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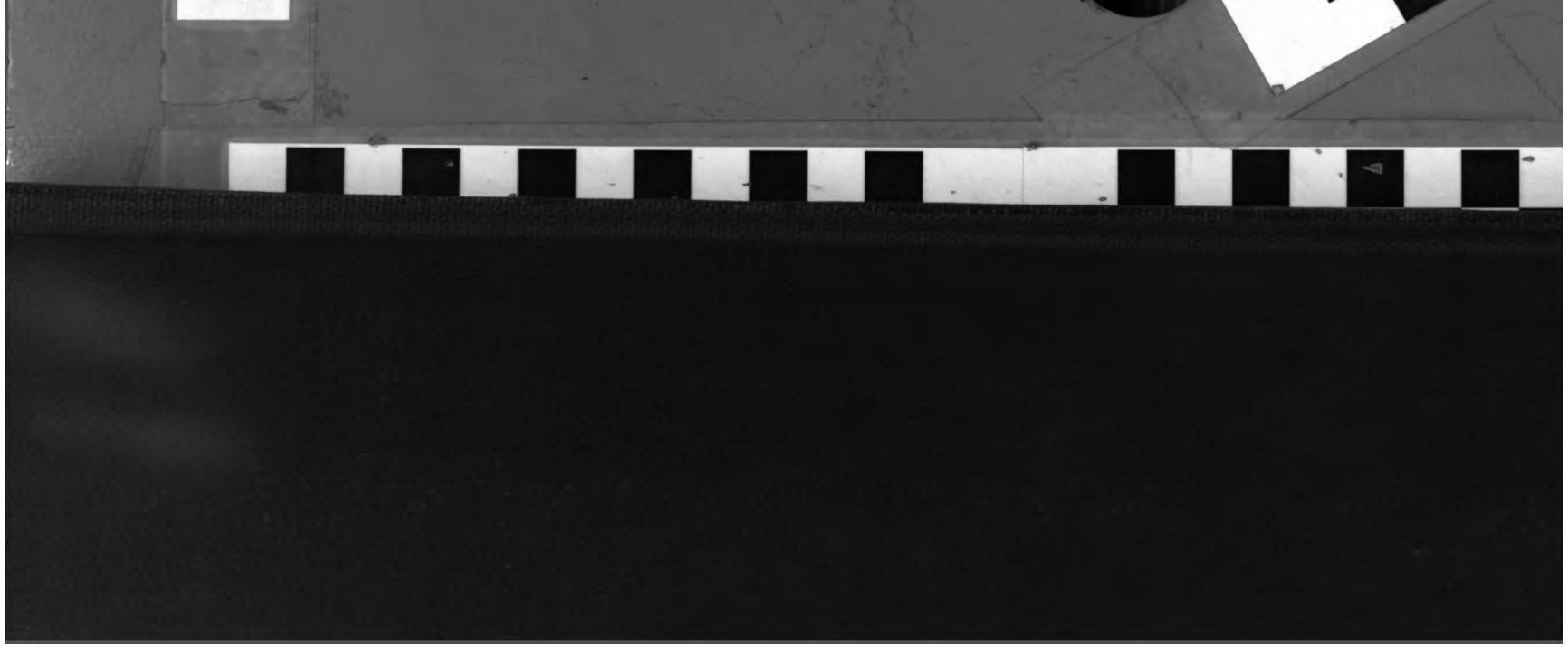

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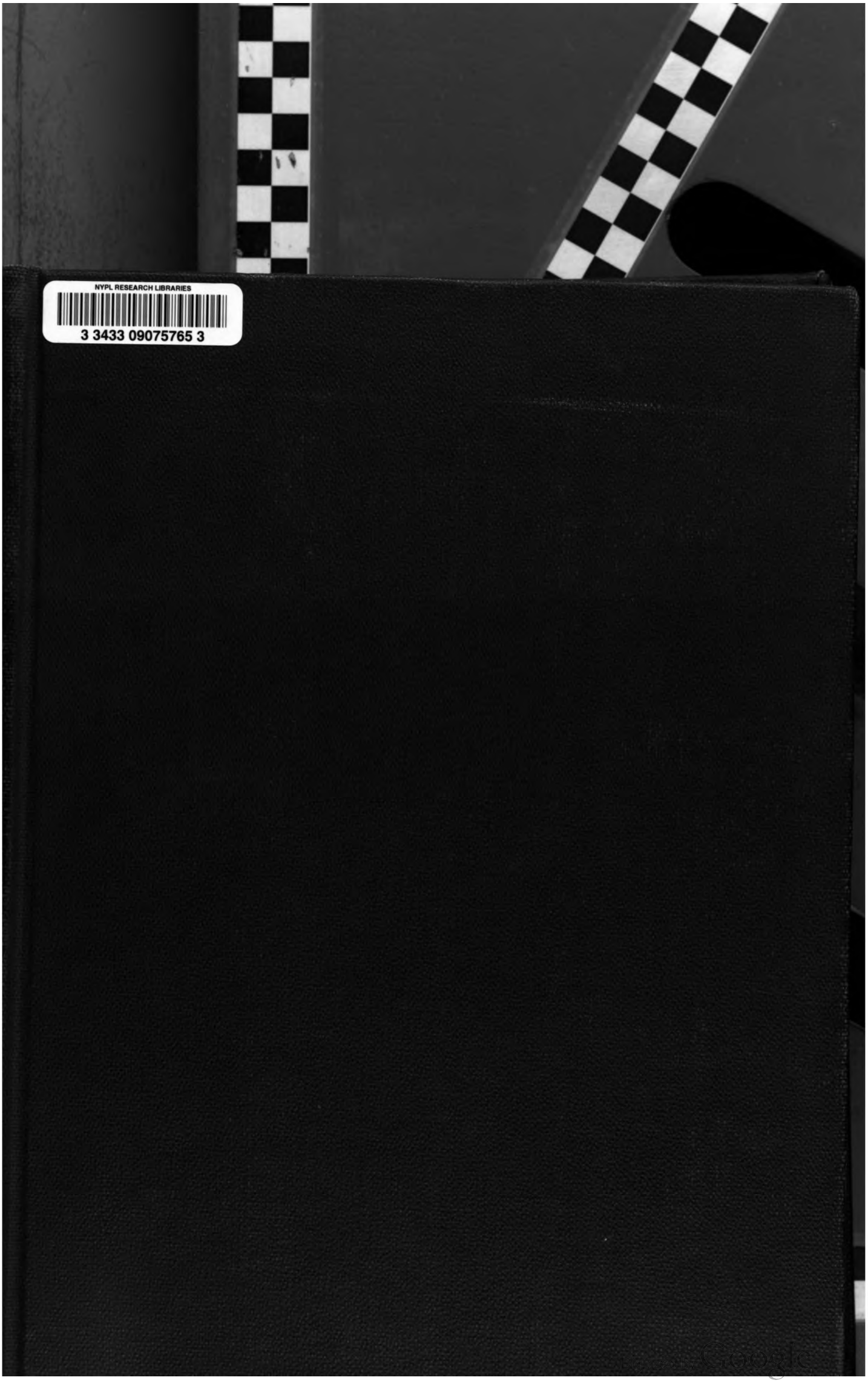
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Accessory
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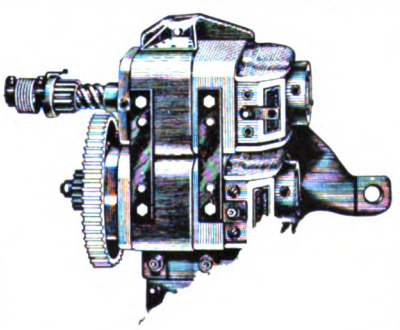
Entered as second class matter, December 30, 1911, at the Postoffice at Pawtucket, R. I., under Act of Congress of March 3, 1879.

The Accessory and Garage Journal

NO. 1. PAWTUCKET, R. I., MAY, 1919. $2.00 THE YEAR.

For Every
FORD
GRAY & DAVIS
STARTER

Send for name of Nearest Distributor.



Descriptive Booklet A-62 and Instruction Book A-68 sent upon request.

The many thousands operating under every possible condition is significant of their dependable quality.

The Gray & Davis system fits on Ford from 1909 up to and including the present model.

GRAY & DAV STON, MASS.

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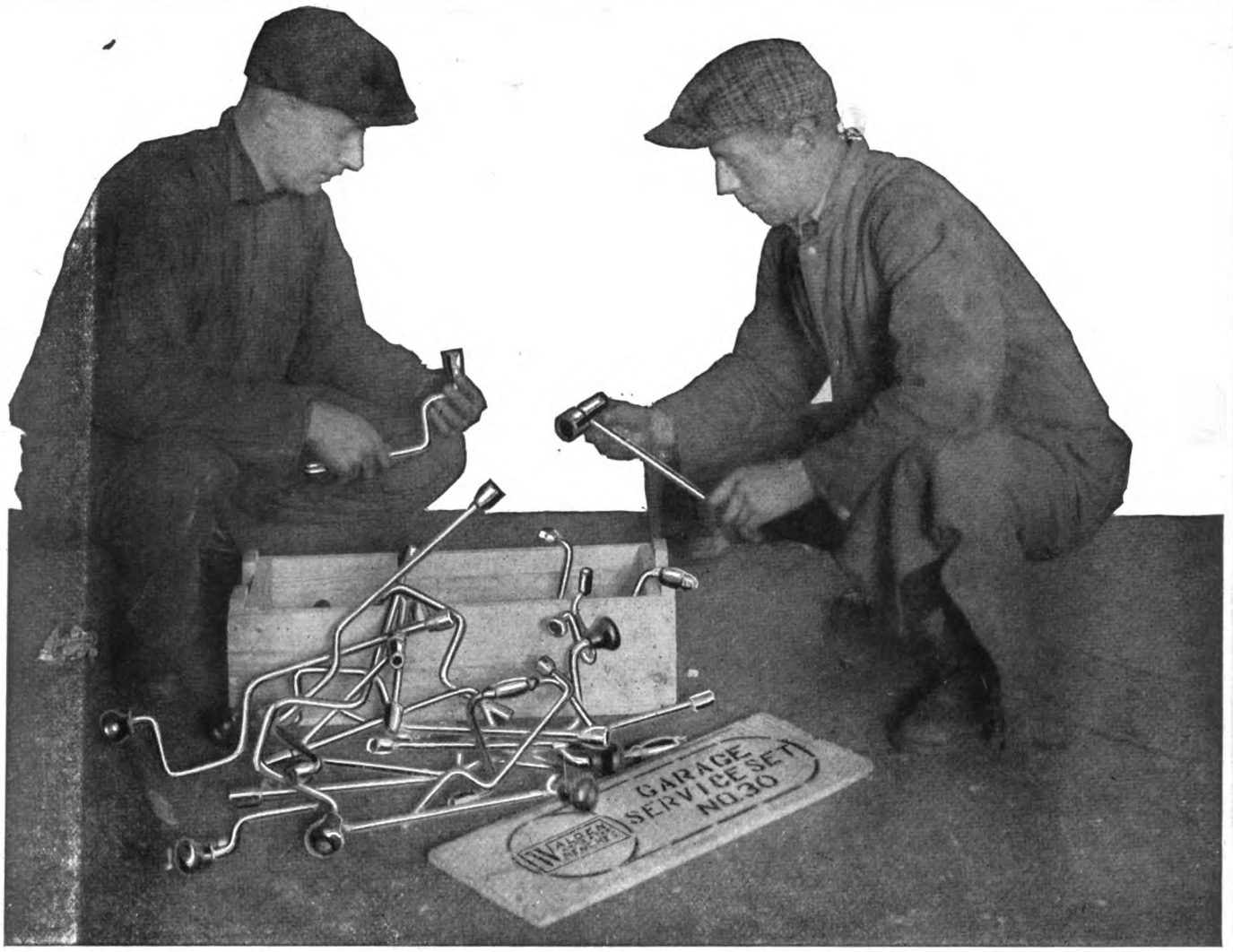

GARAGE MEN EVERYWHERE

ARE BUYING

No. 30 GARAGE SERVICE SETS

so that they may be equipped with the most efficient tools obtainable for making repairs and adjustments on all cars in the easiest and quickest possible manner. List price **$20.** (30 tools).

Send to-day for Complete Wrench Catalogue No. 700 Showing Individual Sets for Ford—Dodge—Buick—Overland Cars.

WALDEN-WORCESTER, INC.
WALDEN WORCESTER WRENCHES
WORCESTER, MASS., U.S.A.

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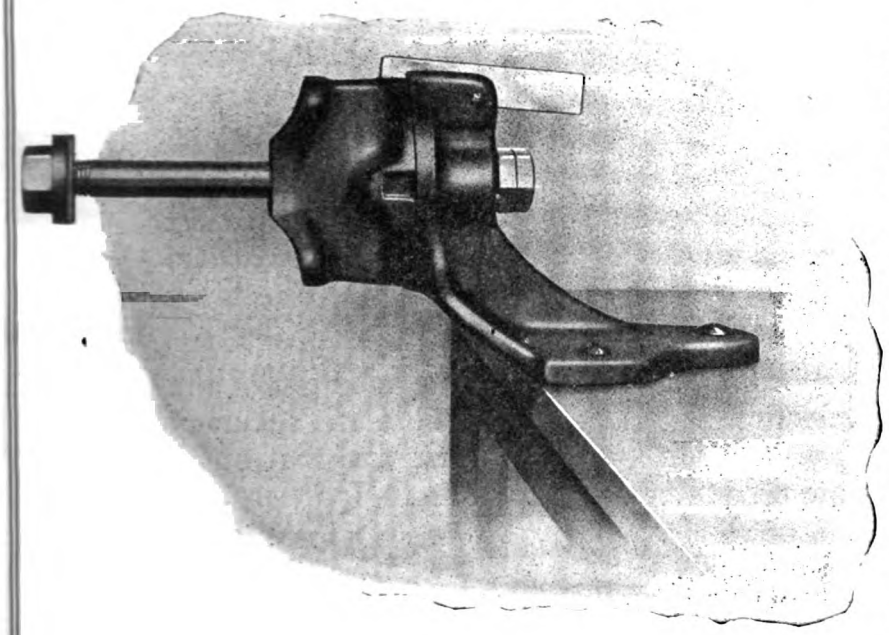
"It's Simple and Easy to Handle Ford Blocks"

—WITH—

THE A. B. MOTOR REPAIR STAND

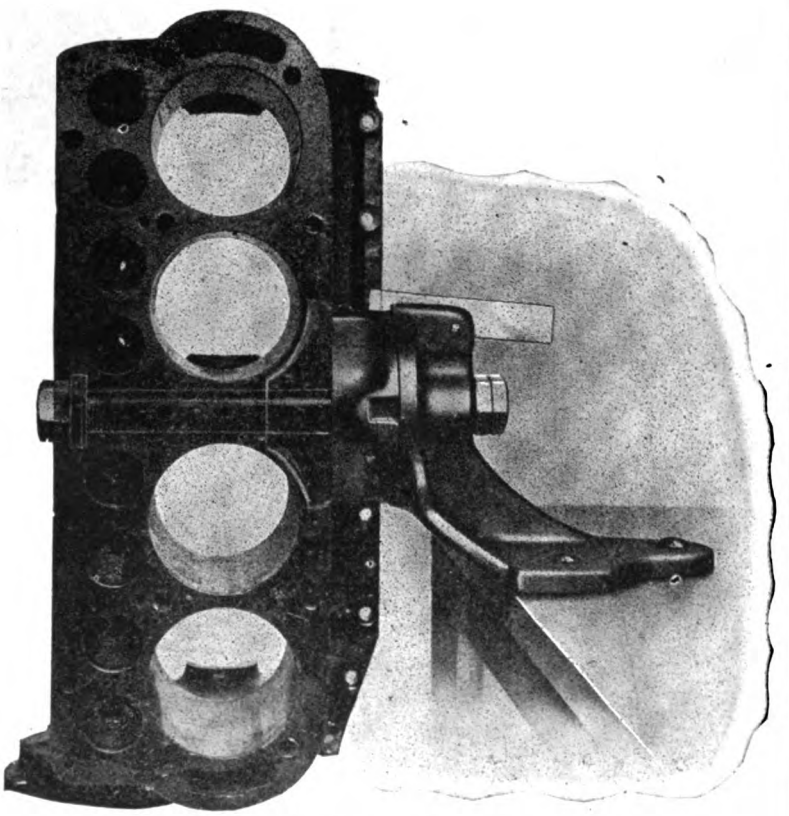


A complete Ford motor can be placed on the A. B. stand, taken apart, worked on in the four positions and re-assembled, more easily and quickly than by any device or method ever used.

The block is breast high at all times, the top, bottom and both sides are clear and all the bench space available for tools and parts.

Important Points

1. Tested to 1,000 lbs.—Ford motor assembly weighs 330 lbs., block 80 lbs.
2. Bolt cast in revolving member eliminating trouble in placing block in position.
3. Block held securely and moved to new position by knocking lock-piece out of slot, turning as desired and locking.
4. Requires little room, weighs 22½ lbs.
5. Price very attractive.



Patent Applied for

A NEW DYER DEVICE

THE G. H. DYER CO. ASK YOUR JOBBER **Cambridge, Mass.**

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BRUNNER

BRUNNER Air Compressors are the creation of careful unhurried workmanship; designed with full appreciation of garage air service requirements. Brunner engineers have studied the garage air service problem from every angle.

As a result the Brunner line of garage air compressors is the most dependable, economical and durable line on the market. And there is in this big line a unit or outfit to meet every service station condition or requirement.

Through the careful selection of materials and the adoption of the highest standards in manufacturing and inspecting, absolute accuracy and the proper strength in every part has been assured so that break downs are unknown and the upkeep cost is next to nothing.

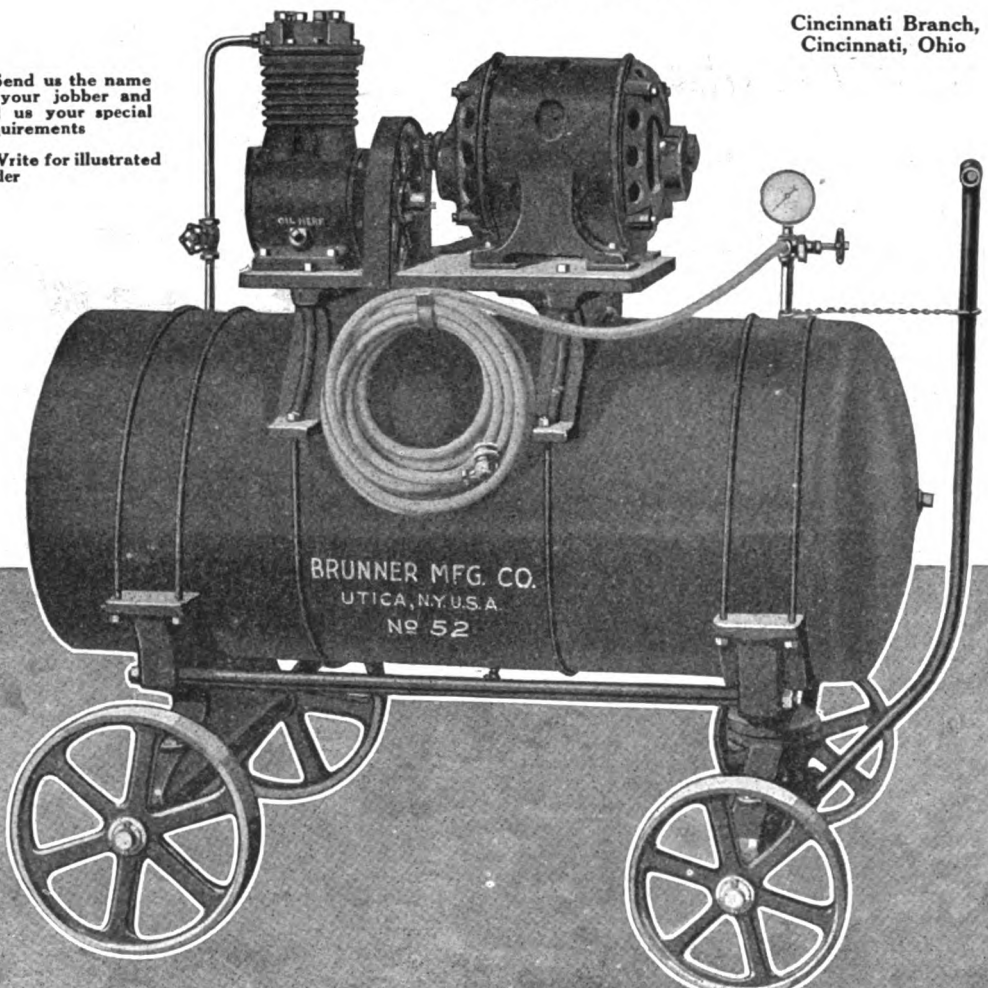
BRUNNER MANUFACTURING COMPANY

Main Office and Factory, UTICA, N. Y.

Cincinnati Branch,
Cincinnati, Ohio

Send us the name of your jobber and tell us your special requirements

Write for illustrated folder



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SATISFY Your Customers by using ORO Connecting Rods

Put Oro Connecting Rods into the Fords you repair. Your customers will come back and send their friends. Hundreds of thousands of Oro Rods are being used with entire satisfaction.

STEEL used in the Oro Connecting Rod is the highest grade open hearth product with a carbon content of 30 to 40 points. There is no connecting rod made stronger than Oro. It will last thousands of miles longer than others.

BABBITT for Oro Rods is scientifically compounded and years of experience have proved it to be the best for this purpose.

WORKMANSHIP on Oro Connecting Rods is the best. The men are the most skillful and experienced in the business. Every tool that has been designed to make the work more accurate is employed.

PROFIT comes in a steadily increasing stream to the garageman who uses this high-grade rod. He builds a bigger and bigger business. He holds his customers. He builds for next year as well as this.

Get Oro Rods from your jobber. Nearly all jobbers have them. If yours has not, write us direct. Be sure to get Oro. Let it build your business as it is building ours.

THE AU-TO COMPRESSOR COMPANY

WILMINGTON, OHIO

Oro
GOOD as GOLD

Manufacturers of the Oro Line of Auto Parts and Accessories, and of Au-To Air Compressors. During the last ten years we have sold thousands of these Compressors and we have never charged a cent for repairs on any of them.

The Long-Lived Connecting Rod for FORDS

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DU PONT AMERICAN INDUSTRIES

THESE SAMPLES SELL PONTOKLENE

The merits of Pontoklene—the tar remover and cleaner ***that sells itself*** are so conclusively demonstrated by a try-out that the most profitable way to sell it is through sampling.

Therefore we furnish you with your initial order for Pontoklene a case of samples for free distribution to your customers. We will also supply you, from time to time, with additional samples in reasonable quantities upon request.

As a result of this liberal sample and our big nation-wide advertising campaign Pontoklene ***literally sells itself.*** All inquiries from our advertising are referred to our nearest dealer. If you act quickly ***you*** can be the dealer in your locality to get this new, profitable business.

There will be more fresh road tar and consequently more demand for Pontoklene in 1919 than ever before. If you are to take advantage of this exceptional opportunity there is no time for delay. The height of the tar season will soon be here. Order today from our nearest office.

Attractive counter display cards, hangers, road signs, circulars imprinted with your name, envelope enclosures and booklets furnished free on request.

DU PONT CHEMICAL WORKS

WILMINGTON, DELAWARE

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For Information, address Advertising Division.

Dyestuffs, Chemicals, Explosives, Leather Substitutes, Pyroxylin, Plastics, Cleanable Collars and Cuffs, Paints, Varnishes, Pigments, Lithopone, Colors in Oil, Stains, Fillers, Lacquers and Enamels.

DU PONT

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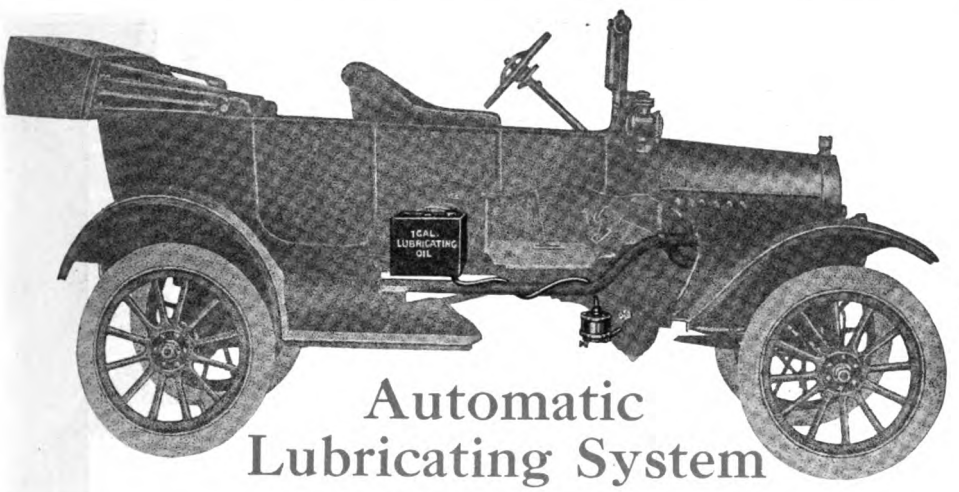
STANDEX



Automatic Lubricating System

FOR **FORD** CARS

The greatest seller—because the greatest success of all devices for Ford cars

A Standex equipped Ford stops all your oil level worries. Oil level never varies—at one mile, a hundred or a thousand.

Gives you approximately 1000-mile range with each filling.

No more getting down to look at pet-cocks or other so-called gauges. It automatically feeds an ounce to crank case—only when motor has consumed such ounce.

Gives you about four times the oil mileage.

Stops for all time spark plug, carbonizing and heating troubles.

Weighs about three pounds; can be installed in fifteen minutes by anyone with a pair of pliers.

Sold Only on a Money-Back Basis (see coupon)

Over 2600 Ford dealers now stock Standex Systems. At your dealer; otherwise direct.

$10.00 complete; oil economy soon refunds that.

Standex Mfg. Cor'n
341-45 E. Ohio Street
CHICAGO, U. S. A.

OWNER'S COUPON

STANDEX MFG. COR'N, Chicago A. G. J. I.
Enclosed find $10.00 for one Standex Automatic Lubricating System. If for any reason I am not satisfied, I am to be refunded the amount paid after 30 days' trial.

Name.....

Address.....

DEALER'S COUPON (Pin to Letterhead)

STANDEX MFG. COR'N, Chicago A. G. J. I.
What is your proposition to dealers on Standex Automatic Lubricating Systems? Send literature.

Name.....

ADDRESS.....

( ) **Dealer mark X if you wish sample billed.**

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EQUIPMENT FOR EVERY CAR, GARAGE AND REPAIR SHOP

Atlantic Pneumatic Grease Gun

When the vehicle is well lubricated it operates easier, lasts longer and costs less to maintain.

Owners demand that their cars be properly greased, they are not now satisfied with the old hit or miss method.

You must use a GREASE GUN or they will take their car to a shop where one is used. Like free air, it will bring business.

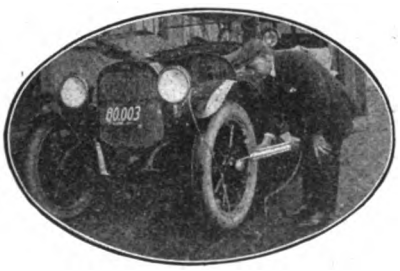
The Grease Gun is operated with air from a power pump, foot pump, spare tire, or compressed air system.

It will force the old grease and dirt out of joints, and fill with new grease. Anyone can operate the Gun.

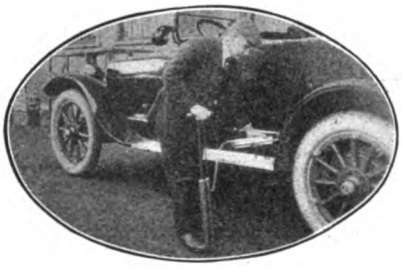
It will permit the use of heavy grease—which is the lubricant to use, as it absorbs the dirt and grit, and when ejected, takes the dirt with it.

It is clean in use, saves 90% in time and labor and never fails to carry the lubricant where needed.

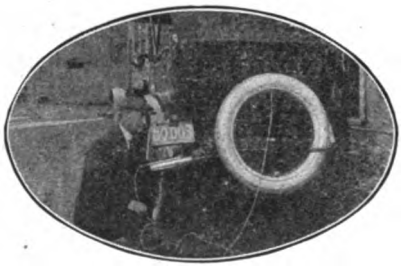
Any grade of grease can be used. It is the only grease gun that can be operated with one hand.



Operated With Power Pump.



Using With Hand Pump.



Power Supplied from Spare Tire.

The ATLANTIC is made to last—Capacity 16 ounces.

Jobbers and Dealers—There is no other Grease Gun just like it. It sells in a big way, it is 100% efficient, and filler goes with it.

List Price—$6.00, in Wooden Box for Carrying When Filled.

Atlantic Motor & Supply Co.

1045 TREMONT BUILDING, BOSTON, MASS.

FACTORY, 63 GORHAM STREEET, SOMERVILLE, MASS.

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Are a Standard Line

Jobbers and Dealers stock the full Blue Ribbon line as they do all other tried, proven and constantly selling goods.

Blue Ribbon products are made by specialists who depend wholly on the quality and service giving satisfaction afforded by lines bearing their trade mark.

There can be no experimentation at the expense of the consumer, dealer or jobber. All Blue Ribbon Specialties must be as good as they are practical in every day use as it is possible to make them.

A nation wide trade, enormous expenditures devoted to development and promotion work as well as the maintenance and operation of the largest plant of the kind in America is too great a stake to gamble against quality.

Blue Ribbon Products today stand supreme. They are passed over the counters backed by an unqualified guarantee on the part of the trade that can leave no doubt as to their merits.

That is why Blue Ribbon Products are a standard line and will always continue to be so.

That is why all jobbers and dealers sell and list them in their catalogues.

Above all else that is why the consumer buys Blue Ribbon trade marked products. Blue Ribbon Products cost no more than others, yet represent the most profitable line that can be placed by the jobber or dealer.

If the **BLUE RIBBON** trade mark is to be seen on your shelves or counter you have a silent salesman in your store that is always working, always earning.

All Blue Ribbon Specialties are sold in quantities to meet any requirement.

The full line affords a complete line and it pays to specialize in known quality goods.

Blue Ribbon Specialties Include:

Blue Ribbon Cold Cream Hand Soap — Contains no pumice or sand.

Blue Ribbon Leak Proof Cement — A permanent radiator cement.

Blue Ribbon Nickel Polish — For nickel parts and trimmings.

Blue Ribbon Auto Body Gloss — For automobile or furniture.

Blue Ribbon Lightning Carbon Remover — Quick and positive in action.

Blue Ribbon Black Enamel — For lamps, hoods, radiators and metal parts

Blue Ribbon Auto Top and Seat Dressing — A waterproof dressing that restores tops and seats.

Blue Ribbon Hand-On Patch — A self-vulcanizing patch for shoes and tubes that never fails.

Blue Ribbon Cream Metal Polish — For any metal. An easy, quick working, satisfactory polish.

Blue Ribbon Oil Soap — A pure vegetable oil soap for any purpose. All quality and efficient.

This is the time to consider your winter and spring requirements

Jobbers and Dealers: Prices and discounts at request.

International Metal Polish Co.

INDIANAPOLIS, INDIANA.

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"We Motorized The Screw Driver"

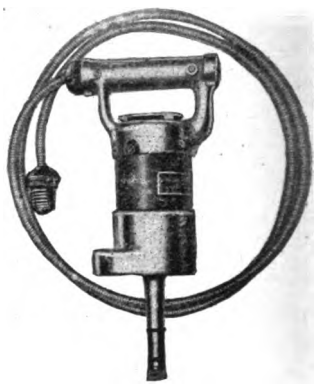
FACTS

The Salesmanager and the Buyer

—AND—

The Inside and Outside Salesman

SHOULD KNOW ABOUT ELECTRIC VALVE GRINDERS



No. 1. An Electric Valve Grinder is intended to supercede the old fashioned slow method of grinding valves by hand.

No. 2. The motion of the old style hand method—viz: forward and back, known as oscillation, must be retained. Complete revolution or rotation of the grinding tool would damage, if not spoil, the valve.

No. 3. The speed or the number of oscillations (forward and back movements) per minute made by the grinder is a vital thing that should be understood thoroughly.

No. 4. Our first model, brought out two years ago, had 1200 oscillations per minute. Our second had 900 per minute, while our present model has between 600 and 700. Tests and experiments made by us in the past two years have proven that a moderate speed will do a smoother and better job.

No. 5. Manufacturers without any knowledge of what is required in a tool of this kind are offering what they term valve grinders to the trade which show a speed of from 1500 to 2500 per minute. Such a speed as this would damage, if not absolutely spoil, any valve upon which it was used. That speed might be right for a drill, but it is entirely too much for a valve grinder.

No. 6. Most anyone could, by using an electric drill for a model, install an oscillating gear and call it a valve grinder, but in this case it only has the movement of the valve grinder, while retaining the speed of the drill. It is neither one thing or the other—just a hybrid—a mongrel. So much about speed.

No. 7. Now about weight: There is a limit here also. The grinder when working, rests on top of the valve. If too heavy, it may score the valve seat, if allowed to rest full weight on the valve. Or else the operator will have to hold some of the weight off of the valve with his arm.

No. 8. To do this will tire the strongest arm in 10 minutes, with the result that the operator will usually allow the grinder to rest full weight on the valve, to the great damage of the valve. It's human nature to do things the easiest way and most repairmen run true to form.

No. 9. So called valve grinders, weighing from twelve to twenty pounds, are appearing on the market. These tools will not give satisfaction for the reasons already given. You invite trouble in selling or using them.

No. 10. A valve grinder can also be too light. But in this case the chances of damaging the valve is slight. The objection is that the operator will be required to exert pressure (bear down) on the grinder and may apply too much.

No. 11. After over two years experimenting and the building of over twenty experimental models, we found that a grinder weighing about seven pounds overcame all the objections mentioned and was practically fool proof —requiring nothing from the operator in the way of thought or attention as to weight or pressure.

No. 12. About the transmission—the gears: After trying fibre, hard rubber compounds, compositions of brass and bronze, common steel, etc., we found that none of these materials would stand up for long under the severe strain that a grinder is subjected to in grinding heavy valves. We increased the size of every gear from ¼ to ⅜" face and make them ourselves from high carbon forged steel—the best we can buy—cut and harden them ourselves. So we know what we are using. These gears that we now use are heavy enough for a small lathe.

No. 13. About the motor: We started with the idea that our motor should be a self-contained individual unit, entirely independent of and separate from the tool. We tried out and experimented with electrical units, assembling the same in casings of our own design. While this would be much cheaper for us than buying a standard make of motor complete, as we do, our experiments but confirmed our original view, that motor making was a trade in itself. Another point was that we had the experience, the reputation and the guarantee of the motor makers back of us.

No. 14. So while we could save money by assembling motor parts bought here and there, when completed we would have at the best only a mongrel power plant. We looked the field of portable electrical devices over carefully—such as washing machines, vacuum cleaners, dairy, ice cream and adding machines, and found without exception that the machine of each type that was regarded as the best in its class was made with the motor as a separate unit.

No. 15. That was good enough for us. We knew we were right and this fact has been further proven when we say that in all the electric tools that we have sold in the past two years we have never had a comeback, where the fault could rightfully be placed on the motor. In a two-year test, in over two thousand service stations, garages and repair shops, in the hands of all kinds and classes of workmen, in use and abuse, our motors have shown practically 100% efficiency.

No. 16. We are, we believe, the only concern making portable electric machine shop tools of our type, such as drills and valve grinders, where the motor is a self-contained, detachable, individual unit. Bear this in mind.

No. 17. The handle: The construction and design of our handle is original with us. The switch is in the handle, where it should be, under the thumb and forefinger. Both switch and handle are doubly insulated, an extra caution that we take. This makes a short circuit in the handle almost impossible. A small thing you may think, to mention, but a single loose strand of wire coming in touch with the handle direct would charge the handle and give the operator more or less of a shock. This can't occur in our tools.

No. 18. We designed a device in the way of a two-piece separable plug, fitting one end of the plug in the handle and the other on the attachment cable. We did this to eliminate the tendency of the workman to juggle the tool around by the cord, where it was permanently attached. It costs us dollars extra to do this, but we save all kinds of future trouble for our customers caused from broken inside connections, the result of the workman handling the grinder by the cord. He can't do this with our tool, if he does the plug will separate and the grinder will drop on the floor. Another original feature of ours.

No. 19. All parts of the Stenman Portable Electric Valve Grinders are made with jigs and dies of our own design. All parts are carefully inspected. Working parts are gauged to .0001. All parts are interchangeable.

No. 20. There is no other Valve Grinder on the market that will compare with the Stenman for efficiency and service. More Stenmans are in use than all other makes combined. While the lowest in price, it should sell for more than any other make—because—it is made by the only concern in the world today that has had sufficient experience to enable it to truthfully say that it "KNOWS HOW" to build a valve grinder.

Order through your Jobber or Direct.

The Stenman Electric Valve Grinder Co., Inc.

42 Southbridge Street
Worcester, Mass.

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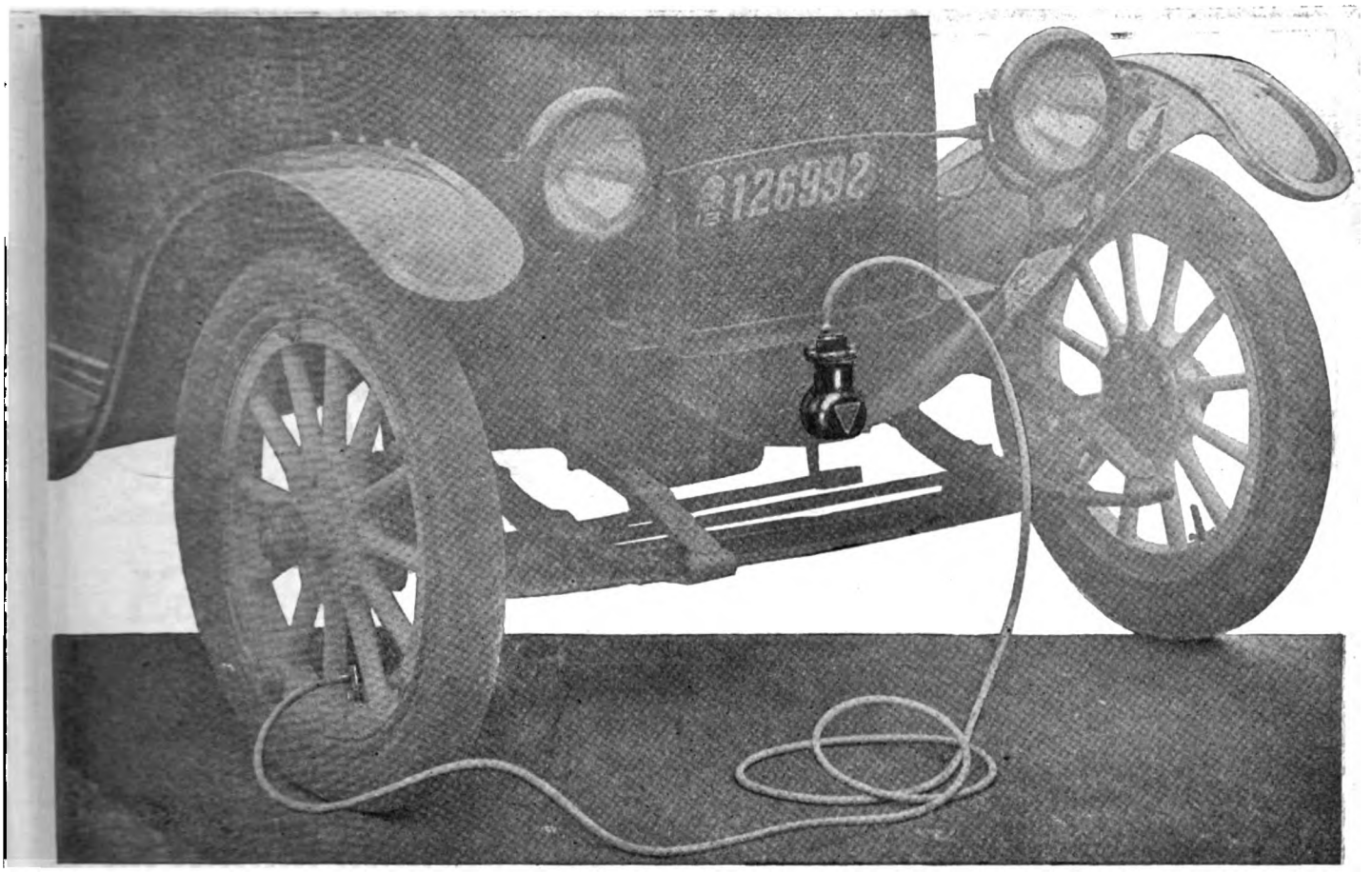

The Detroit Tire-Pump will operate on a — Dodge — Briscoe — Chandler — Hudson — Overland — Reo — or Studebaker. In ordering specify model number and year in which car was made

DETROIT
CRANK-SHAFT
TIRE-PUMP
Guaranteed for Life

This is the latest development in mechanically-driven tire-pumps—it means that you may now obtain a well-built, solid, substantial, powerful tire-pump that attaches at the right place, to the most powerful shaft on any car, the Crankshaft, with no possible opportunity for oil-contamination of the air pumped.

The pump is built like a miniature engine—heavy and strong—and will give unlimited service—in fact, this pump will outlast any car built.

The price is low, so low no man can afford to be without one— or take the chances of tire troubles far from free air, and so get rim cut casings—tube cuts or distorted rims—when a few dollars puts this air plant in your tool-box ready for any emergency anywhere.

This tire-pump takes all the worry out of country driving—makes you master of your tire situation at all times. It's Satisfaction Insurance for motor car driving—don't be satisfied until you own one.

To Accessory Dealers

Just a word—this pump is going to sell big—our advertising campaign is going to make it known to car owners in every nook and corner of the country. We've kept a substantial profit for you, and have built the pump just as good as we knew how. The pump and its price are right—Why not be first in your territory to display and sell it? Get in touch with your jobber immediately.

To Manufacturers

We are one of the largest builders of all styles of power-driven tire-pumps in the country, including transmission-pumps for many of the best-known high-powered, touring cars and trucks. Samples for Standard equipment, blue prints and quotations gladly supplied upon request.

THE DETROIT ACCESSORIES CORPORATION, DETROIT; *Michigan*

Factory Branch Offices

Miller-Cave Corporation, 122 So. Michigan Ave., Chicago, Illinois.

Asch & Company, Inc., 16-24 West 61st Street. New York City.

Hughson & Merton, 77 O'Farrell Street San Francisco, Calif.

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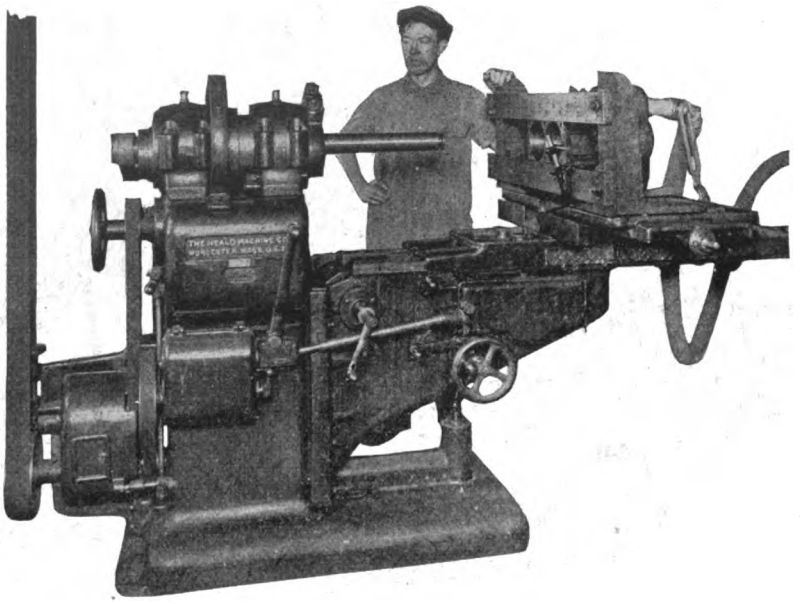

ARE YOU GOING INTO THE CYLINDER GRINDING BUSINESS?

Here Are Two Opportunities You Should Not Miss

FIRST—There is no business today which has been so neglected and where there is such a bright future as that of regrinding worn or scored automobile cylinders. Cylinders wear oval shape from the constant pressure of the ring against the wall, or are scored by broken rings and loose wrist pin bushings. Unless these are ground round again, the result will be loss of power, excessive smoke, and often a piston slap or knock. Also there will be an increased consumption of gasoline and oil.

All of these troubles are taken care of by regrinding on a Heald Style No. 60 Cylinder Grinding Machine. It was especially designed and built to take care of this class of work.

SECOND—There are a number of practically new second hand Heald No. 60 Cylinder Grinders now on the market. These machines have been released by the Government from factories doing air-craft war work. These second hand machines are ideal for automobile repair shops or garages and the Heald Company will be glad to furnish information to prospective buyers where they can get full details regarding these machines.

Write for Bulletins, Series No. 6 and other information in regard to cylinder grinding.

THE HEALD MACHINE COMPANY

Worcester Massachusetts

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-and so we let every dealer sell them-

Everybody wants to buy Hassler Shock Absorbers

—that is, when they know about them—so we decided that more dealers ought to be selling them and telling the good news. Therefore, we now let *every dealer sell Hasslers!*

Nearly a million in use—actual figures—cold cash figures—a dealer's profit in every set! That's what Hasslers have already done—and they've just started!

WHAT HASSLERS DO

Hasslers actually decrease tire and repair expense, and depreciation loss, at least 30%! Gasoline mileage is considerably increased. Then, there is the added comfort—worth far more than Hasslers cost. No other shock absorbers are so satisfactory—so sensible. When Hasslers are once on—they stay on.

If you are in any sort of business—garage, supply, hardware, etc.—where you can offer accessories, then you can sell Hasslers—and reap some of this great harvest.

Hasslers are doing a mighty lot of talking for themselves. Then, in addition, we are spending many thousands of dollars in the leading trade and national publications ripening your prospects for you. Ad Helps of all kinds for your local use, too!

You can stock Hasslers—one or more sets at a time! You don't have to make a big investment. And every set you sell will make other sales for you. Soon you'll have a splendid business in Hasslers alone.

Read our large effective page advertisements now appearing in The Saturday Evening Post and in all of the leading National Publications, Agricultural Papers, etc.

Write us for Dealer's Wholesale Price and name of our nearest local contract distributor.

ROBERT H. HASSLER, INC. 608 Naomi St., Indianapolis, Ind.

CANADIAN FACTORY - HAMILTON, ONTARIO

HASSLER

TRADE MARK REGISTERED

Shock Absorber

PATENTED

The Hassler Guarantee: "Absolute satisfaction or your money back"

10-DAY TRIAL OFFER

Don't ride without Hasslers because someone tries to discourage you. They are a quality product—worth their price. The Hassler dealer in your vicinity will put them on for 10-days' trial. Your money refunded if you say so. Write for name of dealer and Trial Blank.

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RECONSTRUCTED TIRES

Good for 2,500 to 5,000 Miles

Every motorist who sees his tire wearing away is in constant danger of a puncture or blow-out—will enthuse over our guarantee. Particularly so when it saves half the price of a new tire, this is a fact, and we guarantee it.

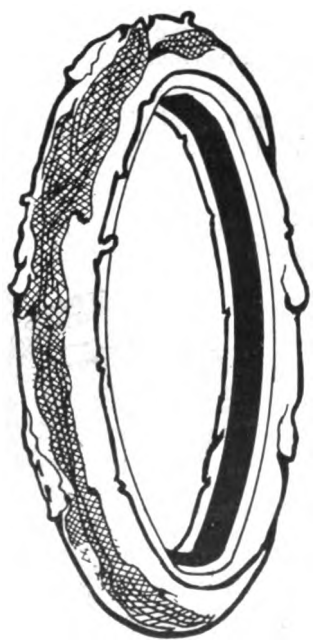
This is a new process, not the ordinary retreading method, but a process that builds a new tire on to the old carcass.—This is what we do:

1.—Turn out an old, worn-out, and useless tire into a new one.

2.—Prevent tread worn, rut worn tires from being utterly ruined.

3.—Cover all weak or worn spots, cuts or bruises in the old tire, of which our Reconstructed Tread actually becomes a part, thus doubling the strength of the casing, and making blow-outs almost impossible.

Let Us Prove the Value of This Work



Here Are Our Prices For Rebuilding Your Used Tires

Size	Plain	Non-Skid
30x3	$9.00	$10.20
30x3½	10.20	11.25
32x3½	11.25	12.30
31x4	12.80	14.45
32x4	13.40	14.95
33x4	13.90	15.50
34x4	14.45	16.00
34x4½	17.10	19.75
35x4½	18.20	20.90
36x4½	19.25	22.45
35x5	21.40	24.05
37x5	23.50	26.20

TIRE CONSTRUCTION CO.

129-131 Columbus Ave., Boston, Mass.

(When Writing to Advertisers, Please Mention the Accessory and Garage Journal.)

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When Springs Break

put on

VULCAN QUALITY

The Replacement Spring

A Dealer Writes:

"Pardon me for informing you of the Splendid Success I have made since becoming a VULCAN Dealer."

Spring Service for a Nation

as rendered by VULCAN has made over 7000 Dealers equally as successful.

VULCAN Service
combines
Quality—Demand and Profit

Write for Particulars

regarding the VULCAN proposition and the FREE Display Rack with first order.

Jenkins VULCAN Spring Co.
Factory
Richmond, Indiana
Direct Factory Branches
Atlanta, Ga. Minneapolis, Minn.
Boston, Mass. Reading, Pa.
Dallas, Tex. St. Louis, Mo.
Sumter, S. C.

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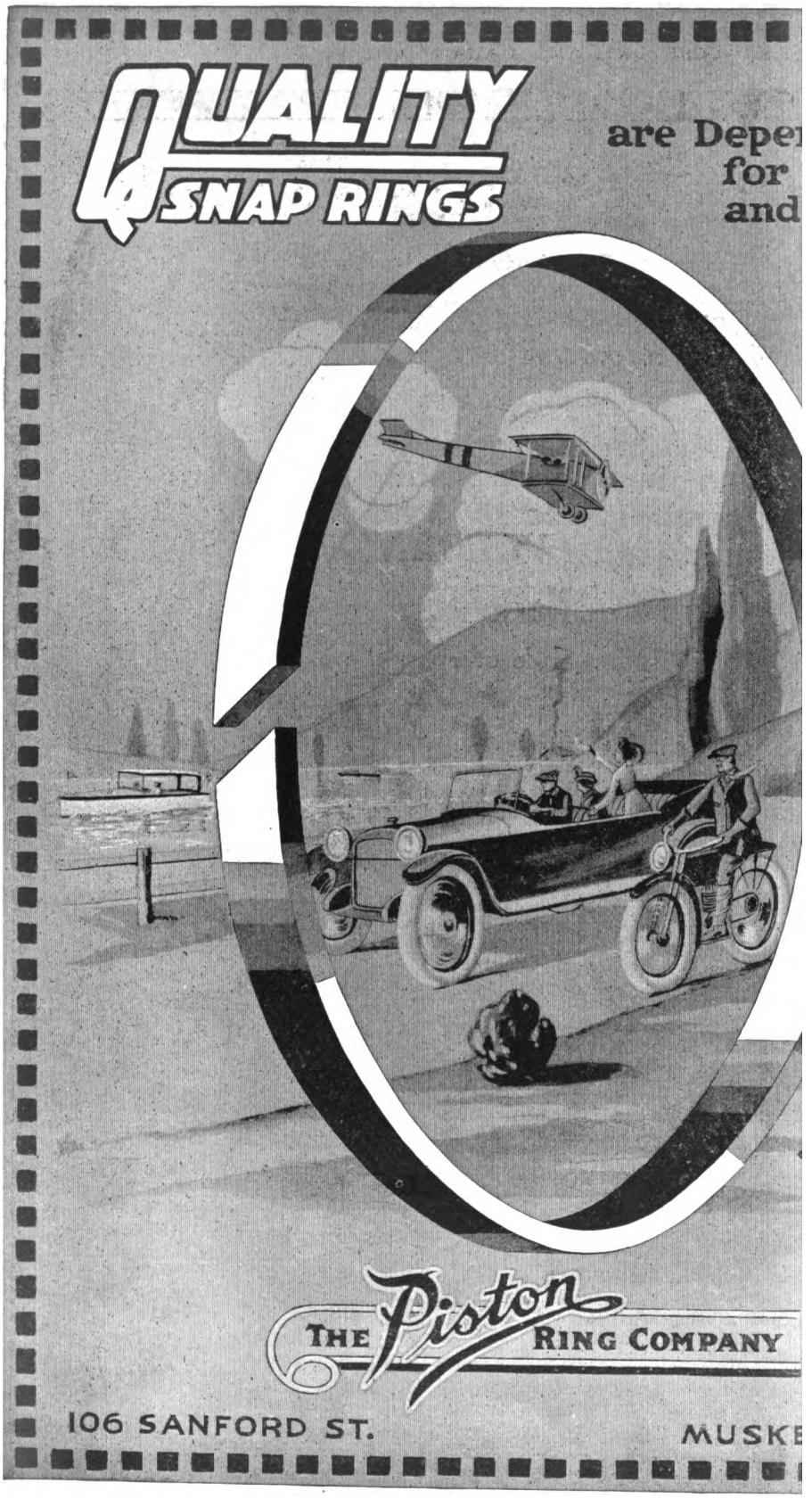

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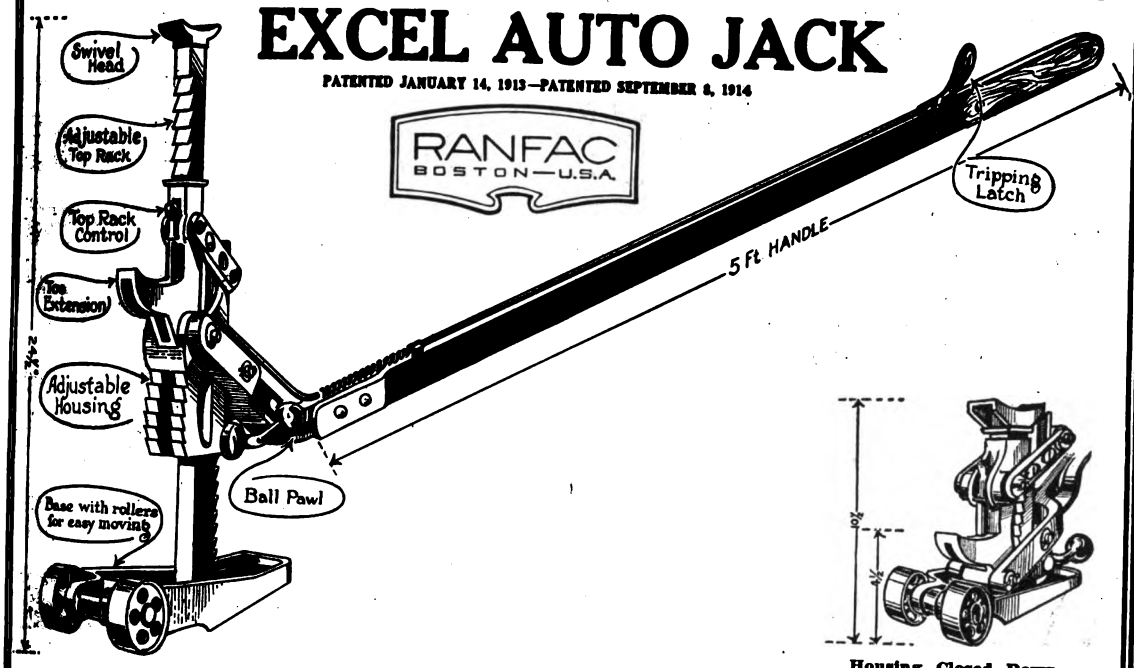
EXCEL AUTO JACK

PATENTED JANUARY 14, 1913—PATENTED SEPTEMBER 8, 1914

RANFAC
BOSTON—U.S.A.



Housing Closed Down

A heavy tool made to stand up under the continuous hard knocks of the Garage and Service Station and to meet the demand for a powerful, substantially built, quick acting device capable of doing heavy work efficiently and well. WIDE HEAVY BASE, fitted with rollers for easy handling. Capacity of Jack, 2000-3000 pounds. Leverage of handle, 60 inches. Weight of Jack, 48 pounds.

Lifting Range MAIN JACK: Lowest Lift 10½ inches; highest lift 24½ inches on any car without blocking, thus permitting the removal of the shackle bolts, springs and front suspensions, and the adjustment of steering rods. TOE EXTENSION: Lowest lift, 4½ inches; highest lift, 15 inches. Permits of getting under a broken axle to lift the car high enough to place truck or skids in position for towing.

POSITION

Jack goes into position immediately, under any part of frame or chassis. No stooping nor crawling. No lame back.

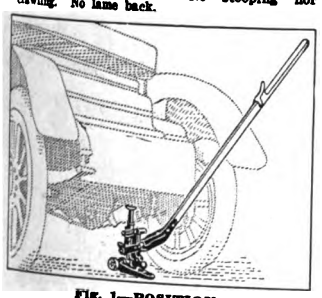


Fig. 1—POSITION

Will reach under bumpers, low gasoline tanks and otherwise inaccessible points without difficulty.

ADJUSTMENT

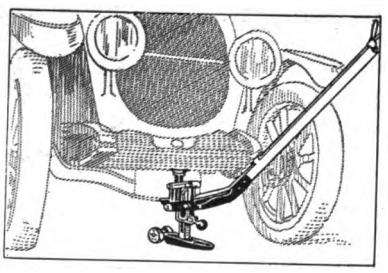


Fig. 2—ADJUSTMENT

One upward motion lifts the swivel head or entire housing into proper adjustment.

LIFTING THE CAR

One downward sweep of the sixty-inch handle lifts the car—instantly.

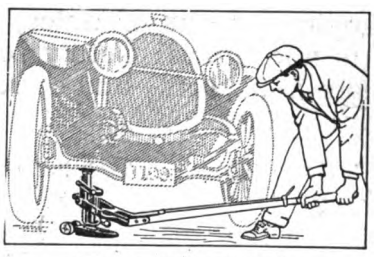


Fig. 3—LIFTING CAR

Then you are ready to work. No loss of time.

Releasing the tripping latch permits lowering of load. Upward kick on ball pawl drops housing and the jack can be withdrawn at once.

Ready To Ship --- In Any Quantity --- List Price $25.00

Subject to liberal Trade Discounts. Write for Quotations and Catalog A.

THE RANDALL-FAICHNEY COMPANY, Inc.

Makers of JERICHO AND JUBILEE SIGNALS, B-LINE OIL AND GREASE GUNS, EXCEL AUTO JACKS, VULCANIZER THERMOMETERS, GLAROSCOPES, ETC.

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Get Expert Factory Help *on* Electrical Jobs

WRITE the United Motors Service branch in your territory or phone the Authorized Distributor in your city when you need expert factory advice on electrical equipment.

Workmen trained in the Delco, Klaxon and Remy factories can give you information and advice about your electrical equipment.

Complete stocks of Delco, Klaxon and Remy parts and official factory records enable you to obtain new parts—and correct parts of genuine manufacture—at all times.

In short, this is the service you may obtain through United Motors Service Incorporated, the service department of The Dayton Engineering Laboratories Co., Remy Electric Co. and the Klaxon Co.

Have you on file the latest organization list of United Motors Service Incorporated? A postcard request will bring it

UNITED MOTORS SERVICE
INCORPORATED

General Offices: Detroit, Michigan

Branches in the following Cities:

Detroit	Atlanta	Kansas City	San Francisco
Chicago	New York	Minneapolis	Seattle
Denver	Cleveland	Los Angeles	Philadelphia
Boston			Indianapolis

THE DAYTON ENGINEERING LABORATORIES CO. STARTING LIGHTING delco IGNITION DAYTON OHIO

Delco

KLAXON

REMY

REMY

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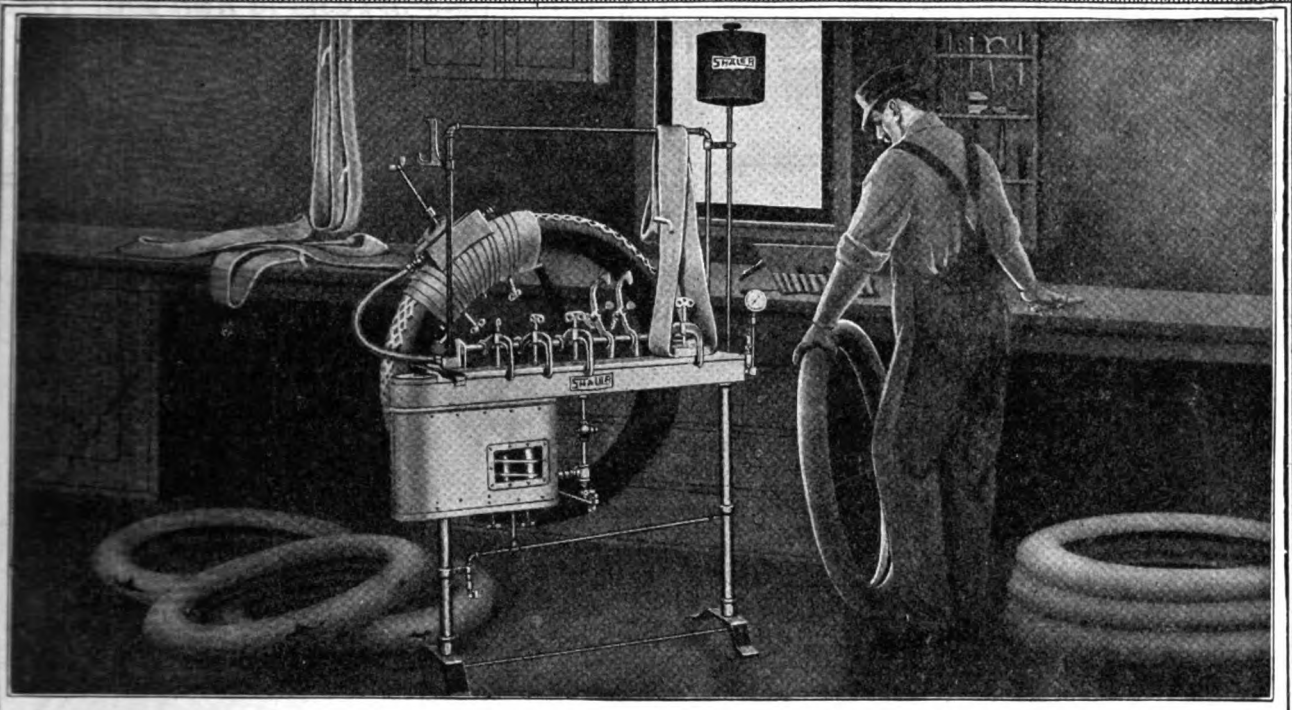

Make More Money

Hundreds of men are making $200 to $500 a month clear profit, repairing tires with the Shaler Automatic Steam Vulcanizer. Many make $60 a week. One man made $45 the first day he received his outfit. No experience is necessary. We teach you how to make repairs. A boy can learn to do expert work with a little practice on old tires. High tire prices and scarcity of rubber make it necessary for motorists to keep their tires in good repair. They are willing to pay liberal prices for good repairs that prolong the life of their tires and give them more mileage. It only takes a little money to start—expenses are small—a corner in a garage is ample floor space, and there is plenty of work to do. We furnish Complete Outfit, tools, materials and everything needed for tire repairing, with plain, simple instructions.

SHALER Steam Vulcanizers *For Repair Shops*

are the simplest in construction—easiest to operate, and will do as much and as perfect work as the large, expensive vulcanizing outfits that cost $250 to $500. The price of the Complete Steam Vulcanizing Plant—illustrated above, Model No. 41—Type N. P. R.—heated with either gas or gasoline, is only $70—subject to trade discounts.

The Shaler N. P. R. is a portable outfit—easily moved to any part of the shop—occupies but little floor space, and so easy to operate that any boy can make perfect repairs with it.

The Shaler Patented System of Automatic Heat Control regulates it automatically. Can't overcure or undercure, requires no watching or regulating.

It has large capacity—repairs 12 casings and 200 tubes a day. Handles any size or style of tube or casing.

The Shaler Wrapped Tread Method of tire repairing is used by all tire manufacturers. It mends casings and tubes quicker, better and at less cost. So simple that anyone can do perfect work.

Ask Your Jobber—or Write for Catalog

of the Complete Line of Shaler Vulcanizers
for Repair Shops, Garages and motorists' use.

C. A. Shaler Company, 254 Fourth St., Waupun, Wis.

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THE ACCESSORY AND GARAGE JOURNAL
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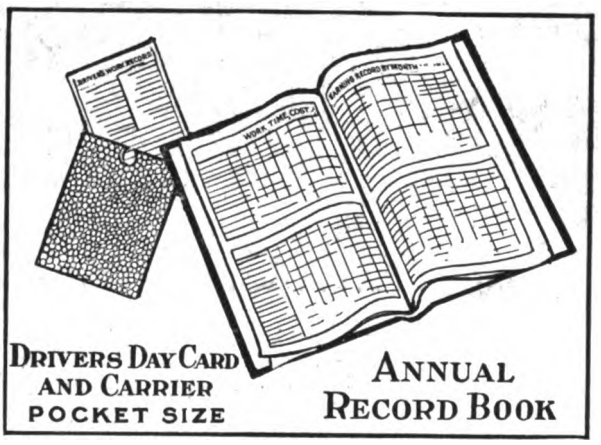
Know what it costs to Run your Truck
Learn what your Truck Earns
Know your Truck Profit and Loss

UNIVERSAL MOTOR TRUCK ACCOUNTING SYSTEM



The system includes an annual record book, 350 drivers' day cards, a day card carrier and full instructions.

Any owner can start this system at any time with an old or new truck of any make or type.

Any boy or girl clerk can maintain all records for one or a hundred trucks.

Each system is good for one year, nothing more is needed or necessary.

The records show at a glance any and all items entering into the earnings and cost of operation.

It is extremely simple. 100% complete and full working instructions are supplied with each system.

It is almost self-operating.

Price $10 — Delivered

Address Record Department
MOTOR TRUCK
Pawtucket, Rhode Island.

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more money for garages

How often are you called on to locate and correct trouble in Electrical Starting and Lighting Equipment? You are bound to have more and more of such calls, especially if you earn a reputation for knowing the electrical side of an automobile and handling it right.

There is big money in Electrical Installations, Repairs, Adjustments, Renewals, etc. Some of the most wide-awake Garage Men have found it out. This year more money than ever before will be made that way, because there will be more electrical work than ever for the man who knows how.

Guess-work won't do. Every time you guess wrong you are likely to make yourself a peck of trouble and lose a customer in the bargain. What you need, and need right now before you find yourself losing opportunities to make money, is a

Weston

Model 280

Garage Testing Instrument

This complete Electrical Testing Equipment is made by the world's foremost Electrical Instrument designers and makers. It meets every requirement for making electrical tests in the garage. With this WESTON MODEL 280 you can handle anything that comes your way in electrical work. And it doesn't cost a small fortune, either—mighty little for what it will help you to make.

With the Instrument, we furnish full information showing you how to use it. And we have a staff of electrical experts whose advice is yours for the asking any time you think you need it.

We can make prompt deliveries if you send your order in early. Write us today for full particulars.

WESTON ELECTRICAL EQUIPMENT CO.
103 Weston Avenue, Newark, N. J.

New York	Detroit	Pittsburgh	Miami, Fla.	Winnipeg
Chicago	St. Louis	Richmond	Seattle	Vancouver
Philadelphia	San Francisco	Buffalo	Toronto	Calgary, Alta.
Boston	Denver	Minneapolis	Montreal	Havana
Cleveland	Cincinnati	New Orleans	Halifax	Mexico City

Do you want to be able to make quick, accurate tests to locate any defect in the electrical system? Or do you want to consume unlimited time taking apart every device and running a chance that you will discover the trouble sooner or later?

There are scores of places where trouble may occur. Unless you test electrically, you cannot eliminate any possible source of trouble without taking each device apart.

A poorly made, inaccurate electrical instrument merely adds to the uncertainty. What you need is reliable, positive knowledge. This Model 280 really is the equivalent of six separate Measuring Instruments of different ranges. It is extremely accurate, durable and serviceable. With it, you can do the work quickly and intelligently, putting yourself a long way ahead of any competitor who has not Weston Equipment.

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Haul bigger loads
using

ADVANCE CORK INSERT

Transmission Brake Lining for Fords

Advance Cork Insert means more pull to start and stop your loads. Here's an example of what it does for a Ford Truck: "We found it impossible to haul more than 1500 pound loads with our Ford and trailer. The engine would go dead in trying to start the load in low gear. But *since* using Advance Cork Insert, loads as high as 2500 pounds are being hauled without any difficulty in stopping or starting. *They produce a smooth friction action without jerk or chatter.*"

"We use nothing but Cork Insert" says a large New York trucking concern, "because loads can be started and backed by our Ford trucks that cannot be budged with ordinary lining in the transmission."

Advance Cork insert also means a *sure* brake. It brings the heaviest load to a smooth, easy stop. Saves the car. Saves accidents. Saves worry.

The use of Advance Cork Insert is economy. Its performance over the past 24 months proves that it outlasts several sets of ordinary linings. It wears so well that it is cheapest in the long run.

Be sure you get the genuine Advance Cork Insert. It is easy to identify, by the red and black package, and the name in big letters, "Advance Cork Insert."

Advance Automobile Accessories Corporation

Dept. E-3 56 E. Randolph St., Chicago, Ill.

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The ACCESSORY and GARAGE JOURNAL

VOL. IX PAWTUCKET, R. I., MAY, 1919 No. 1

Sunbeam Team Eliminated From Sweepstakes

Engines Found to be Oversize—Resta and Chassagne May Take Other Mounts

DISAPPOINTMENT has resulted from the announcement that the team of Sunbeam cars, brought from England for the Indianapolis Sweepstakes, May 31, would be unable to compete and that the famous drivers, Resta and Chassagne, would not appear at the wheels of these cars, which were looked upon as most formidable contenders, although they may take other mounts.

The Sunbeams were ruled out because the engines were oversize, making them ineligible. In making known this fact Louis Coatalen, chief engineer of the Sunbeam works, who came with the cars, said he could not explain it. Joseph Christiaens, the Belgian racer, who was killed while testing one of the cars in England, had charge of their construction, and he must have made a miscalculation, or forgot the piston displacement limitation on cars for the Indianapolis race.

Resta and Chassagne have received numerous offers to drive other cars.

The elimination of the Sunbeam team removes much of the international aspect of the race, for the only strictly foreign entrants that remain are the French Ballot drivers and cars, all the others being American drivers, though there are several Peugeot cars that originally came from France, but have been so much built over that they cannot be considered fully representative of French industry.

FACTS REGARDING RACE.

Distance	500 miles
Total prize money	$50,000
Price for winner	$20,000
Prize for second	$10,000
Prize for third	$5,000
Remainder to be divided among those who finish from 4th to 10th.	
Referee	Eddie Rickenbacher
Starter	E. C. Patterson

It is believed that the race will produce very high speed, time trials having been made at better than 97 miles an hour for a single lap.

Among the American entries there is great interest in the Packard, with a 12-cylinder aviation engine that has been entered by the Packard Co., which this year for the first time is taking part in speedway racing. Ralph DePalma will be the driver. He won the Indianapolis race in 1915.

The Hudson is strongly represented, with six special cars and with such drivers as Eddie Pullen and Ira Vail among the pilots. The Duesenberg racers, of which there are four, present novelties of design, particularly in regard to valve arrangement. The drivers include O'Donnell, Milton, Lewis and D'Alene. Another large team is the Frontenac, with Louis and Gaston Chevrolet, Joseph Boyer and Ralph Mulford as pilots.

Clifford Durant has a Chevrolet Special and Eddie Hearne a Durant Special. Earl Cooper will drive a Stutz. Roscoe Sarles has Barney Oldfield's old racing car. There are also two Roamers, two Premiers and a number of other special cars.

Capt. Eddie Rickenbacher will act as referee. E. C. Patterson, Chicago, holder of the cross-country motor car record between New York and Chicago, will be the starter, and will be assisted by W. S. Gilbreath, manager of the Detroit Automobile Club.

Rickenbacher will also be pacemaker, as Jesse G. Vincent, who was originally selected to set the pace, has been called to Europe.

ENTRIES FOR INDIANAPOLIS SWEEPSTAKES.

Driver	Car
1. Cliff Durant	Chevrolet Special
2. Ralph Mulford	Frontenac
3. Jean Chassagne	Eliminated
4. Dario Resta	Eliminated
5. W. W. Brown	Richards Special
6. Jules Goux	Peugeot
7. Louis Chevrolet	Frontenac
8. Gaston Chevrolet	Frontenac
9. Joseph Boyer, Jr.	Frontenac
10. Earl Cooper	Stutz
11. Tom Milton	Duesenberg
12. Eddie O'Donnell	Duesenberg
13. Dave Lewis	Duesenberg
14. Kurt Hitke	Roamer
15. Eddie Hearne	Durant Special
16. Louis LeCocq	Roamer
17. Ralph DePalma	Packard
18. Eddie Pullen	Hudson Special
19. H. C. Simmons	Hudson Special
20. Ira Vail	Hudson Special
21. Denny Hickey	Hudson Special
22. Not named	Hudson Special
23. Arthur Thurman	Thurman Special
24. Wilbur D'Alene	Duesenberg
25. E. L. Shannon	Mesaba Special
26. Tom Alley	Bender Special
27. Roscoe Sarles	Oldfield Special
28. Arthur Klein	Peugeot
29. Andre Boillot	Baby Peugeot
30. Not named	Peugeot
31. Rene Thomas	Ballot
32. Albert Guyot	Ballot
33. Jules Bablot	Ballot
34. Louis Wagner	Ballot
35. A. E. Cotey	Ogren Special
36. J. J. McCoy	McCoy Special
37. Omar Toft	Darco Special
38. P. W. Monahan	Jay-Bee Special
39. Not named	Detroit Special
40. Not named	Premier
41. Not named	Premier
42. Ray Howard	Peugeot
43. J. M. Reynolds	Hudson Special

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DEALERS' NATIONAL ASSOCIATION MAKES PROTEST AGAINST 5% TRUCK REVENUE TAX

INTERPRETATION of the law imposing excise taxes on power vehicles, made by the Internal Revenue Bureau of the Treasury Department, unless modified, will classify a truck chassis as a "part" and subject to a five per cent. tax, and a chassis and body as a "complete vehicle," the duty on which shall be three per cent.

The incongruity of this ruling is obvious. No matter what the basis for the ruling the fact remains that as the law is applied the tax on the "incomplete" unit will be more than on the complete machine. There can be no doubt that this result was not intended by Congress.

What may happen under this ruling, and there appears to be no other result if the minimum tax is to be paid, is to have all truck bodies built and installed by chassis manufacturers.

Assuming a specific instance where a truck chassis is sold by a manufacturer with a body, the tax would then be as follows:

Chassis, list price	$5000	
Body, list price	500	
Total	$5500	$5500
Tax at 3%		165
Complete truck, plus tax		$5665

Were the truck chassis sold and a body built by a local builder the tax would then be:

Chassis, list price	$5000	
Body, list price	500	
Total	$5500	$5500
Tax at 5%		275
Complete truck, plus tax		$5775

But, strangely enough, a tractor chassis is not taxed. There is reason to believe that the purpose of the bill was to exempt farm tractors, but as the application of the term is not specific the bureau interprets it to mean a highway tractor, such as is used with either semi-trailer or trailer.

According to the same interpretation the parts necessary for repair, aside from bolts, nuts, washers, screws, etc., are taxable at the rate of five per cent.

There are many phases that might eventuate and the application might vary, but these are pointed out to show the inconsistency of the ruling. For instance, if a truck dealer were to sell a truck chassis to a customer and supply a body for it from his own shop he becomes a producer and the truck as completed is subject to a three per cent. tax., and the chassis, having been a part, would be taxed five per cent. One clause of the general ruling states that "A usable, substantially completed automobile truck produced by assembling new parts of trucks or cars, is subject to tax." Another specifies that "Automobiles which have been sold by the manufacturer are not taxable when sold again." But one definition of a manufacturer is a "person who produces the preparation of the article for purposes of resale."

Another ambiguous clause of the ruling is that which provides that "rear portions of automobile trucks, automobile wagons and other automobiles, not properly called trailers, are taxable as a part of the automobile. This is evidently applied to conversion units for car chassis.

There is no question that the condition that arises is serious in that the manufacturers, dealers and buyers have been misled, primarily from the fact that the 1918 decisions of the revenue bill classified truck chassis as the unit of sale.

According to the Internal Revenue Bureau the taxes are retroactive to Feb. 25, so that all chassis sold on and after that date should have carried a tax of five per cent. instead of three, and the three per cent. tax was passed on from the manufacturers.

The National Automobile Dealers' Association has taken this matter up vigorously and has urged its members and affiliated associations to wire and write to Internal Revenue Collector Daniel G. Roper at Washington, protesting against the ruling. The local and state associations are advised to meet and take action that may bring about a modification of the ruling.

The association points out that the loss from all sales made may be largely borne by the dealers, as the manufacturers may be able through their contracts to demand and recover this from their representatives, but the dealers cannot expect their customers will pay the additional two per cent.

The association wired George H. Graham, sales manager of the Pierce-Arrow Motor Car Co., and chairman of the motor truck division of the National Automobile Chamber of Commerce as follows:

Treasury Department decision, article 15, regulation 47, that a truck chassis is a part and taxable at five per cent. will cost dealers thousands of dollars and cause increased difficulty in selling. We will make strong protest to Roper and send delegation to Washington if necessary. What have the manufacturers done and how can we assist further?

The following was also sent to Internal Revenue Collector Roper at Washington:

Treasury decision, article 15, regulation 47, classifying truck chassis as a part is contrary to all sales usage. Truck chassis is a sales unit and is the basis of all truck sales regardless of the type or kind of body used. Therefore, classification as a part is not only an injustice, but greatly impedes truck sales and is a penalty on business. Revision of decision, therefore, should be made so that truck chassis when sold complete as a unit takes three per cent. tax, which we believe was intended when the 1918 revenue bill was framed.

There is no question whatever that as much pressure as is possible will be exerted by the dealers through their association and individually to obtain a modification of the ruling.

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NEW RULINGS AFFECTING ASSESSMENTS ON AUTOMOBILE PARTS AND ACCESSORIES

Rulings affecting automobile parts and accessories are as follows:

(3) Tires, inner tubes, parts or accessories, for any of the articles enumerated in subdivision (1) or (2), sold to any person other than a manufacturer or producer of any of the articles enumerated in subdivision (1) or (2), five per centum. * * *

ARTICLE 14.

Tires, inner tubes, parts and accessories sold to manufacturer.—Subdivision (3) of section 900 of the act provides that tires, inner tubes, parts or accessories shall be exempt from the tax if sold to a manufacturer or producer of automobile trucks, automobile wagons, other automobiles or motorcycles. To come within this exemption the sale must be to such a manufacturer for use by him in the manufacture or production of new cars or for free replacement under contract of guaranty. If sold to such a manufacturer for any other purpose, such as resale to a dealer or for the rebuilding of used cars, the sale is taxable. In order for the sale to come within the exemption of the statute, the manufacturer must at the time the goods are shipped or sold (whichever is prior) have in his possession an order or contract of sale, with certificate of the purchaser in writing printed thereon or permanently attached thereto, showing that the tires, inner tubes, parts or accessories so purchased are to be used in the manufacture or production of new cars or for free replacement under contract or guaranty. If in any case such an order and certificate cannot be produced on demand of any authorized agent of the department the tax in respect to the sale will be considered in default.

ARTICLE 15.

Definition of parts.—A "part" for an automobile truck, automobile wagon, other automobile or motorcycle is any article designed or manufactured for the special purpose of being used as or to replace a component part of any such vehicle, and which by reason of some peculiar characteristic is not such a commercial commodity as would ordinarily be sold for general use, and which is primarily adaptable only for use as a component part of such vehicle. Mere stock or commercial commodities such as bolts, nuts, washers, screws, though used as components for such vehicles, are not "parts" within the meaning of subsection (3) of section 900. Articles however, which ordinarily would be classed as commercial commodities become parts when, because of their design or construction, they are primarily adaptable for use as component parts of such vehicles. Component parts of articles taxable under this definition are taxable when sold separately, if they have reached such stage of manufacture that they are primarily adaptable for use as such a component part. Thus plates, jars and separators for automobile storage batteries are taxable when sold separately. A chassis is a part of an automobile and taxable at the rate of five per cent. when sold separately regardless of whether it is a chassis for an automobile truck or wagon, or for any other kind of automobile. An automobile body is also a part of an automobile.

ARTICLE 16.

Definition of accessories.—An "accessory" for an automobile truck, automobile wagon, other automobile or motorcycle is any article designed to be attached to or used in connection with such vehicle, to add to its utility and which is primarily adaptable for use in connection with such vehicle, whether or not essential to its operation. The term "accessories" includes, for example, horns, speedometers, self-starters, spotlights, shock absorbers, tire pumps, pressure gauges and hydrometers. All such articles primarily adapted for use in connection with an automobile are subject to the tax even though they may sometimes be used otherwise, as, for example, with motor boats. If any doubt, reasonable and bona fide, exists as to the special adaptability of an article the fact of its sale by the manufacturer to be used with an automobile or to an automobile accessories dealer will determine its taxability. A wrench or other tool of a kind sold in hardware stores for general purposes is not subject to the tax, but a wrench or other tool of special design or construction primarily adapted to be used in connection with automobiles will be subject to the tax. Robes, goggles and lunch kits are not subject to the tax. Automobile trailers, regardless of the number of wheels which they may have, are not parts of or accessories for automobiles; but rear portions of automobile trucks, automobile wagons or other automobiles, not properly called trailers, are taxable as a part of the automobile. Where a manufacturer sells automobile accessories or parts to a jobber who in turn sells them to a manufacturer of completed cars the tax upon the accessories or parts is payable by the manufacturer who sells them to the jobber. Where a manufacturer sells material to an accessories manufacturer who in turn sells the accessories constructed from them to a manufacturer of completed automobile trucks, automobile wagons, other automobiles or motorcycles, except tractors, the manufacturer of the completed vehicle is liable for the tax upon his sales and no tax is due upon such previous sales.

Only a manufacturer who does both a wholesale and retail business may compute tax upon goods sold at retail on the price for which like articles are sold at wholesale.

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Auto Makers Purchase British Aircraft Factory

The London Times states that considerable public interest has been taken in the purchase for £140,000 ($681,300) of the national aircraft engine factory at Edmonton (England) by the automobile manufacturers, Messrs. Straker, Squire (Ltd.), on the sale of which the government realized a profit of £7000 ($34,000). The factory stands on a site of 14 acres and comprises a splendid range of buildings of brick and glass.

The purchasers propose to transfer all their manufacturing industries to Edmonton and to concentrate on two standard models—a six-cylinder fast pleasure car and a four-cylinder commercial chassis suitable for transport work and motor omnibuses. The cars will be British built throughout and fitted with British magnetos. The entire factory will be organized on the lines of quantity production from standard jigs, and it is anticipated that 5000 workers will be continuously employed. It is claimed that this firm's experience in aircraft engine production during the war has taught it how to combine maximum efficiency with light weight, the deciding factor in future automobile construction. Two thousand complete motor vehicles are planned to be produced from the converted factory in the first year.

Incidentally, it is said that the disposal board has 14 other national factories available for private enterprise.

GARAGE MAN POSED FOR VICTORY LOAN POSTER.

A garage man was model for the Victory Loan's most effective poster, "Sure, We'll Finish the Job." He is Tony Avolar and lives in Provincetown, Mass., with his wife and four children. Born in Provincetown 40 years ago, he attended school there. His parents, who came from the Azores, sent him to work on a fishing smack. He quit the sea to run a garage. His wife was born in Alsace-Lorraine. The Avolar smile is famous throughout the country.

JOSEPH DIXON CRUCIBLE HAS ANNUAL MEETING.

Stockholders of the Joseph Dixon Crucible Co. at their annual and regular meetings elected the following directors and officers:

Directors—George T. Smith, William G. Bumsted, J. H. Schermerhorn, George E. Long, Edward L. Young, Harry Dailey, Robert E. Jennings.

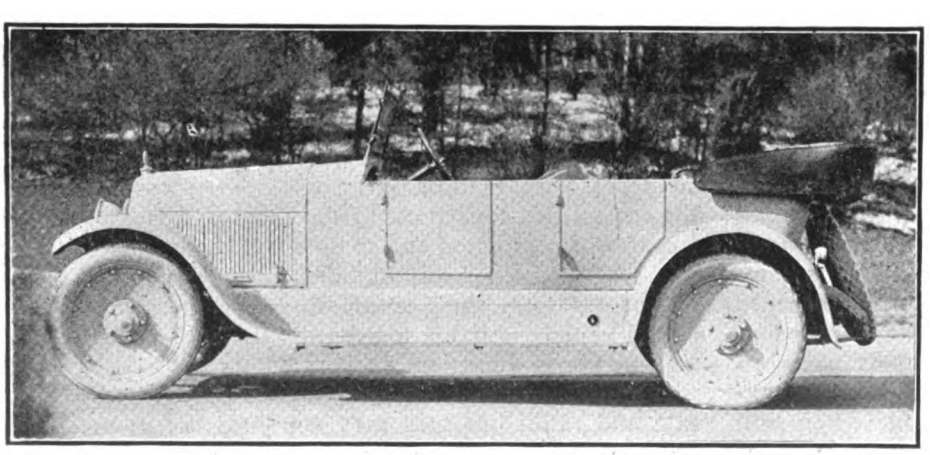
George T. Smith.

Officers—President, George T. Smith; vice presidents, George E. Long, J. H. Schermerhorn; secretary, Harry Dailey; treasurer, William Koester; assistant secretary and assistant treasurer, Albert Norris.

The American Graphite Co., incorporated under the laws of the State of New York, is a subsidiary of the Joseph Dixon Crucible Co., and its annual election was held on the same day as that of the Joseph Dixon Crucible Co. and resulted in the election of the following officers:

President, George T. Smith; vice president, George E. Long; treasurer, J. H. Schermerhorn; secretary, Harry Dailey; assistant secretary and assistant treasurer, William Koester.

The directorate is the same as that of the Joseph Dixon Crucible Co.



The Jordan Silhouette—The Jordan Motor Car Co. Announces That This Car Has Met with Instant Demand. The Silhouette Has a Solid Aluminum Body, and Is Long, Low and Graceful. It Has the Newest French Angle at the Dash, a Cocky Seat Cowl and Fenders Broad and Full Crowned.

Daily Car Production Records For This Year

Daily car production figures for thi year are as follows:

Car	Jan.	Feb.	March	Apr
Buick	100	400	450	50
Briscoe	30	50	50	7
Barley	..	4	10	1
Cadillac	55	60	80	10
Chalmers	30	65	70	8
Chandler	..	50	90	6
Chevrolet	..	300	350	70
Columbia	8	10	15	1
Dodge	300	375	400	50
Dort	40	65	70	10
Ford	1,300	2,000	2,400	3,00
Harroun	4	4	10	1
Hudson	30	50	50	10
Hupp	38	55	65	7
King	..	4	10	1
Liberty	15	15	25	3
Maxwell	150	150	220	25
Oakland	160	160	200	.
Olympian	4	5	10	1
Oldsmobile	..	110	140	14
Overland	320	400	422	60
Packard	..	..	1	2
Paige	50	50	55	7
Paterson	10	10	10	1
Jordan	..	..	..	1
Reo	100	100	125	12
Saxon	10	50	65	5
Scripps-Booth	20	40	45	4
Studebaker	150	150	175	20
Essex	30	50	50	10
Grant	25	35	50	5
Total	2,984	4,822	5,741	7,08

TRAFFIC TRUCK DEALERS MEET IN CONVENTION.

The Traffic Motor Truck Corporation recently entertained hundreds of dealers from all parts of the United States and Canada at St. Louis. The convention was held as an opening for the new plant at 5200 North Broadway, which has a capacity of 50 trucks per day. The advantages of St. Louis as a location for the automotive industry were emphasized. Guy W. Wilson, president of the corporation, spoke on "The World's Greatest Business—That of Transportation." He explained how motor trucks and good roads go hand in hand. T. C. Brandle, vice president; H. H. Hawke, general sales manager; United States Senator Selden P. Spencer and Paul Hilken, president of the Traffic Truck Sales Co., Philadelphia, were among the speakers. A novel demonstration took place when a traffic truck, loaded with granite blocks to a weight of 6000 pounds, climbed up a 45-degree incline which is utilized for transporting cars from the first to the second floor in place of elevators.

EUROPEAN MAKERS PLANNING TO INVADE AMERICA.

European makers are preparing to invade America. Coupled with the announcement that the Sunbeam car, made in England, would be distributed in America, is a report that Rolls-Royce, Ltd., England, will locate at Syracuse, N. Y., where during the war, it had engineering headquarters.

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GREAT RESOURCEFULNESS AND CONSTANT EFFORT NECESSARY TO GET PROSPECTS

Salesmen Proficient in Finding Them Usually Have Good Sales Records—Numerous Sources Where Information May Be Obtained—Expensive Habit of Sizing Up Possible Customers.

GETTING prospects is one of the most difficult problems connected with automobile salesmanship, and the salesman who is proficient at finding them usually has a good sales record. The only sure way to locate these prospective buyers is to "go out and get 'em." The salesman who waits for them to come to the sales room, without any effort on his part, is very likely to be "out of luck."

Great resourcefulness is necessary in getting a line on men and women who are in the market for cars. Many of the tips that result in sales come from acquaintances, but the salesman who gets out and hustles will be able to land considerable business without assistance. Constant effort is essential and this means that advantage must be taken of every hour of the working day.

Tips are liable to come from almost any source and the more a salesman circulates among people the greater is his chance. If he spends most of his time loafing indoors he cuts himself off from the opportunity of getting valuable information that would enhance his income.

Ferretting out prospects resembles detective work to an extent and progressive salesmen emulate detectives in some ways. For instance, a detective depends upon "stool pigeons" for a large part of his information. He has these men "planted" in places where they will be able to keep track of what is going on in the criminal world.

Rewards for Tips.

The salesman, following a somewhat similar plan, has acquaintances, engaged in different lines of endeavor, where they come into contact with all classes of people, to be on the alert for him and to inform him promptly of any person who is known to be thinking of buying a car. If this information results in the salesman making a sale, he usually "takes care" of the tipster by giving him $5 or $10, or some other gift to show his appreciation.

When a customer helps a dealer to make a sale he is very likely to get an unusually small repair bill the next time he brings his car to the service station for work to be done on it, or he may receive some tool, a shoe or a tube as a "present."

Some dealers may insist that this practise is not in accordance with business ethics, but there is no doubt that it is followed by many dealers who stand high in their business. This method is not to be confused with the practise of splitting commissions with prospects, for that is something that is entirely indefensible, as well as being decidedly bad business.

Many salesmen who believe in hard work are accustomed to make a canvass of some class of business or professional men. They get the names and addresses in a directory and then visit each one. A few minutes spent in the presence of each will give the salesman an idea whether the prospect is a "live one" or not. The "live ones" are then followed up systematically. Many sales are secured through this procedure.

On Alert for Prospects.

Salesmen driving their cars along the street are careful to watch for signs of interest on the part of pedestrians. If a salesman notices a man paying special attention to the car he stops and talks with him, as he realizes the man must be thinking of buying one of that make or have some other good reason for his interest.

In small cities salesmen are accustomed to drive their cars to a central part of the town and stop there. The hood is lifted and many persons gather around to watch the engine in operation. Some prospects may be secured among the spectators. All sorts of questions are asked of the salesman and it gives him opportunity to advertise his machine.

Drug stores are a good place to get tips on prospects. Friendly policemen and firemen are in a position to know who may be planning to buy cars. Chauffeurs also are especially apt to hear of prospective buyers. Newspaper men are another source of this information.

The newspapers should be checked up daily for stories that may indicate that certain persons concerned in the news of the day are in a position to invest in cars. Those who inherit money, sell property or are involved in business deals may be in a position to buy automobiles for their first time, or they may get enough money so that they will want to buy better cars than they have owned.

Cars for Newlyweds.

Newlyweds often start married life with a car. Frequently parents give their children automobiles as presents for graduation or some other important occasion. Some men who prefer high powered cars for themselves are in the market for lighter cars for their wives and daughters to drive.

A salesman should keep in touch with anyone who buys a car from his firm. The new owner is almost certain to come into contact with persons who will be interested in that make. On this account the new owner should be given the best of service by the dealer, who should see that the car is kept in good running condition.

One custom is to send a representative of the service department around to call on a buyer a couple of weeks after the sale is made. The service man gets the buyer to go out for a short spin in the car, to test it. While out together the service man discreetly inquires if the man knows of anyone else who might be interested in a machine of that make.

"Leads" on prospective buyers of automobiles and "leads" on prospects for insurance get around quickly, and the salesman must be right on the job if he is to get this information when it is fresh. Insurance men, by the way, get many tips about prospects for automobiles. It is a good plan to team up with some of the insurance men, swapping tips on insurance prospects for tips on automobile prospects.

Working Overtime.

As there are only 480 minutes in an eight-hour working day, the automobile salesman can spend very little time in

Constant Effort Is Necessary in Order to Get Prospects.

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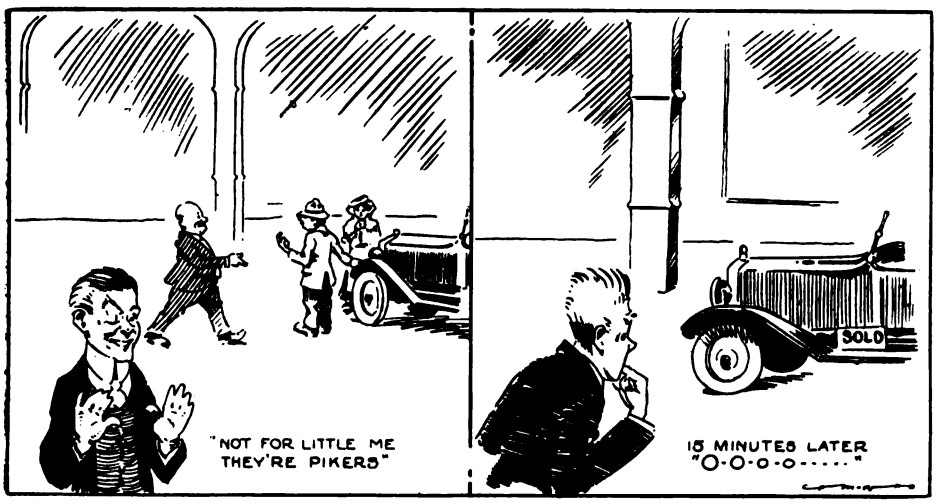


Sizing Up Prospects an Expensive Luxury for Salesmen.

the presence of prospects if he does not put in the entire eight hours at work. He should remember that some business men start to work before 8 o'clock in the morning and also work after 5 in the afternoon, and that these men can be interviewed at that time. There are also many business men who have their noon day luncheon late, and who may be seen at their offices at noon time.

The live wire automobile salesman will not permit himself to be buckled down to certain hours for work each day. If he can get in touch with a prospect at 5:30 in the afternoon he will take advantage of the opportunity, instead of assuming the position that he is not supposed to work after 5 o'clock. And if there is a chance to see a prospect at night the ambitious salesman will make the appointment.

It is possible to get a line on prospects at clubs and other places where men gather. Membership in good clubs and societies is sometimes very desirable from a salesman's standpoint. At women's clubs, especially, are automobiles discussed to a great extent, and the salesman should have some members of them to tell him the latest gossip regarding automobiles and give him the names of those who are talking of buying cars.

There is no reason why the salesman cannot get the opportunity of presenting the merits of the car he represents before many of these women's clubs. If he goes about it in the right way he can secure for himself an invitation to deliver before the club an address on some subject pertinent to automobiles, and he can then get the opportunity of telling the women how good is the car that he sells.

Tabs on Graduates.

Most of the graduates from colleges will probably buy cars at some time or other. If their folks are well off financially the graduates may be able to get machines when they start in their business or profession. If they have to save their own money before they get a car it will be only a question of a few years before they are ready. A follow-up system should be kept on these graduates, and an estimate made when they will probably be prepared to place their orders.

Advertising must be depended upon to attract many of the prospects. In addition to the newspaper advertising there should be carefully prepared form letters and a follow-up system. The mailing list should be prepared to include only those who are financially able to buy the cars offered. If the car is high priced it will be comparatively easy to eliminate "dead" names, but if the car is low priced the dealer must exercise special care, as a great number of workingmen who do not own their own homes are able to buy such machines.

A close watch should be kept on young business men, as it is only a question of time when many of them will be able to get cars. The banks, realizing that these young men will some day be among the biggest clients of their institutions, keep tabs on them and encourage them in every consistent way.

When a person comes to the sales room to look over cars he should be accorded great consideration. He should be met at the door and be given proper attention all the time he is in the room. The dealer or salesman should take it for granted that a person coming to the sales room is financially able to buy that make of car.

"Sizing Up" Prospects.

"Sizing up" prospects is an expensive luxury for salesmen, as the "Hudson Triangle," the house organ of the Hudson Motor Car Co., has cautioned in the following story:

"They were poorly dressed, obviously from the foreign quarter, and they stole into the great sales room like two frightened children in a forbidden land.

"The immaculate salesman on duty 'sized them up' and casually strolled to the spot where they had stopped to look at a stripped chassis. 'Dead ones!' was his mental comment.

"'Are you looking for a car?' he asked aloud.

"In broken English they indicated that they were.

"Something in a used car, perhaps," the salesman said in a patronizing manner.

"Both hands, tongues and heads were expressing a violent negative when the sales manager happened on the scene and took charge of the situation.

"A few friendly suggestions melted the ice, put the couple at their ease and quickly drew forth their story. For years they had dreamed of owning an automobile of their own. Suddenly fortune had smiled. Then had come weeks of anxious discussion which ended in decision to buy the Essex.

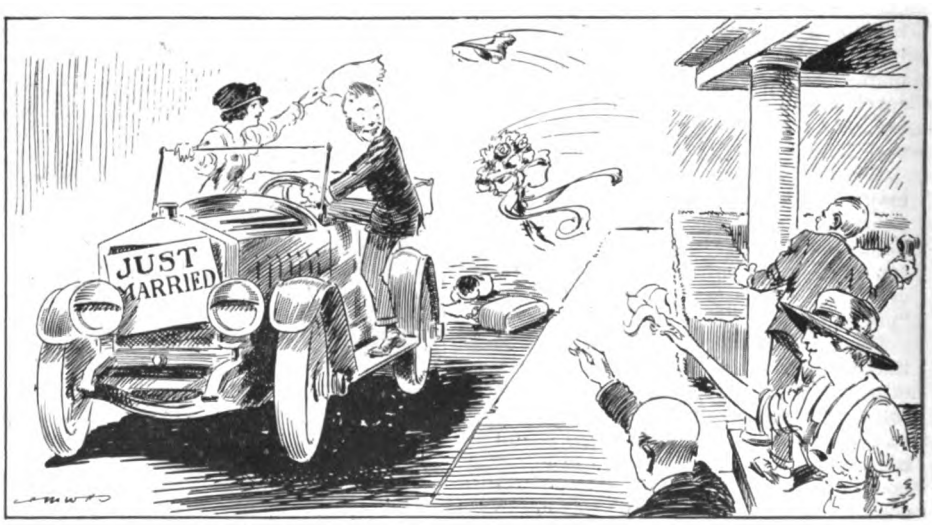
"They did not even ask a demonstration and in 10 minutes the sales manager had the man's signature on an order. The woman reached into her dress and brought forth a roll of bills from which she paid the full price of the car."

Expensive Habit.

The writer thus comments upon the moral of the incident:

"All of which only goes to prove that this 'sizing up' habit is one of the most expensive luxuries a salesman can indulge in today. And the peculiar thing about it is that the habit is especially chronic among the older salesmen who are just the ones who ought to know better.

"If we are going to get our share of the big money that is to be made by the salesmen during the next 10 years, we have got to quit this guessing. We have got to quit this 'sizing up' business. We have got to get back to first principles and locate every possible buyer by positive analysis, realizing that to judge by mere appearances, especially at this time, may be a costly experiment.



Newlyweds Often Start Married Life with a Car.

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"As a result of several experiences with the most unlikely looking prospects, who turned out to be quick buyers, one successful Hudson and Essex distributor has taken particular pains to see that every person who enters his sales room is treated with particular courtesy.

"A salesman not only opens the door with a cheery welcome to everyone who enters, but also opens the door for them when they leave. Everybody either entering or leaving that salesroom is treated with the same courtesy he would receive in the distributor's own home.

"'To be courteous and agreeable,' he says, even when all tired out, is not only good judgment, but it is a natural stimulant that carries no reaction with it.

"'With rare exceptions, even the hardest prospect responds to courtesy and agreeableness.

"'Also it pays—and all things that pay have some place in salesmanship.'"

Only Safe Rule.

The only safe rule when selling automobiles, especially low-priced cars, is to assume that everyone is able to buy one. A. C. Chambers, in Russel Magazine, tells this story regarding so-called "impossible prospects"

"I heard a young salesman remark the other day:

"'I didn't get old So and So, and I didn't expect to. No use killing yourself trying to sell impossible prospects!'

"'How do you know he is impossible,' I asked.

"'Why, everybody says so!'

"'Who's everybody?'

"'Oh, the other salesmen.'

"'They haven't sold him yet, have they?'

"'No.'

"'If they had ever sold him he wouldn't be impossible, would he?'

"'No, of course not.'

"He admitted that some chap would make that sale some day. And then I told him my long felt wish that heaven hurry the time when folk forget about impossible prospects and remember that there are only—impossible salesmen."

Value of Note Book.

There are thousands of good prospects, and it is up to the salesman to get out and look for them. He will find it valuable to keep a note book so that he can jot down information that may come in handy in the future. No matter how good a memory he may have the salesman should not trust it. Put the data down in the note book and there is no chance of forgetting about it.

Each day the data that belongs in the card index file should be copied from the book and the notations made on the proper cards. The time when the prospect should next be called upon should be recorded and indexed so that the card will not be overlooked on that day. In setting the time for the next call the salesman should bear in mind that he should play on the safe side, and not set it too far distant, as some other salesman might stumble onto the prospect and make the sale in the meantime.

"Not Ready to Buy."

B. A. Gramm, in "The Gramm-Bernstein" magazine, said:

Good Luck Is Twisting Herself Out of Shape to Help You Out.

"We have received letters stating 'Prospects not ready to buy.'

"I am glad to have received these letters. It gives me a chance to get something off my chest.

"If you were to follow the annual reports of insurance companies you would discover they each average over $100,000,000 new business per year, or a grand total of over a half billion dollars.

"This tremendous volume of business, or the bulk of it, is sold by insurance salesmen to men who are 'not ready to buy.'

"The volume of business sold in this way can easily be verified by you. The fact that it was mostly sold to men 'not ready to buy' can also be easily demonstrated.

"Call on any 10 men you select, or any 10 at random, ask them if they are in the market for insurance—I guess you know the answer in advance—not one is 'ready to buy.'

"Now, if you will stop right here and carefully consider where all this leads to, you will surely come to the same conclusion at which I arrived some time ago. With most buyers, with nearly all—it is always too early or too late to buy.

Hard Work Necessary.

"Billions of life insurance and other commodities are sold every year and will continue to be sold to buyers who are not 'ready to buy.' You may well ask what makes this possible.

"Salesmanship—good salesmanship—enthusiasm—hard work and determination.

"If a man can sell a commodity which the buyer cannot see, taste, wear or resell, had to die to win, and always out of season—what possible excuse can a man have with a line like ours that is used every day.

"Just make up your mind, old man, that good luck is twisting herself all out of shape in an effort to help you out. Just let a warm glow of gratitude permeate your entire system because your man is 'not ready to buy.'

"Remember that when a man is ready to buy he goes ahead and buys—from the first man who offers what he wants—and by the time you get there he doesn't need a blessed thing. Be glad that he is 'not ready to buy,' and, therefore, has not already bought.

"If you fail to sell a man who is 'not ready to buy'—and who, therefore, has not bought—then you have fallen down on your selling. Admit this to yourself, try to study out how you have fallen down and tackle the next man with renewed determination."

Putting Over the Sale.

Live motor truck salesmen nowadays have hard propositions put up to them and they have to solve the riddles if they are to put over the sales. The manager of the Michigan branch of the Fulton Motor Truck Co. had placed before him one proposition which all but stumped him, yet he won out and landed the sale.

After calling upon a farmer and convincing him that he should have a motor truck, the farmer said:

"But I have no use for a truck now. I cannot get any manure for fertilizer and that is all that I would have to haul right now. If you can find me some manure I'll buy a truck, and that is an agreement."

Such a proposition had never been put up to the salesman before, but with faith in himself he went out to make that sale. After some search, and there are few horses used in and around Detroit that it meant some search, he found a carting company which was selling fertilizer to one man, but not on contract.

This company said that if the farmer would take all it had and give a bond of $150 it would make a contract with him. The truck salesman knew that to get the farmer to the city to make out the bond required would mean a lot of time wasted, so he took the matter in hand, got the bond all right, then went to the farmer with the contract in his hand from the cartage company and with the bond made out. The sale was made therewith for cash.

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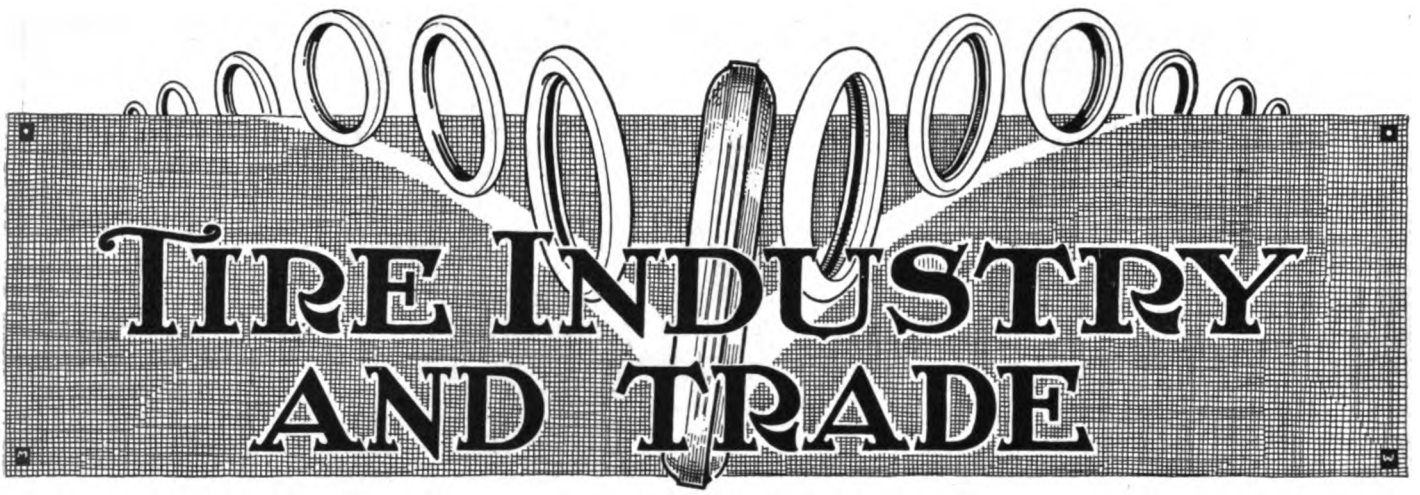

The Goodyear Tire and Rubber Co., Akron, O., and other tire companies have announced reductions in prices. The Goodyear reductions amount to approximately 15 per cent., and apply to both fabric and cord tires, including motor truck and motorcycle tires and tubes. Other companies made reductions of from 12 to 15 per cent. G. M. Stadelman, vice president and sales manager for Goodyear, says: "Our present action is entirely logical and is based on an ample supply of raw materials secured at medium cost, the largest tire production in the world, the facilities afforded by ownership of our own cotton plantation and fabric mill, our world wide organization that gives us important advantages in purchasing crude rubber and a desire to pass on to the tire users the benefits that come from this combination.

The Yale Tire and Rubber Co., New Haven, Conn., is the title of a new incorporation, with authorized capital stock of $500,000, to begin business with $100,000 paid in, which will manufacture pneumatic automobile tires, occupying temporary quarters in a building on Dixwell avenue, pending the erection of a permanent factory structure. It is claimed that before the company begins manufacturing, practically all of the $500,000 stock will have been issued. The incorporators are: J. E. Hubinger, Charles W. Murdock and George P. Smith, all of New Haven.

The India Tire and Rubber Co., Akron, O., has declared a quarterly dividend at the rate of eight per cent. annually on its common stock and seven per cent. on preferred.

The Federal Rubber Co., because of the exceptional increase in its export business, has transferred its export department from the general offices of the company at Cudahy, Wis., to the company's eastern headquarters at 38-40 West Sixty-second street, New York City. G. H. Hamilton, for many years associated with Federal comauny as a special representative, is manager of the export department.

Charles Gomprecht, formerly treasurer and purchasing agent of the Times Square Auto Supply Co., has resigned his position with that firm to accept an executive position with the Keystone Tire and Rubber Co. He has been connected with the industry since the bicycle days.

TIRE PRICES REDUCED.

Various companies have announced reductions in the prices for tires, ranging from 12 to 15 per cent.

The Syracuse Rubber Co., Syracuse, N. Y., has filed articles of incorporation in New York state, with $3,000,000 capitalization and expects by fall to begin the manufacture of automobile tires in its own plant and eventually employ 800 to 1000 men. E. R. Caldwell is acting president and George Loggie acting treasurer. Albert E. Wing, Cleveland, O., vice president of the Ideal Rubber Co., is a director.

The Perfection Tire and Rubber Co. has arranged for the distribution of its tires throughout the East, having contracted with a group of well known tire men who have started an extensive sales campaign backed up by a national advertising campaign. This eastern contract is for a minimum of $1,000,000 per year for five years.

The Perfection Tire and Rubber Co., Manhattan, New York City, has been chartered with $100,000 capitalization by E. W. McCarthy, A. I. Farb and J. J. McLordan, 2 Rector street.

The Keystone Tire and Rubber Co. through the vice president, denies that Keystone has contracted for the Perfection factory output. The contract does not take any of the regular Perfection output which is handled by distributors and exported by the Nemours Trading Corporation. It is a "cost plus" agreement giving Keystone 3000 or more tires daily under its own name and design.

The Mason Brothers Co., Cleveland, and the Mason Tire and Rubber Co., Kent, O., have had plans prepared for a $3,000,000 cotton spinning and weaving mill, which will be known as the Mason Cotton Fabrics Co. The mill will contain approximately 125,000 square feet of floor space, with 10,000 spindles.

The Gibraltar Tire and Rubber Corporation, with $1,400,000 capitalization, has filed a charter in Delaware. The principles are Richard Krause, Clauson Point, N. Y.; M. A. Heyser, Brooklyn, N. Y., and Arthur Watson, Nyack, N. Y.

The Savoid Tire Corporation, through President W. J. Jeckers, has announced the sale of the exclusive rights on the Savoid process in a number of eastern states. The sale, he says, nets the corporation $3,750,000. One contract covers the New England states. A Boston financial group is reported as the buyer. Coincident with this announcement comes news that a charter has been filed in Delaware for the New England Savoid Tire Co., with $3,000,000 capitalization, the principals being T. L. Croteau, M. M. Clancy and B. B. Drew, Wilmington, Del. Another contract closed was New Jersey, which brought $1,000,000. Rights for Maryland, Virginia and the District of Columbia were reported sold to a southern financial group for $750,000. On all of the contracts the Savoid Tire Corporation will receive $1.25 royalty on every tire rebuilt in the territories mentioned. Contracts have been closed for a dozen states, with a gross amount of $6,000,000.

The Knight Tire and Rubber Co., Canton, O., has incorporated into its names two of the lines on which it is pushing, and has adopted the corporate style Canton-Blackstone Co. A new cord tire, the "Canton Cord," will be made. The "Blackstone" and "Knight" lines will be continued. The company is a subsidiary of the Republic Rubber Co., Youngstown, O.

The Kelly-Springfield Tire Co. has bought a plot, 100x175, on the southeast corner of 10th avenue and 54th street, New York, where it will erect a warehouse and service station, having outgrown the quarters now occupied by it for such purposes.

The Globe Rubber Tire Manufacturing Co., New York, has brought out a cord tire. This new tire has a gray tread and it is announced that the compound used in this tread has a zinc oxide base like the one used in the company's 6000-mile fabric tires.

The Erie Tire and Rubber Co., New York City, has changed its name to the Lake Shore Tire and Rubber Co.

The Carlisle Cord Tire Co., Manhattan, New York City, has increased its preferred stock from $500,000 (par value) to $1,000,000, and its common stock from 10,000 shares (no par value) to 25,000 shares, with an active capital of $1,125,000.

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The Black & Decker Manufacturing Co., Baltimore, Md., has established a New York office, in room 2920, Equitable building, which is in charge of G. R. Lundane, who will supervise the distribution of Black & Decker products in New York City and surrounding territory, including the State of Connecticut.

Mr. Lundane was formerly connected with the Thos. B. Jeffery Co., Kenosha, Wis., and eventually became service manager at its Kansas City plant. He subsequently handled the Jeffery car for the State of Illinois, and has recently been connected with the Findeisen & Kropf Manufacturing Co., Chicago, manufacturer of the Rayfield carburetor, in the capacity of eastern district sales manager.

The Black & Decker Manufacturing Co. now has branches in New York, Philadelphia, Atlanta, San Francisco, Chicago, Detroit, Columbus, Buffalo and Boston, the general offices being at Baltimore. The company also has foreign connections in England, France, Norway, Sweden and Japan.

The Champion Ignition Co., manufacturer of AC spark plugs, will begin production of a new speedometer this month, according to announcement by Albert Champion. It is said that one automobile company will use 140,000 AC speedometers next season. Efforts will be made to get the production of the AC speedometers up into thousands per day by late fall. The speedometer development and manufacturing departments will be under the direct supervision of Jo. Berge, recognized throughout the industry as one of the real veterans and experts on speedometers. Extensive tests ranging over a period of two years have resulted in the perfection of the new speedometer, which is of the magnetic type.

The K-W Ignition Co., Cleveland, announces that a decree has been entered in the United States District Court for the eastern district of Pennsylvania, whereby the court has decreed letters patents No. 841,844, granted to Bernet, Jan 22, 1907; No. 1,015,300, granted to Cox Jan. 23, 1912, and No. 1,253,470, granted to Cox, Jan. 15, 1918, under which the K-W Ignition Co. Lock Switches are manufactured, to be good and valid in all respects, and whereby a competing company is adjudged to be an infringer and is enjoined from further manufacture, use or sale of the lock switches. The defendant is permitted to dispose of a comparatively small quantity of lock switches which it has on hand and for which it must account in a monthly statement to the plaintiff.

G. R. Lundane, in Charge of Black & Decker's New York Office.

The Red Head Spark Plug Corporation, a new organization, has taken over the patents, rights, machinery and good will of the spark plug department of the Emil Grossman Manufacturing Corporation, Brooklyn, N. Y., manufacturer of the Red Head Vitristone spark plugs for the last 11 years. None of those interested in the old organization are represented in the new company, which has sales offices at 261 Broadway, New York, and factories in Newtown, Pa., and New York. There is greatly increased capacity, devoted exclusively to the manufacture of the spark plugs. A. H. Hill is sales manager. A thorough advertising campaign, with an efficient sales force, is planned.

The M. & S. Corporation announces the removal of its factory and general offices from Detroit, Mich., to 1107 East 152nd street, Cleveland, O., and the change in name of its product to Powrlok; also the election of W. T. Walker, formerly of the Walker-Weiss Axle Co., Flint, Mich., as president and general manager, and the appointment of L. O. Haskins, formerly with the O. & S. Bearing Co., Detroit, Mich., as director of sales and advertising.

The Perfection Heater and Manufacturing Co., Cleveland, has acquired in their entirety the organization, the assets, manufacturing facilities, etc., of the Perfection Heater division of the Standard Parts Co. The new company has already increased its organization and its facilities, and is concentrating upon the manufacture of motor car heating equip-

C. S. Pelton, whose connection with the Perfection Spring and the Standard Parts company dates back seven years, and who for the last four years has been in charge of the development of the Perfection Heater business under the old regime, is vice president and general manager of the new company. E. L. Jones, for a number of years with the Remy Electric company and with the Standard Parts company in important sales capacities, is associated with the new organization as special factory representative. L. H. Peck, formerly machine tool designer for the Foote-Burt Co., and for 21 months a lieutenant in the Aviation Corps, has charge of engineering and production.

The new company is capitalized at $300,000 and lists among its stockholders a number of Cleveland's most prominent business men. The officers are: President, W. A. C. Smith; vice president and general manager, C. S. Pelton, and secretary and treasurer, F. D. Kellogg.

The Wayne Oil Tank and Pump Co., Wayne, Ind., has inaugurated a new consulting and advisory service for oil men. F. A. Bean, consulting engineer, will take charge of this work. He has a broad engineering experience, covering 23 years, 15 of which have been in an executive capacity. No charge will be connected with the service. All advice, plans, etc., are to be given gratis. This service should appeal to all oil men, especially the marketers and jobbers. The functions of service include standardization of equipment, economical operation and maintenance of equipment, designing and planning of buildings, ground layout, etc.

The American Bureau of Engineering, maker of the famous Ambu Electric Trouble Shooter and other devices and equipment for battery shops and garages, has moved its offices and stock rooms to 1601-1603 S. Michigan Ave., Chicago.

To meet requirements of the various manufactured in 10 different types. These as standard equipment on 24 makes of are adaptable to every type of car.

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Personal News of the Industry in Brief

Frank S. Corlew is now manager of the New England branch of the Jenkins Vulcan Spring Co., Richmond, Ind. The branch is at 819 Boylston street, Boston, where ample facilities to handle the con-

FRANK S. CORLEW.

stantly increasing volume of business will be maintained. Mr. Corlew's experience dates back to the time that the bicycle business was in the heyday of success. When about 15 years old he became sales manager of the New England branch of the Fowler Bicycle Co., Chicago. When the motor car became a commercial success Mr. Corlew became sales manager of the Adams Sutton Co., pioneer distributor of Oldsmobile cars in New England. In 1909 he was prominently identified with the introduction of Velie cars into the New England territory, as well as the distribution of several other well known makes of automobiles. Eight years later he became manager of the Washington office of the Motor Products Corporation, Detroit, and was in charge of the company's operations during its co-operation with the government in the world war. He is a member of the Bay State Automobile Association and other motor organizations, and is an enthusiastic yachtsman.

H. A. Flogaus, an automotive engineer, has been appointed to the engineering staff of the Maibohm Motors Co., Sandusky, O. For four years he was automotive engineer with the Willys-Overland Co., Toledo, and later was with the Curtiss Aeroplane and Motor Corporation, Buffalo. As assistant chief draftsman of the Motor Transport Corps he was in charge of the chassis design of the class B truck, being stationed at Washington last year for this work. Since leaving government service he has been chief tool engineer with the Matthews Engineering Co., Sandusky.

M. M. Whorley, who held the position of branch manager of the Firestone Tire and Rubber Co., Syracuse, N. Y., has resigned to become secretary and general manager of Wilson & Greene Motor Co., Ford distributor, Syracuse, N. Y.

J. L. Steele is now connected with the sales force of the Neskov-Mumperow Motor Car Co., Anderson distributor and Dort retailer in St. Louis. He was formerly with the Pennsylvania Rubber Co., Philadelphia. W. C. Pfeiffer has also been added to the sales force.

Alfred Faber and James McGarity have joined the service staff of the Automotive Electrical Service Co., Inc., Delco, Remy, Northwest and Klaxon service distributor in St. Louis. Mr. Faber was formerly of the Automobile Ignition Co. and Mr. McGarity was formerly of the Chandler Motor Car Co. and the Packard-Missouri Motor Car Co.

J. E. Weber succeeds W. Milton Koenig as advertising manager of Weber Implement and Automobile Co., distributor in St. Louis of Chalmers, Maxwell and Hupmobile cars.

F. H. Haack is now manager of service for the Moerschill Electric Co., St. Louis, representative for Connecticut ignition, Splitdorf magnetos, Webster oscillators and U. S. L. batteries.

J. H. Malone has become vice president and general manager of the William F. Hudson enterprises in Philadelphia. He was formerly with the Chilton organization.

Stephen M. Avery is now advertising manager with the Traffic Motor Truck Corporation, St Louis, Mo.

Claude Greenhoe has assumed the duties as chief engineer of the motor bearings division of the Hyatt Roller Bearing Co, Detroit, Mich. R. G. Wells, who formerly held the position, has been promoted to chief engineer of the Hyatt factory at Newark.

H. H. Lotz has joined the sales force of the Hilo Varnish Corporation. He will cover Southern Ohio, with headquarters at Dayton. He was for many years with Lowe Brothers Co.

Lon R. Smith has resigned as sales manager of the Buda Co., Harvey, Ill.,

LON R. SMITH.

and will assume general sales and advertising management of the Midwest Engine Co., Indianapolis.

George H. Hunt, long identified with the automotive parts industry, has joined the executive staff of the Detroit Pressed Steel Co., manufacturer of Disteel wheels. He has been appointed sales

GEORGE H. HUNT.

manager of the wheel division and will keep in touch with the manufacturers of motor cars and trucks. For several years he was manager of the Detroit branch of the Stromberg Carburetor Co. and for the past year the Detroit representative of both the Edward G. Budd Manufacturing Co., Philadelphia, manufacturer of steel bodies, and the Budd Wheel Corporation.

C. W. Jacoby has assumed the duties of manager of the Philadelphia office and warehouse of Peter A. Frasse & Co., Inc., succeeding W. F. Moore, who has resigned.

J. H. Weller is now assistant to B. W. Burtsell, president of the Herschell-Spillman Motor Co., North Tonawanda, N. Y. He will have charge of production. Mr. Weller was formerly assistant production manager of the Packard Motor Car Co.

W. R. Mason will cover the State of New York as sales representative of the O. Armleder Co., Cincinnati, O.

Ray Wice, who has been for several years a salesman with the Hudson-Phillips Motor Car Co., St. Louis, has become connected with the Hudson-Frampton Motor Car Co. E. C. Anderson has become wholesale territorial manager for the company.

Eugene W. Lewis has returned to Detroit from Washington, where he was with the chief production branch of the general staff of the army. He was former vice president of the Timken-Detroit Axle Co. Mr. Lewis will devote his time to private interests.

T. C. Stephens has become associated with the sales force of the South Bend Spring Wagon and Carriage Works, South Bend, Ind. He will devote his time to the selling of Gary trucks and the Trailmobile trailers.

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Charles Clifton, president of the National Automobile Chamber of Commerce, has appointed the following as a show committee for the 1920 truck shows: M. L. Pulcher (Federal), chairman; A. J. Whipple (Diamond T) and David S. Ludlum.

CHARLES CLIFTON.

C. C. Hanch, who has been in Europe for the last three months, is now on his way home. He went on a tour of investigation for the National Automobile Chamber of Commerce and his report will be a leading feature of the Export Managers' Convention which is to be held in New York City, June 6. He was formerly head of the Automotive Products Section of the War Industries Board.

L. D. Rockwell has opened an office in the Book building, Detroit. He is manufacturers' representative for the Dahlstrom Metallic Door Co., Jamestown, N. Y., maker of seamless tubes, moldings, windshield tubing and specialties; Fiske Brothers Refining Co., New York, manufacturer of lubricating oils and greases; American Tube and Stamping Co., Bridgeport, Conn., producer of alloy steel, hot and cold rolled strip, and the Nagel Electric Co., Toledo, maker of ammeters, gasoline gauges and automobile specialties. Mr. Rockwell was for 14 years eastern district manager and also special sales representative in the Middle West for the Standard Welding Co., and its successor the Standard Parts Co. of Cleveland, O.

Charles Weed has become manager of the local branch of the Times Square Supply Co. of New York in Providence, R. I. He succeeds L. L. MacGuire, who has gone into other work.

Wakeman Hackett has become associated with the Oshkosh Motor Truck Co., Oshkosh, Wis. He was for 20 months in service in France with the 121st Field Artillery, 32nd Division, where he reached the rank of captain. In his new position he will act as factory representative covering the Middle West states.

I. H. Holthusen has become associated with the sales force of the Manley-Thompson Co., Tacoma, Wash., Ford distributor. Mr. Holthusen has had wide experience in the Ford trade, having worked for the Universal Motor Co. for two years and also for the Ford Motor Co.

Walter C. Irvin has become associated with Tom Cooper's Garage, Arkmore, Okla., which is widely known throughout the southwest. During the war he was commissioned a first lieutenant in the Motor Transport Corps. Previous to this connection he was with the Fort Motor Co., Oklahoma City branch, as superintendent.

G. E. Bovis has resigned as manager of the Fisk Rubber Co.'s office in Sioux Falls, S. D., to join the forces of the McGraw Rubber Co. at Des Moines, Ia.

L. R. Harris is now manager of the local branch at Providence, R. I., for the B. F. Goodrich Rubber Co. He was formerly manager of the branch at Boston. Mr. Harris has been connected with the organization for the last seven years.

F. Bradley Peyton is now connected with the Motor Sales Co., local sales agent of the Fordson tractor in Charlottesville, Va. For the past 12 years he has been connected with banking interests.

L. H. Shepherd is now connected with the Boston branch of the B. F. Goodrich Rubber Co., having been succeeded by L. R. Harris as manager of the Providence branch.

Milton W. Franklin is now with the Remy Electric Co., located at the factory at Anderson, Ind. Mr. Franklin has made valuable contributions to technical publications, especially on the subject of ozone, which are regarded as authoritative and constitute the accepted views at the present time. For two years he was professor of radiology at the Polyclinic in New York and director of the Department of Radiology in the New York Health Department. He has been connected with various electrical railway companies, with the General Electric Co., and was president and general manager of the C. & C. Electric and Manufacturing Co. of Garwood, N. J. He is a member of most of the leading technical societies of this country.

MILTON W. FRANKLIN.

John N. Willys has been appointed chairman of the National Automobile Chamber of Commerce in charge of next year's national passenger car shows. He is president of the Willys-Overland Co.

JOHN N. WILLYS.

Mr. H. M. Jewett, president of the Paige-Detroit Motor Car Co., and Mr. H. G. Root, general manager of the Westcott Motor Car Co., will be associated with Mr. Willys on the committee.

Claude C. Ostrom has severed his connection with the Parish Manufacturing Co. as general manager at Reading, Pa. He was formerly its Detroit manager. Mr. Ostrom has been identified with the automobile industry for some time, having been with the Locomobile Co. of America for six years, and previous to that having spent seven years with the Midvale Steel Co. His future plans are as yet unknown.

F. H. Bogart, formerly production engineer for the E. F. Houghton Co., Philadelphia, Pa., has become associated with the Oneida Motor Truck Co., Green Bay, Wis., as production and factory manager. He has had 20 years of practical experience in automotive manufacturing.

Verne Seger has resigned from the service department of the Republic Motor Truck Co., Inc., Alma, Mich.

Sherman W. Dorman, who for the past three years has handled the purchasing of accessories for the Biddle Purchasing Co., has joined the Overseas Motor Service Corporation. He will be manager and will handle a selected number of high grade accessories in foreign fields exclusively, the most prominent of which are controlled by the United Motors Corporation.

D. McCall White has resigned as vice president in charge of engineering of the Cadillac Motor Car Co. Mr. White came to this country some time ago and was then widely known as a British engineer. His knowledge of high speed engine design commended him to the attention of the Lelands, then at the head of the business, and he became the originator of the Cadillac Eight.

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Willys Export Firm

John N. Willys, president of Willys-Overland, Inc., has announced the organization of the John N. Willys Export Corporation, with offices in the City Investing building, 165 Broadway, New York. This organization will direct export sales activities for a number of Mr. Willys's various interests, chief of which are the Willys-Knight and the Overland motor cars. A campaign of trade development and expansion, world wide in its scope, already has been outlined and will be inaugurated immediately. The export corporation will serve clients in 80 or more countries; in fact, wherever there is a market for its products. Associated with Mr. Willys in the new corporation are E. C. Morse and John Macfadyean, both of whom are and have been for a number of years prominent in the automobile and export fields.

TO DESIGN FRENCH CAR.

Benjamin Briscoe of the Briscoe Motor Corporation, has been elected a director of Bellanger Freres, one of the largest manufacturing companies of Paris, France. He is under a commission from that company to design a moderate priced automobile for French manufacture along French lines, but of American parts to a large extent. He has opened offices at 820-821 Book building, Detroit. Mr. Briscoe has associated with him in his work Rodolphe Stahl, an engineer who has been connected with him in his companies for the last nine years. Mr. Briscoe was a lieutenant commander in marine aviation.

This connection does not mean that Mr. Briscoe has severed his connections with the Briscoe Motor Corporation, of which he is one of the principal stockholders, a director and member of the executive committee.

FORD TO INVADE SPAIN.

The Ford Motor Co. has decided to launch an immediate invasion in Spain and the Scandinavian countries. The company will erect assembling plants at Cadiz, Spain, and at Copenhagen, Denmark. The Ford interests will be able to assemble more than 500,000 cars annually for the demands of the two countries. A more intensive campaign will be waged in France. Offices of the company at Bordeaux and Paris will be reopened.

The proposed plants will cost $300,000. Copenhagen, besides being an ideal point of distribution for the Scandinavian countries, is accessible to Poland and it is not difficult to send products into Russia through the northern ports. Henry Ford, his son, Edsel, and other big stockholders believe that Russia will be the most fertile of the foreign markets as soon as the wave of Bolshevism subsides and law and order gain the upper hand.

When the rights for the Belgian Congo were recently assigned, the Ford interests thereby obtained representation in every country in the world. There are only two manufacturing plants, one being situated at Detroit and the other at Manchester, England. Recently an assembling plant has been constructed at Buenos Aires, Argentine, and sales offices have been opened at Sao Paulo, Brazil. There is an assembling plant at Bordeaux, France.

Italy Needs Cars

Many requests have recently been made to his office, reports Trade Commissioner M. J. Chiesa of Rome, for agencies, exclusive or limited, representing automobile manufacturers. There is a great demand for a lightweight low priced car. He says that the war has lessened the buying power of the people in the large cities of Italy, but the smaller towns and cities, whose population is of the rural and land owning type, have increased their resources. It is from these rural districts throughout the provinces that the demand is greatest. For instance, in Macerata, whose population is about 20,000, there are now 500 cars in use.

Mr. Chiesa believes that American manufacturers of the lower priced cars would do well to survey the field and prepare for future possibilities.

FOREIGN TRADE OPPORTUNITIES

(Reserved Addresses May Be Obtained from the Bureau of Foreign and Domestic Commerce, Washington, D. C., or from District and Co-Operative Offices.)

29,313—Catalogues with price lists are desired for the purchase of medium and high grade automobiles. Correspondence may be in English.

29,316—A Spanish firm having had many years of commercial experience wishes to form connections with American export and import houses. Correspondence should be in Spanish. References.

29,317—A member of the French Commission in the United States desires to secure connections with a large manufacturing corporation planning to organize export business in Europe. He has a thorough knowledge of English, French and German. References.

29,331—A limited liability company is being formed in a city of Spain to do a general importing business. The associates wish to establish connections with firms exporting construction materials, machinery, chemicals, textile products, office supplies and automobiles. They are also in a position to handle shipments of grain and flour. References.

29,238—A firm in Colombia wishes to purchase a gasoline motor car for passenger use of a capacity of 20 passengers. This car should be equipped for use in a tropical country and have provision for proper ventilation and protection against heavy rains. Plans and specifications for this car should be forwarded to the purchasing agent of this firm who is in this country and whose name and address may be secured upon application to the bureau or its district offices.

29,263—Exclusive representation is desired by a company in India for the sale of hardware, mill and railway stores, machinery, electrical goods, stationery, provisions, perfumery, wines and spirits, bicycles, motorcycles, motors, dynamos, electrical lighting sets, pumps, oil engines, lathes, bleaching, dyeing and finishing machines, weaving and spinning machines, rice hullers, flour mills, elevators, etc. It is requested that triplicate sets of catalogues, price lists and samples where necessary, be forwarded. References.

29,266—A manufacturing firm in Norway wishes to purchase machinery to be used in an automobile factory. Drilling machines, milling machines, lathes, motors, frames, axles and starter equipment are required. Quotations should be given f. o. b. New York. Payment, cash against documents. References.

29,268—A company in India desires to purchase and secure an agency for the sale of steel and iron in bars, sheets, tubes, plates, etc.; builders' and engineers' hardware; caustic soda and petroleum and lubricating oils. References.

29,272—Three different firms in Belgium make urgent request that they be placed in communication with exporters for the sale of automobile trucks with trailers, 1½ to three tons, small agricultural machinery, tires, solid and pneumatic; unbleached and bleached cotton cloth, linen, flannels, etc.; and foodstuffs and general products.

29,274—Belgian firms have forwarded a request for agencies and consignments of the following goods: Small motor cars, tourist cars, trailers, trucks and motorcycles; cold storage and salted meats; cotton, leather and balata belting; hemp twine for binding and leather belting of good quality.

29,280—An agency is desired by a man in Switzerland for the sale of motors, auto

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trucks, agricultural machinery, farm tractors, animal fats for industrial purposes and meat extracts. Correspondence may be in English. Reference.

29,337—Well recommended firms in Belgium desire to secure agencies and consignments of the following goods: Enamel ware, agricultural machinery, carriage and cart axles and machines to manufacture same, medium priced automobiles, automobile accessories, food products, sanitary articles, silk hosiery, railway materials, machines, machine tools, tools and elevating equipment.

29,346—A firm in Spain desires to secure agencies on a commission basis for the sale of industrial and agricultural machinery, vehicles, automobiles, motorcycles and bicycles; electrical material and apparatus, such as lamps, motors, fans, plates, stoves and water heating apparatus; office furniture and supplies, such as new, second hand and rebuilt typewriters, ribbons, dating and numbering stamps, paper, wax, ink, metal and rubber stamps and calculating machines, pianolas, billiard tables, gramophones and disks, films, printing materials and construction materials including cement, lime, pressed bricks and tiles, glassware, builders' hardware, elevators and plumbing supplies. Correspondence should be in Spanish. References.

29,342—The representative of an American firm who is now in Denmark desires to secure agencies for the sale in the Scandinavian and Balkan countries from manufacturers of agricultural implements and machinery, especially caterpillar tractors and steam plows, technical specialties, building supplies, machinery for oil wells and medium priced automobiles and accessories. References.

29,364—The purchase of wood working machinery, motor and general engineering machinery and tools is desired by a firm in New Zealand. Quotations should be given f. o. b. port of shipment. Payment to be made against documents in New York. References.

29,365—An American firm is about to send a representative to South America via Cuba and desires to secure agencies for the sale of dyes and chemicals, hardware, tools, house furniture, shoes, machinery and motors, typewriters, cotton and woolen goods, automobiles and automobile accessories.

29,368—An importing and exporting house in India desires to secure the representation of several lines of American made goods. References are furnished.

29,352—An American firm will soon send its agent to Europe and desires to represent manufacturers throughout Holland, Belgium and France in the sale of general merchandise, dry goods, automobiles, automobile accessories, hardware, chemicals, dyestuffs, machinery, groceries, foodstuffs, raw materials, etc. References.

29,353—A Spanish import house which has established a force of traveling agents desires to represent American firms interested in foreign trade, on its own account or on commission. It states that it is in a position to furnish satisfactory commercial and banking references.

29,355—A mechanical engineer in Australia wishes to secure agencies for the sale of gas power motor engines. References.

29,375—A merchant in France desires to secure an agency for the sale of motors of all kinds, gas engines, combing, spinning and weaving machinery and accessories. Correspondence should be in French. Reference.

29,390—The purchase of tractors, plows and thrashers to be used in northern Mexico is desired by a man in that country. Correspondence may be in English. Reference.

29,406—A representative of a firm in Spain is at present in this country and desires to purchase and secure agenies for the sale of camping outfits, tents, thermos bottles, automobiles, bicycles, motorcycles, motor tubes, automobile accessories and all kinds of sporting goods. References.

Survey of Motor Trade Conditions in Argentina

The Guaranty Trust Co., New York, has issued an interesting survey of motor trade conditions in the Argentine, of which part follows:

For the American exporter of passenger and commercial automobiles Argentina is already an established market of first rate importance. The possibilities for developing the demand for these vehicles and for tractors are enormous. There is much to be said for the widespread belief that Argentina offers the American exporter of these lines greater opportunities in the future than any other country in South America.

General Conditions.

There are also certain general conditions affecting the use of automotive apparatus throughout Argentina of which a knowledge is of the utmost importance, whether the exporter be interested in one or all of the lines enumerated. These include such subjects as the following:

(1) Roads: (a) Existing facilities; (b) possible and probable extension and development; (c) the value of intelligent and persistent good roads propaganda.

(2) The present and probable future distribution of the population and the probable growth through immigration and otherwise; the purchasing power of the country as a whole, of particular areas, and of the various classes of the population.

(3) The conditions in particular industries, such as ranching, mining, agriculture, manufacturing, etc., which most affect purchasing power from year to year.

(4) The cost and distribution of fuel.

(5) The existence or non-existence of repair facilities, the number of trained mechanics available and the question of accessories.

(6) The influence of expert demonstration, prompt delivery, large packing, etc.

(7) Competition from foreign and domestic sources before, during and after the war; local requirements and prejudices which may be overcome or modified.

(8) The value of expert co-operation in two or more non-competitive lines.

Intensive Study.

The American exporter who would achieve the maximum of success in one or all of these markets in Argentina will profit by an intensive study of the entire subject.

In common with most of the world outside of North America and parts of Europe, good roads in Argentina are practically confined to the principal cities. Heavy, expensive cars cannot yet be operated to advantage over the immense level pampas, nor even on the unimproved black dirt roads of the country districts. Their use in quantity is therefore restricted to definite areas, such as those surrounding cities like Buenos Aires, Rosario, Bahia Blanca, Mendoza, Cordoba, La Plata, Santa Fe and Tucuman.

Buenos Aires, a city of 1,500,000, and the financial, industrial and social center of the country, is served by several hundred miles of good roads and is so connected with La Plata, an important seaport of 136,000 inhabitants 30 miles distant. The lack of suitable roads linking up even the most important cities is accentuated by the absence of trained native mechanics and repair facilities in the intervening districts. The majority of the great land owners of the country maintain houses in one city or another, notably Buenos Aires, where excellent garage service, trained help and good roads simplify the problems of upkeep in the use of expensive cars.

Need More Good Roads.

The areas of good road service about each of the main cities must gradually expand and they are, therefore, destined to become constantly more important consuming centers and points of distribution for outlying districts.

It is in the sale of expensive cars, which is as yet practically limited to the cities, that the American exporter may well prepare for the keenest competition from Europe as well as from rival American makes. Briefly, it may be said that Europe supplied Argentina with automobiles prior to 1912; that European exports, largely of the best makes and expensive types, have gone almost exclusively to the cities; that such importations were a very important factor until very recently, and that without doubt strenuous efforts will be made, particularly by Italy and France, to regain an important trade temporarily interrupted by the war.

American exporters of expensive models have encountered a marked prejudice in favor of European workmanship and finished product. This is scarcely strange in view of the fact that many of the wealthiest Argentinians have long been in the habit of wintering in European capitals. The foreign exporter, who took pains to develop the new market before the serious entry of the American car, fostered this preference.

Heavy Overstocking.

Only patient effort and expert demonstration will serve to overcome such prejudice. The splendid opportunity afforded during the war period has been tempered somewhat by heavy overstocking with expensive foreign cars in 1911 and 1912. Many such cars remained unsold until the models were obsolete, tying up important resources of the dealers involved.

The greatest opportunity in Argentina so far as the manufacturer of passenger cars is concerned apparently belongs to the quantity producer of good, light and inexpensive machines.

The great market for such vehicles lies away from the cities in the vast outlying districts. The field is one particularly suited to the American product, which dominates this market as it exists today and should continue to do so in the future. Almost no European cars have been sold outside of the good road centers, while it is said that more than 80 per cent. of the imports from the United States are now going to wealthy farmers and others in the country regions.

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Research Association Formed by British Auto Men

Trade Commissioner Herman G. Brock, London, has made the following report to the United States Bureau of Foreign and Domestic Commerce:

"The various exhibitions of British manufactured goods, such as the Scientific Products Exhibition and the British Industries Fair, have all served to give a more general realization of the importance of the scientist and his work to industrial development.

"The government long ago announced its desire to encourage research in industry. The first tangible evidence that the value of scientific research is recognized by British engineering trades is the announcement recently made of the formation of the Research Association of British Motor and Allied Manufacturers. According to the Imperial and Foreign Table Supplement of the London Times of April 5, this association is about to be registered and will apparently start work with an income in excess of $50,000 a year, guaranteed for at least five years, of which almost half will be contributed by the government. A considerable number of the largest motor manufacturers have already guaranteed their support of this association. Their subscriptions will range from $250 minimum to $2500 maximum, and the willingness of the bigger firms to pay this latter figure indicates how fully they appreciate the importance of applying research and investigation to outstanding problems in motor vehicle design.

"The association will be governed by a council, partly commercial and partly technical, and this council will be advised as to its program of work by a purely technical committee of scientific motor engineers. The work will be divided into two main branches. First, in order of time, will come the collection of information from all quarters, which is necessary in order to assess the knowledge already available in regard to any particular problem, and so avoid going over old ground. Even without any actual research at all, the proper compilation of a complete library of scientific information in connection with the industry would in itself be a great asset to manufacturers.

"As soon as this collection of information is sufficiently advanced the actual work of research can begin. It is too early to say definitely what steps will be taken first. They will no doubt include the study of the efficient use of inferior fuels and the examination of the principles of suspension and of the materials used in springs. It is anticipated that this research work under proper control will greatly accelerate improvement in the design and construction of British motor vehicles, and the energy of the industry in forming this new association should, it is believed, serve to give confidence to buyers in all parts of the world in the activities of the manufacturers concerned and their desire to keep in the forefront and, if possible, to outdistance all competitors."

AUTOMOTIVE ENGINEERS PLAN FOR SUMMER MEETING.

The Society of Automotive Engineers will hold its summer meeting at Ottawa Beach, Mich., June 23-27. Ottawa Beach was chosen because of the ideal facilities it affords for a meeting combining professional sessions with social features and recreation. All professional sessions will be held in the morning with afternoons free for recreation and diversion. During the evenings there will be lectures or informal talks on scientific, but semi-popular topics. One subject to be discussed at length is the passenger car of the future. Many prominent engineers, including one or more British engineers, will contribute to this discussion. There will be a paper dealing with the relation of farm tractors to their implements. Aeronautic subjects will be treated.

LYDDON & HANFORD ADDS TRADE PAPER DEPARTMENT.

The Lyddon & Hanford Co., Rochester, N. Y., advertising, has added a trade paper to its well organized agency. Granger C. Lederer, formerly of the Moss-Chase Co., Buffalo, and more recently of the staff of Walter B. Snow, Boston, publicity engineer, will direct and develop the department. Mr. Lederer is an experienced advertising man, young, enthusiastic, energetic and a creator of selling advertisements. He has handled the advertising for many well known manufacturers of machinery, tools, automobile accessories, farm implements, etc.

VAN DORN OPENS NEW BRANCH IN CHICAGO.

The new Chicago office of the Van Dorn Electric Tool Co., Cleveland, O., manufacturer of portable electric drills, reamers and grinders, is located at 527 South Dearborn street and extends through to 528 Plymouth street. William Cottrell, sales manager at the Chicago branch, says that the phenomenal increase in business enjoyed by the company is the result of the insistent demand for mechanical devices of proved efficiency and economy. He emphasized the imperative need of his increased accommodations. The new offices are near the South Dearborn "L" station, where all elevated trains stop and which is only a step from the heart of the city.

CHARTERS AUTO SERVICE.

W. C. Holden, Inc., Ossining, N. Y., auto service, has been incorporated with $5000 capitalization by J. A. Greene, E. H. and W. C. Holden, Ossining.

LISTED ON EXCHANGE.

The New York Stock Exchange has admitted to the list Keystone Tire and Rubber Co. common stock.

Metropolitan Boston Garage Men Have Banquet

Good roads, minimizing fire hazards and legislation were the topics at the first dinner of the recently organized Garage Association of Metropolitan Boston at the Brunswick Hotel, Boston. There were about 100 owners of big garages present. President J. N. Scully introduced J. F. Fleming of Brookline as toastmaster.

Col. W. D. Sohier, chairman of the Massachusetts Highway Commission, gave interesting facts and figures about the expenditures on the highways of money derived from motor fees. He showed how beneficial it was to take care of many of the roads in the small towns which are not on the main traveled routes. He also told of the possibilities of the future with the great increase in traffic, which means a big maintenance problem.

Frank Lewis, fire prevention commissioner, asked the members to report to him places where there are three and four cars in old barns or other buildings contrary to law, and said he would remedy these conditions. He said he was glad to be able to state that now fires in garages are getting to be few and far between in this district, because owners are willing to obey the law.

John R. Murphy, fire commissioner of Boston, told of the co-operation of his department with that of Mr. Lewis, and he urged the members to work together to minimize the danger, for in this way they would save money by the reduction of insurance premiums.

He said that Boston was spending money lavishly to protect the lives and property of its citizens, and with everyone using care there would be no conflagrations here, though the fire hazard was very big.

James T. Sullivan of the Bay State A. A. explained to the members the benefits of the organization and showed how necessary it was to keep in touch with legislative matters. By working with other motor organizations, he stated, inimical measures could be checked at the start. Harry Daniels entertained with songs.

Y. M. C. A. SPENDS $800,000 ON CARS SINCE ARMISTICE.

The Y. M. C. A. War Work Council has spent more than $800,000 for cars and accessories since the signing of the armistice. The motor transport material consists of 1700 cars, of which about 900 are trucks of 22 different makes. Four types of motorcycles are also used.

AUTO SUPPLY FIRM.

The Elm Tree Auto Supply Co., Inc., has been incorporated with $15,000 capitalization by E. L. Thomas, J. D. Van Stone and J. E. Foster, Medina, Orleans County, N. Y.

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SIMPLE SYSTEM FOR STOCK ACCOUNTING

By Walter Engard.

KNOWLEDGE of stock is imperative in any business. This applies to all commercial activities that entail receipt, storage, handling and delivery of commodities. The stock represents capital invested, and the manager who buys wisely does not have on hand a surplus greater than is necessary to meet demands, replenishing it to maintain a standard that has been determined by experience. There may be exceptions to this general policy, but these should be justified by conditions, for working capital is always desirable and when available can always be utilized to good advantage.

The profit is not in the volume of stock, but in the turnover, and the smaller the volume and the more frequent the turnover the greater will be the percentage of profit to capital. The frequency of turnover depends very largely upon the character of buying—not buying because a commodity will afford a large margin if sold, but buying what is demanded and what will be sold readily, and specializing customers' service, obtaining what is required through knowledge of products and those producing them. The keen buyer of stock seeks information relative to new products, and selects those that are known to be salable, giving preference to those produced by concerns of known reputation, that are well advertised and can be guaranteed as having certain quality.

Goods that are recognized as standards, or staples, that are always in demand, can be bought in considerable volume with reasonable certainty that they can be sold, but products that are not as well known and which must be stimulated by "sales" and "price reductions" are not desirable because of the additional cost of selling as compared with other commodities. Stock that is kept on shelves or in cases and not turned over is from every angle unprofitable, no matter what the price paid or the profit expected, for the capital it represents cannot be used, and after all it is the use one makes of capital, not the percentage of profit that is expected, that justifies business.

But while buying is a very important factor in business success, buying must primarily be based on knowledge of the stock in hand and the demand for each of the different commodities dealt in, which in an average store will run into hundreds if itemized. As stocks are usually kept only an inventory will afford the definite detail, and these cannot be practically made up save at considerable intervals. Obviously stock accounting is a work that must be maintained constantly to be useful.

When one considers the advantages of stock knowledge both from the buying and selling aspects one must conclude that the form of record that will show whatever detail is desired is imperative. But the record cannot be of such character that the cost of maintenance will be excessive, yet if it is not complete a very large part of its value is lost. Without exception every business head has sought a system that will be adequate and simple. This statement applies with full force to the dealer in power vehicle equipment, accessories and supplies. He has innumerable articles in stock that must be accounted for as they are received, as they are stored, as they are displayed, and finally as they are delivered to customers, and each has a value that represents capital. Such a record will obviate unnecessary buying, stock shortage, and is necessary in determining assets and profits each month.

THE CAPITOL MOTOR CAR COMPANY No. 23621

REQUISITION ORDER

M _____

To Stock Clerk:- Deliver the Following

Charge Cash

Article		Price		Total	

Any business must have systematic arrangement of the stock, for this will minimize the time of the clerks, the customers will be better served and satisfied, and handling will be materially reduced. As a matter of fact much will depend upon the thought given a store arrangement, and this applies to the receiving department, the stock room or warehouse, the location of goods in the retail department, the shipping room and the sales displays, which may include the show cases, exhibition stands and the windows. Arrangement of a store has much to do with sales promotion, but while there ought to be every attention given to attracting and interesting customers, the cost of this is also a considerable factor.

Where a retail sales department is operated by a company that operates a car agency, a service station and a repair shop, and supplies, accessories and equipment are sold, this must be regarded as a separate enterprise, although its operation is interwoven with the operation of the other divisions. And the arrangement of each must be with reference to economy, efficiency and satisfaction of patrons.

What may be accepted as a very satisfactory departmentizing plan will comprehend a car sales room at the front of the building or area occupied, and this may be equipped with fixtures and decorations that are regarded as appropriate. At the rear should be the offices, the waiting room and the lavatories. Back

THE CAPITOL MOTOR CAR CO. Name of Part_____ Part No._____ Bin No._____

Invoice No.	C. P	L. P	Date	No. Rec'd	Req. No	Date	Del.	In Stock	Req. No.	Date	Del.	In Stock	Req. No	Date	Del.	In Stock	Req. No	Date	Del.	In Stock

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of this should be the service station, and still further back the repair shop. No cars should be taken into the sales room save those intended for display, and these should be moved in and out through a rear entrance into the service station.

Accounting for Parts.

The vehicles brought into the garage or into the repair shop should pass through a side entrance. If no garage is planned the repair shop must afford service and there must be an entrance to this from some public way.

The shop will afford service for the cars sold, at least, and this means that parts must be carried in stock, the volume depending upon the business done. There is every reason for accounting for the parts stock, and in addition to this there must be a stock of materials such as is usually used in making repairs. And if accessories, supplies and general equipment are handled the stock room will be to all intents and practise a store. It should be operated as such and the location should be with reference to serving customers, but, first of all, saving the time of the employees who have occasion to requisition stock and material for repair work, and who go to the stock room frequently during a day. One will understand that such a location will save a large amount in the time of employees, which has a cash value, in the course of a year.

The stock room must be planned so that each class of supplies, accessories, equipment, parts and material will be accessible when wanted. Shelving and bins must be provided, all bearing designations by name and number of what is kept on or in them, and tires should be arranged by makes and sizes, so that any one or number of articles in stock may be found quickly.

Definite Stock Record.

A definite stock record must be maintained and that which will best serve is the perpetual inventory. This necessitates a separate stock record sheet, such as is illustrated, which is maintained for every article in stock. That is, there is a separate form for "Whiz" tires 30 by three inches, for "Best-of-All" tires 30 by 3 inches, for "Aviator" tires 30 by three inches, for both plain and non-skid treads, and so on through the series in stock. No matter if the prices are identical and the tires are the same make, if they differ in any way there are separate records. One will note that on this form is entered the name of the part, the part number and the number of the bin or shelf in or on which they are kept in the stock room.

All invoices received should be sent to the stock room, and when the stock they cover is received by the stock clerk he should check the invoices and enter the different articles in the stock record. He should fill the number of the invoice, the cost price, the list price, the date of entry and the number received. On the invoice is then noted "Entered ————," specifying the date. The invoice should then be returned to the office where it passed through the channels required by the system of bookkeeping.

The stock clerk should be responsible for all stock and never issue anything without a requisition signed by the shop foreman or by an office authority. When a car is brought in for repair, for illustration, the driver explains to the shop foreman what is wanted and authorize the shop to furnish the necessary part and labor. The foreman makes out a r pair slip upon which is entered the n ture of the work, and one copy of thi order is retained by the shop forema and the other goes to the stock clerk. A parts and material are needed they ar drawn by requisition, the stock clerk er tering upon the repair shop record an the stock room record whatever has bee supplied. The stock record form mus include the requisition number (which i the case of repair work may be the jo number), the date of issue, the numbe of articles of any one classification, an then into the column "In Stock" is ca ried the balance of the articles remain ing in stock. This entry is obtained b deducting the number issued from th number in stock.

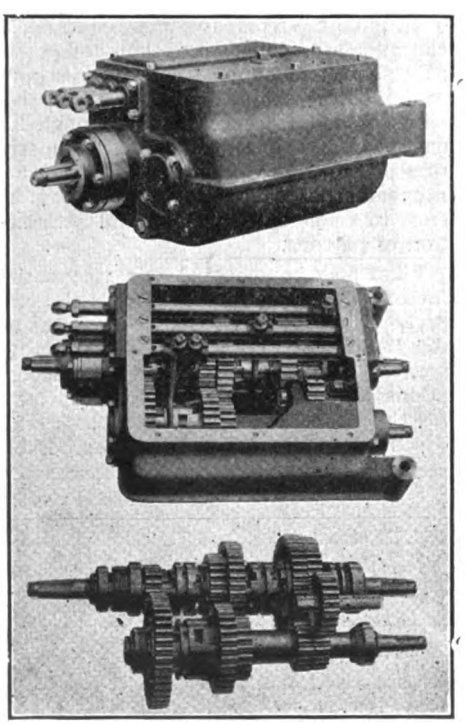
Requisition Slip.

The direct sale of accessories, sup plies, equipment or anything not required for repair work is entered in a requisi tion slip that is issued either by the foreman or the office, and which serves as a sales slip. This is made in tripli cate, one sheet going to the office, one to the stock clerk and the third to the customer. The slip is received by the stock clerk, who, after issuing the articles specified, enters the sales against the stock record, stamping the slip "Entered ————" in the same manner as the invoices. The amount of the sale is filled in the office, no prices being of record in the stock room, and all cash is received by the office.

With this record the stock can be checked at any time. Any part of the stock may be inventoried at a moment's notice to verify the record. If the record shows that a given number of articles should be in stock, these may be quickly counted, and if there is shortage or surplus investigation may be made immediately. The office can quickly check the stock because a record of all stock issues must finally reach it, and the requisition slips are filed according to the serial numbers. Each requisition is numbered serially and failure to receive them in the order of issue necessitates an explanation. Should an error be made the slip is marked "Void" and sent to the office to complete the record.

This system of issuing and recording stock follows the various transactions that involve stock and material, minimize routine and economize time and is productive of a much higher degree of efficiency, at the lowest practical cost of maintenance as well as insuring against losses through buying or handling.

NEW COTTA TRANSMISSION GEARSET



The New Cotta Four-Speed Ratio Transmission Gearset, Showing the Complete Unit, the Cover Removed, and the Shaft and Countershaft.

THE Cotta Transmission Co., Rockford, Ill., has recently developed a four-speed transmission gearset in which the gears are always in mesh and with which it is possible to change speed ratios without shifting gears. This is possible owing to the fact that the jaw clutches are shifted instead of the gears. Transmission gearsets of this type with two and three speed ratios for trucks and tractors have been used successfully for a number of years.

It is claimed that 20,000 trucks, fitted with three-speed Cotta transmission gearset unit, operating on the same principle as the four-speed ratio unit, have been used on the various battle fronts during the world war.

This four-speed transmission gearset possesses exceptional gear ratios, almost providing ideal gear reductions for different speeds. The gear ratios are as follows: Low or first speed, 5.2 to 1; second speed, 3.68 to 1; third speed, 1.86 to 1; direct or fourth speed, 1 to 1, and reverse, 4.666 to 1.

The gear reduction in the second ratio is low enough to start the vehicle under favorable conditions and the low ratio of 5.2 to 1 when conditions are exceptionally bad is the best to use for crawling or where very heavy loads are being moved over rough, sandy or soft surfaces.

STUDEBAKER MUSEUM NOW HOME FOR "GOLD CAR."

The famous "Gold Car," which was a feature at American automobile shows in 1917, recently arrived at South Bend, Ind., from San Francisco, after being brought from Australasia, where it was on exhibition. The car will henceforth repose in all its golden splendor in the museum maintained by the Studebaker Corporation in its administration building at South Bend.

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SPACKE ROADSTER LOWEST PRICED CAR

New Automobile Now Being Made to Be Sold at $295—Production Plan Calls for 10,000 Each Month—Has Unusual Features.

THE Spacke roadster, which will be the lowest priced car on the market, probably will be on the market in July. It will sell at $295 f. o. b. Indianapolis. The manufacturer, the Spacke Machine and Tool Co., Indianapolis, is a well financed firm and has been in business for years. The company has had great success in making engines.

The roadster will be marketed exclusively through A. B. Norwalk & Co., Inc., Times building, New York. It is announced that the plan is to produce a minimum of 10,000 cars within the 12 months beginning July 1. The Norwalk company is appointing agents in various parts of the country, and its agents will have samples ready for the public this month.

The car will have the air cooled Spacke 9-13 horsepower De Luxe engine. There will be no differential. It will have a pressed steel racing type body, with two bucket seats, the wheelbase being 90 inches and the length over all 118. It is claimed that the car will travel from 40 to 50 miles on a gallon of gasoline, and will attain a speed of 35 miles an hour.

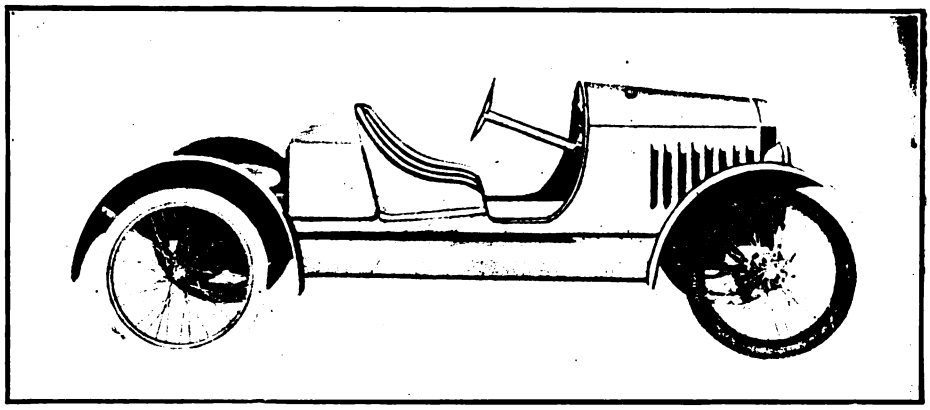
The principle back of each car, according to the manufacturer, is to provide a really inexpensive car, proved in every detail and capable of all requirements of ordinary service. "The Spacke motor car," states the announcement, "cuts the cost of transportation in half. Its first cost is far less than any other car, and the cost of operation and upkeep actually saves half usual cost of a small car.

"This saving is remarkable when you consider that it has attractive appearance and is modeled on the lines of speedsters costing over 10 times the Spacke price. In the great saving that this new type of car brings you do not sacrifice speed or ease of handling. It will give you all the speed the law allows and throttle down to slowest traffic with a quick pick-up to high speed.

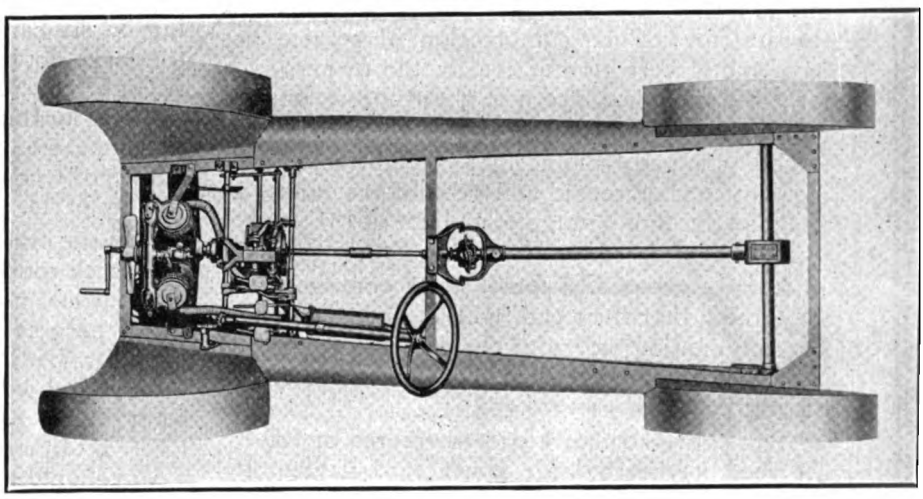
"The secret of the Spacke car is light weight and simplicity. Its design eliminates half the weight of the usual light car and saves you fuel, tires and upkeep in proportion. Its simple, sturdy power plant and working parts make it easy to operate and care for, also adds thousands of miles of service."

The weight complete is 700 pounds. By the addition of the Spacke delivery case on the rear deck the passenger car is made into a serviceable delivery car, the added weight being 55 pounds and the cost $25. An outline of the specifications is as follows:

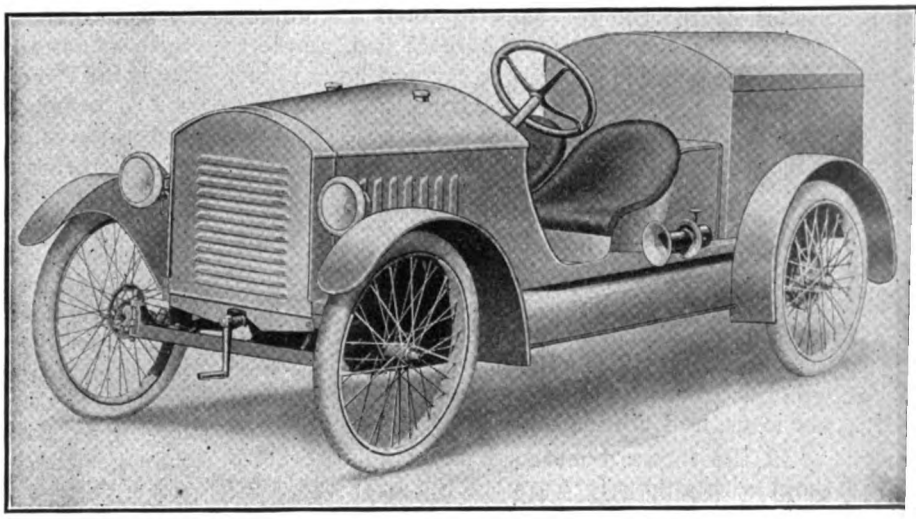
Length overall, 118 inches; wheelbase, 90 inches; engine, Spacke 9-13 DeLuxe; number of cylinders, two; bore and stroke, 3½ inches by 3⅝ inches; horsepower, 9-13; piston displacement, 10.62 cubic inches; camshaft drive, helical gears; cooling, air; lubrication, eccentric pump and splash; carburetor, Wheeler & Schebler; gasoline feed, gravity with foot accelerator; ignition, Atwater Kent, hand control on dash; gearset, (own make) planetary, two speeds forward and one reverse; final drive, bevel gear, six to one ratio; rear axle, bevel drive, 1⅛ inches shaft; frame, pressed steel channel; tires, 28 by 3 inches; wheels, wire, demountable, enameled black; motor bearings, annular ball; rear axle bearings annular ball; front axle bearing, cup a cone; bodies, racing type, steel bo bucket seats, steel carrier box; wei complete, 700 pounds; delivery box, pounds extra; miles per gallon gasoli 40 to 50; lights, electric; color, battles gray; speed, from 3 to 35 miles.



Spacke Roadster.



Spacke Chassis.



Spacke Car with Delivery Case.

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PLATE XXXV.

SALES, SERVICE AND STORAGE STRUCTURE

Unusual Features Are Incorporated in This European Type of Service Station, Which Has Sixteen Individual Compartments.

The accompanying type of service station is different from the ordinary; it is a type that is, perhaps, already known to many, yet seldom applied as in the plan shown.

The design is commonly called the community or neighborhood garage, having as a general rule nothing but individual compartments for storage, where no repairs or accessories may be obtained as in many garages or stations.

Having provision for both repairs and sales of accessories and supplies, as well as individual storage, this garage proposition is a worth while investment. This combination of service has been found very productive by the owners of a large automobile concern in a European country, and attractive to owners and drivers.

The company claims that in addition to selling cars it can repair and rebuild machines, as well as affording storage to a client of the private or individual garage scheme.

Many owners feel much more content when they know that their cars will be under lock and key, eliminating worry of garage hands "joy riding" with their cars when they put them up for the night.

The entire structure covers an area of 120 by 150 feet, having a large court yard flanked by the different members or units of which the building is composed. First there are 16 individual compartments, each in itself a complete garage. In size they are 12 by 25 feet, ample to house any type of passenger car and have plenty of working room as well. A truck of garage size could be accommodated in one of these compartments.

Individual Compartments.

A work bench has been shown, very handy to the man who desires to do a little repair work. Heat and electric lights are provided from a central plant. The floor is of concrete with drain, insuring at all times a dry floor. There is a large window area, providing ample light for ordinary purposes, and double doors.

In the forward end is located a large show room with a door for cars leading from the court —also two small doors for general purposes. Three large windows afford an abundance of light and these are flanked by an entrance door from the main street.

A drive separates the show room from the office, and this leads to the court yard. At the front end is located an ornamental iron gate, which enriches the design. It also affords protection from stragglers after certain hours who might endeavor to utilize the court for parking purposes.

Next are the offices, large and spacious, with a waiting area nailed off, as shown. Off the office are two toilets, one for men and the other for women. These are lighted and ventilated from overhead.

Large Repair Shop.

In the rear, at the end of the court yard, is situated a large repair shop, adequate for working on six cars at one time. This is lighted by the large doors opening to the court and a huge skylight covering nearly the entire roof. To the right is located a machine shop, as shown, and this should be so equipped that it can handle any nature of work, from small repairs to the making of new parts.

On the other side of the repair shop is the tool and stock room. In this room tools may be kept without loss and parts may be stored there, these being necessary if cars are sold by the garage operator. Adjoining the stock room will be found a toilet and wash room, and from this a stairway leads to the basement, where the boiler room is located. In connection with the boiler room provision should be made for coal storage.

Construction Details.

The general form of construction is brick, with concrete foundations and floors. Plank roofs are covered with tar and gravel. The doors are of wood, with wired glass, and the skylights are of galvanized metal.

The brick for the street front of the building should be first class and of a rough texture, used in connection with a ¾-inch white mortar joint, rough struck to harmonize with the brick. All trimmings are of terra cotta or concrete stone. A geometric design in wrought iron placed in a circular opening over the main entrance to the court has been introduced.

The heating is by steam, each compartment having a separate radiator or coil, while the shops may get the best results from wall radiation of the pipe system, or radiators, if owner cares to purchase them.

There are electric lights throughout the special lighting arrangements for show room and office, and wrought iron lamps on the sides of the entrance to the court.

Regarding the cost, $15,000 would about cover what is shown.

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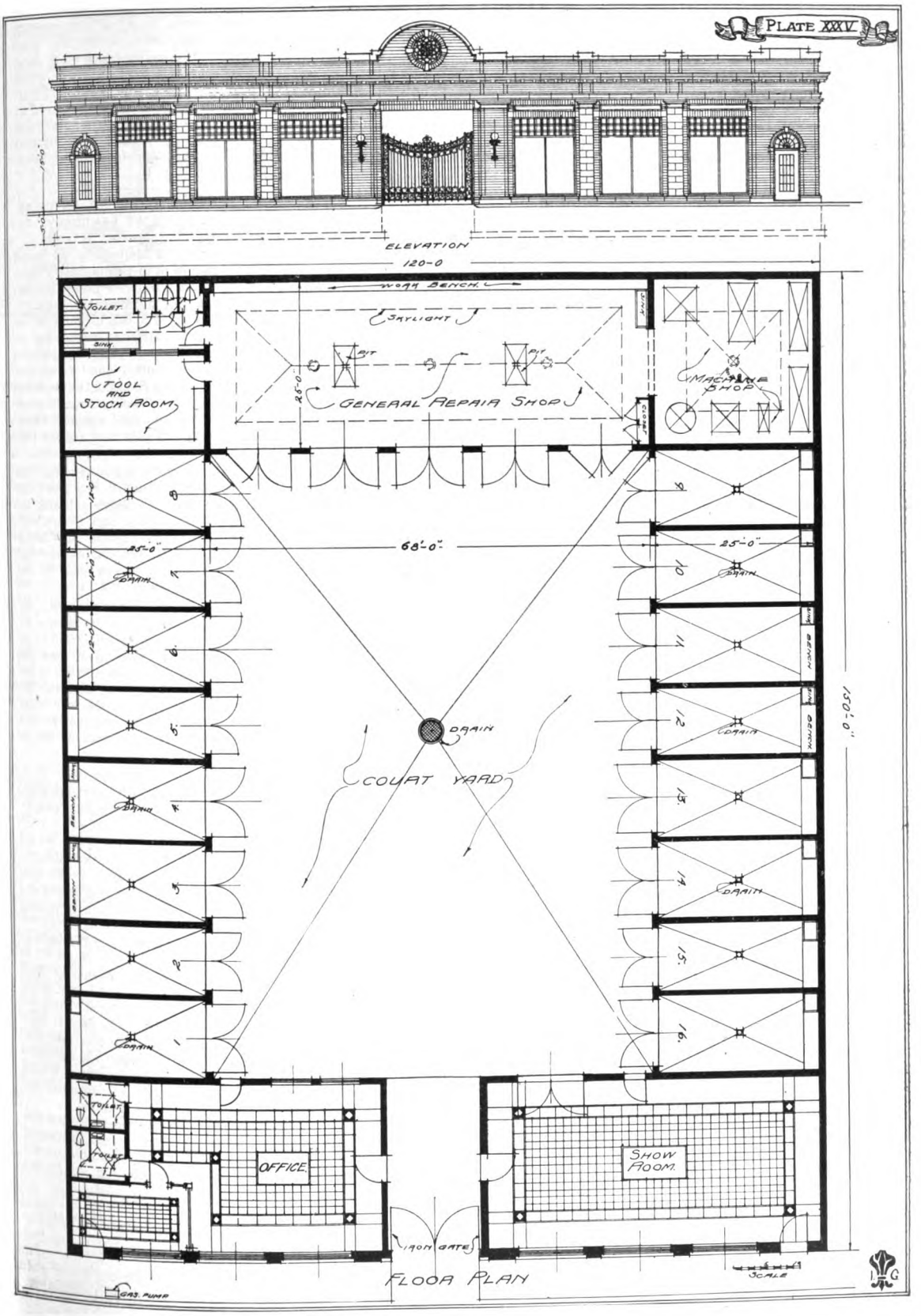
PLATE XXV.
ELEVATION
120-0
WORK BENCH
SKYLIGHT
TOILET
SINK
TOOL AND STOCK ROOM
GENERAL REPAIR SHOP
MACHINE SHOP
PIT
25-0
68'-0"
25'-0"
DRAIN
COURT YARD
OFFICE
SHOW ROOM
IRON GATE
GAS. PUMP
FLOOR PLAN
SCALE

FAKE ARMY OFFICER WHO SPREAD RUMOR U. S. WAS TO SELL WAR CARS ESCAPES

Frank Edward Speicher, who is alleged to have spread stories throughout the country that he had been commissioned by the United States Army to sell war cars, is again at liberty. Speicher was an automobile mechanic when he was drafted into the Motor Transport Corps of the army from his home in Arlington, N. J., last June, and sent to Camp Humphries, Va., where he was assigned to the Fifth Engineer Training Battalion. All the officers liked him so well that within a few weeks they made him a sergeant, and he had no trouble in obtaining leave of 10 days when he asked for it soon afterward.

"I want to go to Washington," he said, "and see some friends about a commission."

It was Second Lieut. Speicher that came back to Camp Humphries. He explained to the camp commander that he had taken the oath of office while in Washington, and that he was now a commissioned officer. A few weeks later when a notice, ostensibly from the War Department, reached the camp promoting him to a first lieutenancy he was warmly congratulated.

In a few more weeks First Lieut. Speicher got another 10-day leave and when he came back he wore the silver bars of a captain.

Gets Into Syndicate.

In October of 1918, according to the information of the Military Intelligence Division of the army, the police of Newark, N. J., came down to Camp Humphries and arrested Speicher on a charge of embezzlement. Speicher was released from custody after several prominent Newark men got his bail reduced from $2500 to $1500, but he did not return to Camp Humphries. He had found something a great deal better in Newark.

During his stay there Speicher formed the acquaintance of a group of Newark men who contemplated forming a $2,000,000 syndicate to purchase from the government, after the war, the surplus automobiles and accessories. Speicher made a good impression upon the syndicate, particularly by being suddenly promoted to a majority, whereupon he doffed the silver bars of a captain. The syndicate members took Speicher into their confidence and let him in on the syndicate. Speicher repaid this kindness by taking one of the capitalists down to Camp Holabird, Maryland, and showing him about the place, where the government keeps several million dollars worth of automobiles and accessories.

When they got to the Maryland camp Speicher had what seemed to be an order from Gen. Drake of the Motor Transport Corps authorizing him to enter into negotiations for the sale of surplus equipment of the corps, calling specifically for a contract to sell 929 Dodge cars at $400 each and $2,250,000 worth of rubber tires.

Again Escapes.

When Speicher next appeared he wore the silver leaf of a lieutenant-colonel. He explained that his work of arranging the sale had gained him another promotion.

The syndicate arranged immediately with a motor car concern to handle its goods and received $15,000 with which to start business. Speicher explained that certain palms in Washington had to be greased in order that the sale might go through without any trouble, and the trusting members of the syndicate gave him $7500. That was the last they ever saw of Speicher.

Early in April the detectives struck Speicher's trail in New York and after a 36-hour chase they arrested him in Danbury, Conn. He was taken to Governor's Island, charged with being a deserter and with having impersonated a commissioned officer with intent to defraud.

This month, during a heavy rain storm and while a dance was going on at the island, Speicher, clad in the uniform of a captain which had been smuggled into him, walked calmly out of his room in the Casual Company guard house, presented an officer's pass at the ferry landing and came to New York. The police and the army have not seen him since.

NEW LINE OF HB MOTOR DRIVEN BENCH GRINDERS.

Hobart Brothers Co., Troy, O., have brought out a new line of sturdy motor driven bench grinders, as an addition to its well known line of electric motors and motor generator sets for recharging motor car storage batteries.

The new HB Bench Grinder is equipped with a ball bearing motor of ample capacity and is a useful and practical necessity for the garage or machine shop. This helpful bit of equipment can be used either on individual stand or on the bench. It is furnished with either the single or double extension shaft as required, providing either for a single or double grinder or polishing wheel. This sturdy, dependable outfit is sold for a small initial payment, the balance in small monthly payments, which allow the machine to pay for itself. The garage man has the advantage of using the machine while the grinder is earning its own payments.

New HB Bench Grinder.

The main feature of this new bench grinder is the motor, which is two horsepower capacity, ample to meet all requirements. This greatly increases the efficiency of the grinder for general garage uses. Sold complete for $18.50 cash and balance in eight monthly payments of $10 each. Manufactured by Hobart Bros. Co., Troy, O.

MAIBOHM MOTORS CO. ERECTING FACTORY AT SANDUSKY.

The Maibohm Motors Co. has moved its organization to Sandusky, O., where it is building a $175,000 plant. With its parent company the Maibohm Wagon Co., established in 1888, this organization has been building carriages, wagons and automobiles at Racine, Wis., for more than 30 years. Temporary quarters are now being occupied at Sandusky by the executive offices, the chassis assembly, painting, trimming and final assembly departments only. Steady and regular shipments are being made.

All departments in the new plant will be consolidated under one roof. The site comprises 17 acres adjoining the main line of the New York Central Railway and the Big Four and Lake Erie & Western lines. It is at the western edge of Sandusky, and a few hundred feet from Sandusky Bay.

The most modern and up-to-date factory in the industry is the promise for the plant. Chassis assembly will be accomplished on a power driven chain conveyor, 365 feet in length. Of this 50 feet will be occupied by a drying oven. The chassis is completed at the point where the finished body emerges from the dark room. The production capacity will be 50 cars per day.

ARROW GRIP MANUFACTURING CO. HAS ELECTION OF DIRECTORS.

Ground will be broken at once for the new home of the Arrow Grip Manufacturing Co. in Glens Falls, N. Y. The company is backed by industrial leaders and is prosperous. At the annual meeting these directors were elected:

George F. Underwood and William H. Gelshenen of New York, Mayor C. F. Burns and Wm. H. Denning of Troy, George Tait, G. F. Bayle, Sr., T. M. Avery and E. G. Mertens of Glens Falls.

These officers are to be elected: President, George Tait; vice president, William H. Dennin; secretary and sales manager, E. G. Mertens; treasurer, William H. Gelshenen; assistant treasurer and general manager, T. M. Avery.

The company, which manufactures nonskid chains, has offices and distributing branches in New York and Chicago and is about to open offices in San Francisco, New Orleans and Montreal.

EASTON GETS PARTS PLANT.

The Board of Trade of Easton, Pa., announces that the Bard Manufacturing Co., Waltham, Mass., manufacturer of automobile parts, will locate in Easton.

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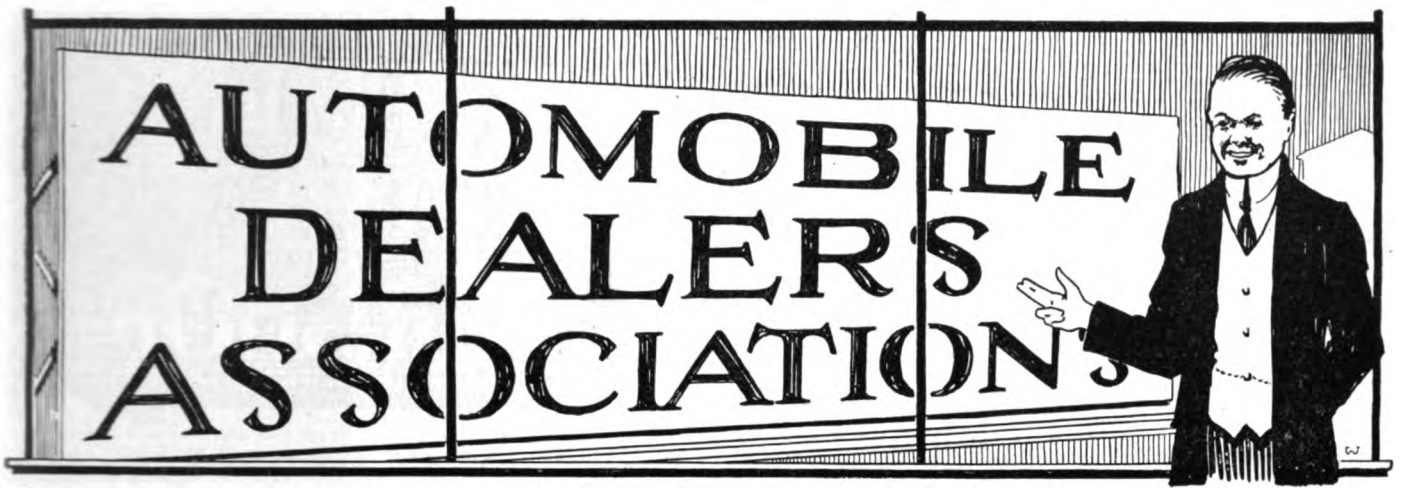

New York

Orphans' Day, the annual event of the motor car tradesmen of New York City, will be held Thursday, June 19. This was decided upon by the directors of the Orphans' Automobile Day Association. The officers are: President, Frank Carrie; vice president, William S. Silver; treasurer, Horace De Lisser; secretary, A. L. Prindle. Headquarters for the association will be established at the new offices of the Automobile Dealers' Association, at 60th street and Broadway. Those who can loan their cars for one day should communicate with Secretary Prindle.

VEHICULAR TUNNELS.

In discussing the question of the vehicular tunnels under the Hudson river, T. D. Pratt, executive secretary of the Motor Truck Association of America, Inc., says:

"It is to be hoped the engineers who will be employed to design the new tunnel to New Jersey will bear in mind the serious effect which may be caused by having the two entrances to the tube, the east bound one and the west bound one, too close together. They should be sufficient distance apart so that great traffic congestion will not occur at these points. Assuming that the traffic through the tunnel will be as great as across the Manhattan bridge, which is a conservative estimate, it will only result in establishing another bad traffic 'spot' in the city such as the congestion at the Manhattan end of this bridge, which is very bad; but all our efforts should be to reduce and eliminate, where possible, such spots. The Motor Truck Association intends to watch this situation very closely."

ORGANIZE IN IOWA.

The Iowa Motor Trades Bureau of Des Moines, Ia., has been organized with these officers: President, John Rude, Rude Auto Co., Marshalltown; vice president, John Hanson, Overland-Hanson Co., Waterloo; secretary, A. J. Knapp, Iowa Motor Trades Bureau, Des Moines; treasurer, R. J. Clemens, Clemens Auto Co., Des Moines.

Horace De Lisser, Treasurer, New York Orphans' Day Committee.

CHAMBER OF COMMERCE.

Directors of the National Automobile Chamber of Commerce have declared their determined opposition to any state legislation designed to increase the license fees of car owners.

At the April meeting of the chamber, Col. Charles Clifton presided. It was announced that the car load shipments of cars and trucks for last month were 21,500, against 16,728 for March, 1918, showing that the industry is rapidly getting into its normal stride.

PLAN TRUCK WEEK.

Upon suggestion of Harry G. Moock, business manager of the N. A. D. A., the Truck Dealers' Bureau of the St. Louis Automobile Manufacturers' and Dealers' Association is planning a truck week, beginning June 2, when a train of more than 100 trucks will be sent on a five-day trip through Missouri.

The trucks will be loaded with alfalfa, wheat, drygoods, calves, pigs, cattle, milk cans, etc., and there will be speakers for good roads, trucks and other topics.

Detroit

New general offices of the Detroit Auto Dealers' Association have been opened on the second floor of the Garfield building, 870 Woodward avenue. All business of the association will be handled from this office.

A used car market report will be furnished by the association semi-monthly to its members, as a guide in appraising the value of used cars. New cars will also be listed in the report.

USED CAR REPORT.

The Chicago Automobile Trade Association has issued the 20th edition of the National Used Car Market Report. These cars are no longer listed: Hupp-Yeats, Stoddard-Dayton, Pope-Hartford, Rambler, Bergdoll, Garford, Luverne, Pan-American and Lyons-Knight. The report shows sales from Nov. 21, 1918, to March 21, 1919.

STEWART RESIGNS.

Charles A. Stewart has resigned as general manager of the New York Automobile Dealers' Association, Inc., to enter the selling end of the motor car business. He has been manager of the association for nine years. He was manager of the last automobile show held in New York. He has been prominent in legislative matters relating to the interests of motorists.

SHOW BUILDING.

The Denver Automobile Trades Association is planning to erect a $150,000 building for association headquarters and shows. The proposed structure will have from 80,000 to 100,000 square feet for exhibit purposes.

More than half of the money needed has already been tentatively subscribed.

ENDURANCE RUN.

The Los Angeles Motor Car Dealers' Association is planning an endurance run. It is intended to make the test one of driving rather than of car stability, as the usual endurance run always means a great strain on both cars and drivers.

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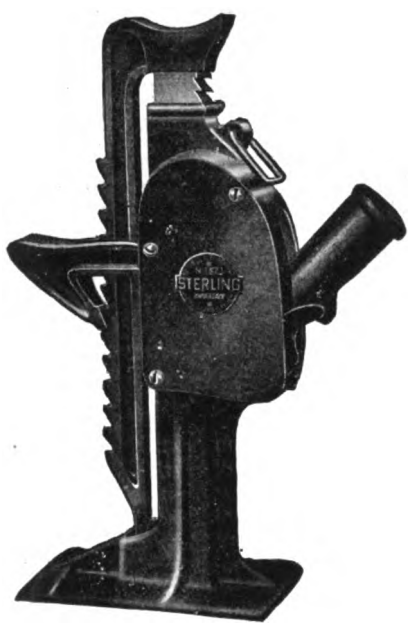
ACCESSORIES, EQUIPMENT AND TOOLS FOR THE GARAGE AND REPAIR SHOP



"Sterling" Single-acting Jacks. Sterling Jacks are designed for use with every size and type of passenger and commercial vehicle. They are designed for automatic lowering and operate on down stroke of handle regardless of whether the load is raised or lowered. The direction of movement is controlled by upward or downward position of the tripping lever. When handle is not operated the pawls automatically lock, preventing accidental dropping of the load, a quality that insures positive safety in raising any heavy vehicle.

The frames are made of highest grade malleable iron, having a guaranteed tensile strength of 50,000 pounds per square inch; are of liberal proportions and reinforced wherever subject to strains.

The operating mechanism is made of carbon steel and malleable iron, carefully designed to obtain efficiency, safety and ease of operation. All parts are carefully machined, fitted and rigidly inspected. Handles are supplied suitable for each type. The larger sizes are provided with carrying loops for convenience in handling.

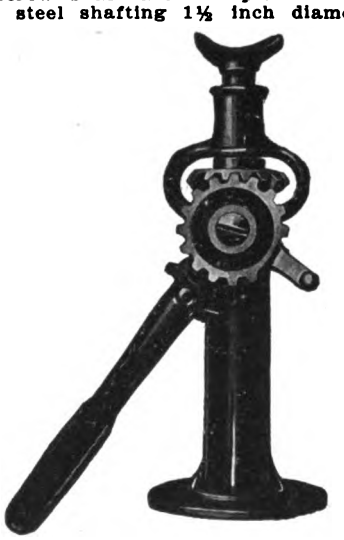
Sterling Jacks are guaranteed to give unqualified satisfaction and any jack or part found defective in material or workmanship or unsatisfactory in service will be replaced when returned to the factory for inspection.

Manufactured by the Republic Auto Parts Co., 81-83-85 10th St., Long Island City, N. Y. Prices on application.

Reliable Jacks. These jacks include all sizes from the smallest No. 00, weighing 4½ pounds, that will lift 4000 pounds, to the largest No. 4, weighing 25 pounds, with a lifting capacity of from three to 10 tons. They are suited for use with any machine, from the smallest automobile to the heaviest truck or tractor. They are built with side cranks for placing under axles and taking up slack before the jacks lift the loads.

There are five sizes similar to the illustration. The crank mechanism on the side gear obviates pumping except for actually raising or lowering the load. Turn the crank till the top of the screw is at the required height, slip the jack into place, give the handle a couple of strokes and the car is off the ground. To lower, let the car down by the handle and pull out the jack. This crank mechanism is fully covered by a patent.

The No. 4 jack is for tractor, trolley car, threshing engine use and for work requiring a high jack with great lifting power. It has the crank on the side gear for speedy adjustment. The foot extension and screw shaft are one piece of cold rolled steel shafting 1½ inch diameter.

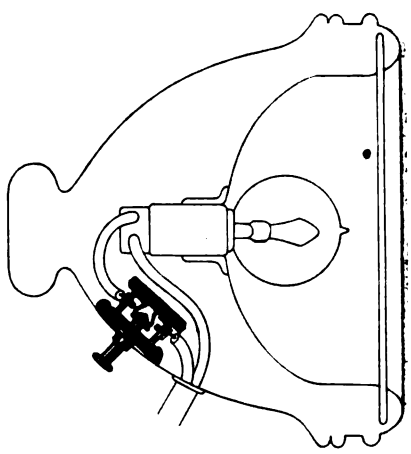


Unconditionally guaranteed. These are standard equipment with some tractors.

Manufactured and sold by the Elite Manufacturing Co., Ashland, O. Price and literature on application.

C-H Spotlight Switch. A new switch recently developed by the Cutler-Hammer Manufacturing Co., consists of the ordinary spotlight with a switch of the push and pull type made for mounting within the shell of the spotlight. Claim is made that many years experience making switches for automobile use have proven that a satisfactory lighting switch must have large "wiping" contact surfaces to prevent excessive contact resistance, and that the contactor must "float" on the operating shaft so that vibration and side strain on the button will not cause the lights to flicker. Both of these qualities are incorporated in this new switch.

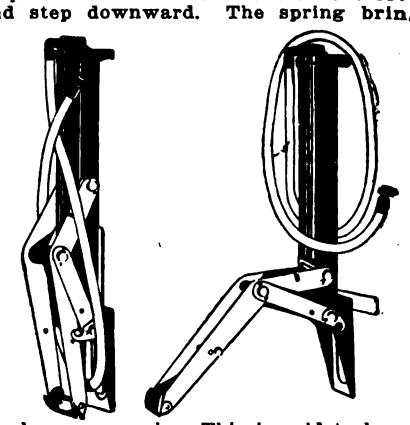
The insulating parts are fiber, the frame of stamped steel, the contacts of brass and the contactor of phosphor bronze. These parts are riveted together to form a solid unit which does not loosen or change alignment when subjected to vibration or strain. The mechanism is not enclosed because this switch is installed inside of



the spotlight shell with the button outside. Either rivets or machine screws can be used to fasten the switch to the shell. No plate is required. Drilling one hole the size of the button and two more for the rivets or screws permits mounting the switch as shown in the accompanying illustration.

Manufactured by the Cutler-Hammer Manufacturing Co., Milwaukee, Wis. Prices and literature on application.

Twombly Tire Foot Pump. A new way of pumping tires is introduced by the Twombly Tire Foot Pump. As is indicated by the name, the pump is designed to be operated by foot pressure, or what amounts to the same thing, the weight of the body. To operate it is only necessary to place the ball of the foot on the lever and step downward. The spring brings



the lever up again. This is said to be essentially a high pressure pump, as the matter of pumping from 70 to 80 pounds pressure is as easy as raising the pressure to 40 pounds. One of the features claimed is its compactness, being only 17 inches long, three inches high and three inches wide.

Manufactured by Schlesinger-Redburn Corporation and marketed by Abbott Motor Equipment Co., Broadway and 59th St., New York City. Price quoted at request.

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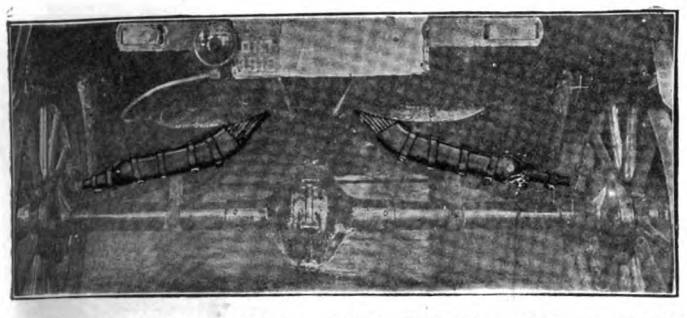


Spring Covers for Ford Cars. Woodworth Lubricating Spring Covers with strap-on fastening are now made for Ford cars. The covers are made of leather and imitation leather, oil and water proof. The straps that hold them to the springs take all wear, so the covers last indefinitely. Inside of the covers are felt linings of large size saturated with oil enough to last for a year, the maker claims. The covers can be re-oiled from an oil cup or may be removed and saturated with oil. It is claimed these covers lubricate the springs and keep out the dust and dirt.

Manufactured by the Woodworth Manufacturing Corporation, Niagara Falls, N. Y. Price, a complete set in a box, genuine leather, $3.50; imitation leather, $2.50.

The Jones Automobile Tachometer. The Tachometer is an instrument which shows how fast the crankshaft of the engine is revolving. It indicates continuously revolutions per minute. Tachometers differ from speedometers in that the latter, though much the same in principle, indicate the speed of the car over the ground in miles an hour.

The principal use of Tachometers is to detect engine trouble. They should be used in adjusting engines to speeds of greatest efficiency, in performance tests and operating cars at the most efficient engine speeds. For speed cars this instrument is particularly valuable, and where maximum efficiency is required it is more reliable than are the human senses.

Automobile Tachometers are much the same in principle and construction as automobile speedometers. The Jones Tachometer was originally designed for aircraft and because of the more severe conditions and requirements there are fewer satisfactory types of airplane Tachometers than automobile speedometers.

The centrifugal Tachometer is so constructed that the centrifugal force, or the tendency of a body to fly away from the axis of rotation, depending on the speed of rotation, acts against the elastic force of a spring. The amount of deformation of the spring determines the motion of the pointer and this indicates the speed. The deflection is continuous, but not strictly proportional to the speed. This disproportionality is compensated in the Jones instrument by a double adjustment device.

The Jones Automobile Tachometer is claimed to be extremely accurate in mechanism and the only centrifugal instrument yet produced embodying a perfectly uniform scale, and other manufacturers find it necessary to calibrate each individual dial, which makes for an unevenly spaced scale, the graduation being crowded on parts of the dial, causing confusion in reading. The dial on the Jones instrument is of greater length and openness than any other instrument of its type yet designed, insuring instantaneous and accurate reading of the smallest speed variation.

It is extremely light in weight, is not affected by temperature changes as is the magnetic type of instrument and has no magnets to lose their attraction in use. The governor system operates at high speed and being very light insures great accuracy. The entire mechanism is so simple that it requires absolutely no attention once it is installed.

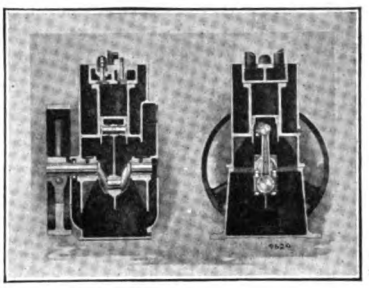
The frame and casing of the instrument are aluminum alloy, black enameled. All rotating parts operate on ball bearings. The dial is black with white indications or vice versa, reading from 500 to 2500 revolutions per minute or 1000 to 5000 revolutions per minute—luminous or plain figures as desired.

The instrument is a flush mount type and can be set in the dash board of any automobile. It is driven by a flexible shaft from the engine and is supplied complete with shafting and all necessary fittings.

Manufactured by the Jones-Motrola, Inc., 29-31-33 West 35th St., New York, N. Y. Prices and literature on application.

Imperial Fourteen Compressors. These machines were built in large numbers to meet a war demand and have been tested for long periods of service. They have now been placed in the market for commercial sale. They are built in four sizes and the capacity ranges from three to 45 cubic feet of air a minute at pressures to 100 pounds a square inch. The small compressors can, however, be used for pressure requirements up to 200 pounds a square inch, the horsepower needed being, of course, slightly increased. They are single acting machines of a vertical type built for belt drive. Where driven from a line shaft, tight and loose pulleys are supplied; where the use of an independent motor is planned they are ordinarily furnished as a unit complete with motor, endless belt and short drive attachment. In the latter case a hard wood base plate is included with the standard equipment.

The machines are so well balanced as to operate satisfactorily if bolted to any solid flooring, but where permanency of installation is desired the building of a concrete foundation is advocated. The smallest size is built with a ribbed cylinder for air cooling where the service is intermittent, and with a water cooled cylinder of the reservoir type for continuous operation. Larger machines are water cooled only, employing the reservoir jacket system

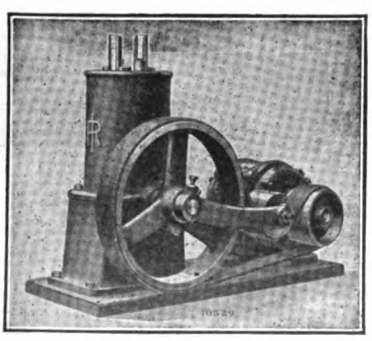


except that in the case of the largest size a closed jacket for connection to a pressure system is optional. In this connection it is worth noting that the reservoir cylinder design affords unusually ample water capacity and that both cylinder and head are cooled. The manufacturer states that a single filling of the water jacket will suffice for a 10-hour run of the compressor.

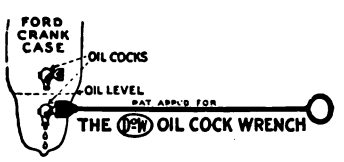
In general design the Imperial Fourteen Compressors remind one strongly of an automobile engine. There is the same drop forged crankshaft and connecting rod, the die cast removable bearings, the automatic splash lubricating system and general ruggedness and simplicity which has come to be recognized as guarantees of satisfactory service under all sorts of operating conditions.

It is pointed out, however, that these little machines were designed to meet exacting efficiency test and that while simplicity was sought, efficiency was the chief requirement.

Manufactured by the Ingersoll-Rand Co., 11 Broadway, New York, N. Y. Prices on application.



Oil Cock Wrench. Every Ford car owner who has been obliged to reach beneath his car to find out the level of oil in the crank case by opening the petcock in the transmission case, thereby getting his clothes soiled by dirt or oil, will appreciate the utility of the tool illustrated. It is called the Dow Crank Case Oil Cock



Wrench. As the handle is 25 inches long, with this tool the oil cocks may be opened and closed without reaching by hand underneath the car. It is well made and finished in black enamel. This tool is also useful for opening or closing the cock on the bottom of the radiator.

Manufactured by Dow Wire and Iron Works, Inc., Louisville, Ky. Price quoted at request.

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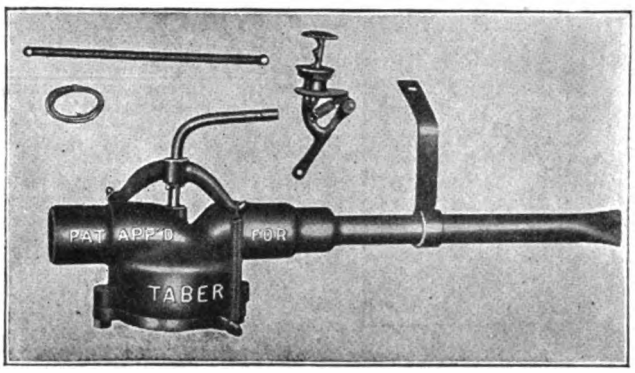
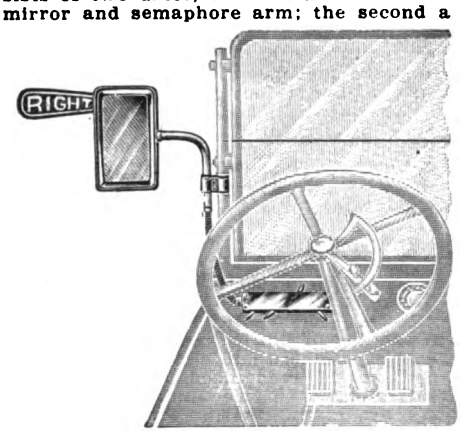


Combined Muffler and Cut-Out. The Taber Combined Muffler and Cut-Out for Ford cars consists of a casting that fits onto the exhaust pipe in place of the regular muffler. It is claimed by the manufacturer to reduce back pressure to a minimum and is guaranteed against blowouts for the life of the car. The cut-out is embodied in the main casting and is self-cleaning, there being but one working part. The casting is rigidly held in place by brackets that fasten to the frame, so that it cannot work loose or rattle. It has been tried in very severe conditions and has been adopted by a number of prominent concerns in the automotive industries.

Manufactured by the Emco Manufacturing Co., Inc., Binghamton, N. Y. Price, $4 85 retail; West of the Rockies, $5.

Semaphore Auto Signal. With the ever increasing number of automobiles on the streets and the consequent multiplication of the traffic problems the semaphore auto signal has been designed. This device consists of two units; the first a combination mirror and semaphore arm; the second a



dash control. By the control the semaphore may be set in either of three positions, right, left or stop. The color scheme of the semaphore arm is striking, the letters on all positions are black, but for the three positions are on different colored fields. For right the field is green; for left, white, and for stop, red.

Manufactured by Semaphore Auto Signal Co., Inc., 1780 Broadway, New York. Price, $12.50 complete.

"Duo-Cord" Tires. The extra flexibility of cord tires, their easy riding qualities, freedom from blowouts and saving of gasoline are points widely known. "Duo-Cord" tires follow the best practise of the finest cord tire construction. The easy riding qualities not only add to the pleasure of car use, but save repair bills. The extra strength to resist blowouts is due to each cord being surrounded by rubber, thus strengthening the cord (as a shoemaker waxes his thread) and preventing frictional heat. Gasoline saving results because the quick resilience does away with the drag of stiffer tires, making the car run much more easily.

"Duo-Cord" tires are priced somewhat lower on most sizes and materially lower in small sizes, only because they are sold closer to cost.

The Double Fabric Co. began in the early part of cord tire development to work out the clincher type of cord tires. For more than two years the company has been successfully building Ford sized cord tires.

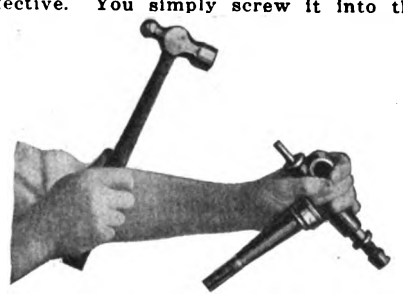
The "Duo-Cord" in Ford sizes is an all-cord tire without any intermediate plies of fabric and is made exactly like the same high quality of the largest sized cords.

Ford sized "Duo-Cord" tires have the advantage that they can be used right along with any fabric equipment the owner may have until such time as his fabric tires are no longer serviceable.

Not only is the Brazil Rubber Gray Inner Tube extra thick for a pure Para tube, but Brazilian rubber is used, which, while more expensive, is stronger and tougher than the plantation rubber generally used. The result is an inner tube which not only holds the air unusually well and is free from slow leaks, but also a tube which will not dry out and crack in years of use, and one that if torn or damaged can always be perfectly repaired. All "Brazil Rubber" tubes are laminated construction, being built of from four to six plies.

Manufactured by the Double Tire Co., Auburn, Ind. Distributed by Farley & MacNeill, 105-107 Federal St., Boston, Mass. Prices: "Duo-Cord" Tires, $24.70 to $83.40; "Brazil Rubber" Gray Inner Tubes, $3.45 to $11.05.

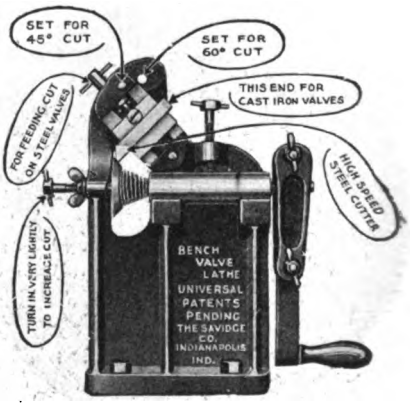
The "Sioux" Bushing Remover. The "Sioux" Bushing Remover is simple and effective. You simply screw it into the



bushing, in which it cuts its own threads. This gives a grip on the bushing, which can then be driven out from the back. The No. 20 "Sioux" Bushing Remover is for use on blind bushings—those which cannot be driven out from the back. The tool is screwed into the bushing and then a center piece is screwed through the No. 20 "Sioux" Bushing Remover with jack screw effect, until the bushing is removed. The "Sioux" Bushing Remover will do the work in a short time and with less labor.

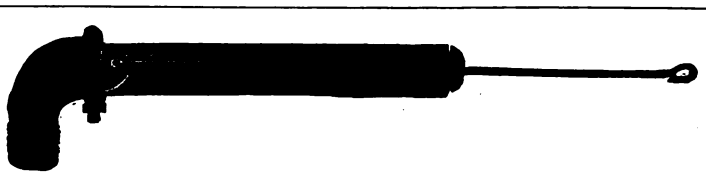
Manufactured by Albertson & Co., Sioux City, Ia. Prices: No. 51, Ford set, $10 complete; No. 50, for all cars, $18 complete; No. 20, for blind or pocket bushings, $5.

The Universal Valve Lathe is light, compact and cuts quickly and easily. It can be clamped in a vise or held in one hand and operated with the other. One does not have to be a machinist to operate this lathe. While it is made for any size valve the two steel sleeves furnished,



one for 5/16 valve stem and one for ⅜ sizes, will handle 90 per cent. of the valves on the market. Each lathe is fitted with a high speed steel cutter ground ready for use.

Manufactured by A. C. Savidge, 611 N. Capitol Ave., Indianapolis, Ind. Price, $10. Extra sleeves, 75 cents. Extra cutters, 75 cents.



Victory Siren. This is a new warning signal that has a range of two full octaves and innumerable tone combinations. Attached by anyone in a few minutes. The Victory Siren is a polished brass horn, so constructed that is cannot break or become inoperative. It will not cause back pressure in the exhaust manifold. The signal will serve as well for trucks as for passenger cars. It can be used as desired to make signals, either loud or modulated as conditions justify. It operates from the steering wheel by a cord. It may be attached to the exhaust manifold with a few minutes work.

Manufactured by the Inter-State Tool and Manufacturing Co., 3419 Rutger St., St. Louis, Mo. Price, $2.50 complete.

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Tyler Safety Step Plate is a step plate for automobile running boards that combines a number of desired features. The ribs radiate, having a non-slip surface in every direction. These cannot be torn from the body of the mat by use. The wearing surface is much greater than in most mats of this type, because all of the rubber is above the stiffening plate.

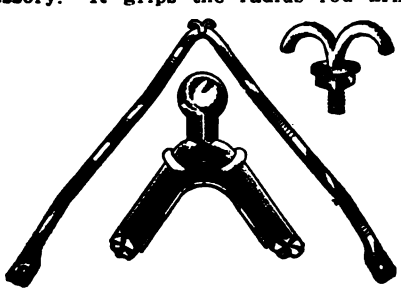
The construction of the plate is much stronger than commonly used. The rubberized cloth backing holds the plate and the rubber together and all are vulcanized as one. On account of this construction it

will retain its neat appearance longer and will be more durable. As door mats they are practical. They are themselves neat and clean and all dirt is readily removed from them by brushing or washing.

Manufactured by Tyler Manufacturing Co., 64 Pearl St., Boston, Mass. Prices, type C, all black rubber with steel inside, 8 by 11 inches, each, $1.50. Other sizes from $1 to $3.50.

Perfection Radius Rod Support. This support is made of steel angle iron 1 by 1 by ⅛ inch. It is very strong and will not bend. The eylets are made especially strong where the bolts attach to the axle and they will not break off.

Attention is called to the new twin hook bolts especially designed for this accessory. It grips the radius rod firmly



at the ball socket and the support cannot move forward or backward, and will not rattle. This article consists of only two parts. These are carried in stock and can be quickly shipped. A body brace is also manufactured for connecting the running boards for Ford cars.

Manufactured by the Dow Wire and Iron Works, Inc., Louisville, Ky. Prices on application.

The Woodworth Lubricating Spring Cover is an improved spring cover for leaf springs of automobiles and consists of a water and oil proof material having a felt pad inside, which is saturated with oil before the cover is put on. The cover is adapted to enclose the spring from the clamps at the thick part to the end of the tapered leaves. The cover is held in place with straps about two inches to 2½ inches apart.

These covers afford perfect lubrication throughout the full length of the spring and keep out all moisture and dirt and keep in the oil, so that one oiling lasts for a year or more. Springs perfectly lubricated make the car ride very easy, do not squeak and are not likely to be broken.

The New Woodworth Lubricating Spring Covers are made in special sets for Ford use, which sell at $2.50 a set, and seven

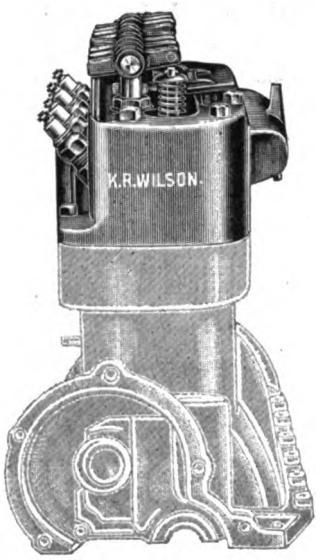
other sizes which fit all other makes of cars. A list of cars showing the sizes of covers required and the prices is published in pamphlet form and in a large two-colored wall hanger, which is furnished free to dealers. The covers are very convenient for dealers to handle, for with only eight sizes any pleasure car on the market can be fitted.

Woodworth Lubricating Spring Covers not only make cars ride easy, but save many times their cost by prolonging the life of tires and machinery. Liberal discounts are allowed jobbers and dealers and free advertising matter is furnished.

Manufactured by the Woodworth Manufacturing Corporation, Niagara Falls, N. Y. Prices and literature on application.

Wilson's Valve-in-Head Cylinder Head is a detachable overhead valve head for Ford engines that is claimed by the manufacturer to be far superior to other types of overhead cylinder heads and to be very economical in operation and to give more speed and power than the ordinary Ford head. The valve area is unusually large, having a port opening of 1⅝ inches and a valve of 1¾ inch. The gas turns just one complete right angle in entering the combustion chamber. The exhaust is on the left side of the engine. The outfit is complete with exhaust pipe and muffler, cylinder head bolts and water connections. The water inlet is in the center of the head, to equalize the cooling, instead of on the end as in the usual construction. The push rods and rocker arms are equipped with fiber tappets to silence the engine.

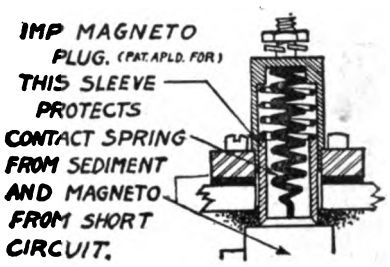
A line of reamers, arbor presses, motor stands, valve seating and facing tools and other tools too numerous to mention are manufactured by this concern for the use of mechanics in overhauling Ford cars.



Manufactured by K. R. Wilson, 10-16 Lock St., Buffalo, N. Y. Prices and literature on application.

Imp Magneto Plug for Ford Cars. Many Ford car owners have experienced difficulty in starting, a condition often caused by fibers worn from the transmission bands being carried by the oil circulation to accumulate around the magneto contact spring. A "short circuit" often results, since it is only necessary to bridge a 3/16 lap between the contact spring and the transmission cover to form an almost perfect electrical connection.

A partial short circuit will reduce the efficiency of the electrical system and loss of power, dim lights and hard cranking



result. It is usually necessary to have a repair man remove the lint, after which the car can be started.

The Imp Magneto Plug has a safety sleeve which protects the contact spring from all foreign substances, making it absolutely impossible for such a condition to develop. It is sold under a positive guarantee that it will insure against all magneto trouble and most all other ignition failures. Since all the current produced by the magneto is delivered to the coil box terminal a hotter spark results, which insures more power. It can be attached by anyone in five minutes.

Manufactured by the Improved Motor Accessories Co., Cleveland, O. Price, $1.50.

Save Your Spokes. Keeps spokes tight in the hub, stops the squeak and saves you money. The moisture which penetrates the dry wood swells it. Then the dry, hot

weather drives this moisture out and causes the wood to shrink. This shrinkage and swelling loosens the spokes and every strain makes them rub and squeak. The constant friction between the loose wood parts wears the spokes away eventually. This weakens the wheel until it finally breaks, perhaps on the road, or has to be replaced. Breaking is dangerous, replacement is expensive and using "Save your spokes" it is very easy to prevent both.

"Save Your Spokes" is for use on any patent or artillery type wheels.

Manufactured by the A-C Manufacturing Co., Inc., Chicago, Ill. Distributors' price, retail, 50 cents a can, enough for four wheels. Packed 12 boxes in a fancy show case display.

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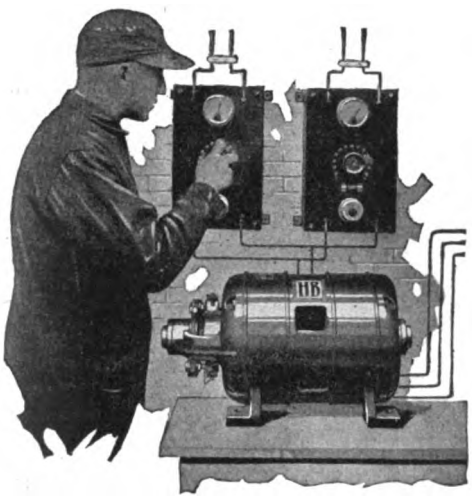
HB-16-Battery Capacity Charger. The HB-16-Battery charging set is a new outfit, designed for the average size garage, where the increased demands for battery charging necessitates larger capacity than is afforded by the smaller sizes.

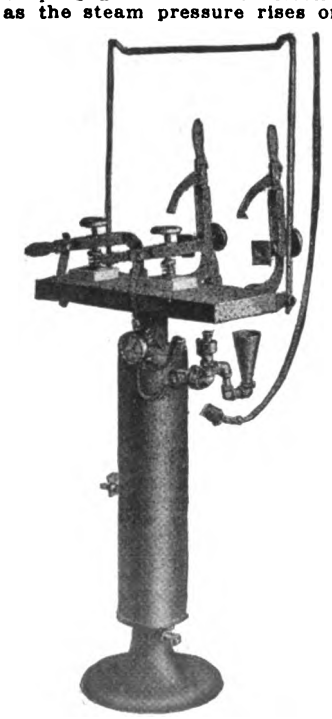
The charger is a sturdy, reliable machine of one KW capacity, with capacity for charging one to 16 six-volt batteries, or their equivalent in 12 or 24-volt batter-



ies at one time. It is built extra strong and of wear resisting materials. It operates on two or three phase city current, but not on single phase. Most garages have the current available, and, if not, the city plant can easily supply the necessary lines. There are two separate, independent charging panels, each built to carry up to eight six-volt batteries. Each panel is complete with its own ammeter, fuses, cutouts, rheostat, etc., and with resistance for balancing the line and varying the rate of charge. The panels are of clear black electrical slate, oiled and beveled. A special feature is the HB universal automatic voltage control, whch permits the charging of six, 12 or 24 volt batteries at the same time.

Manufactured and sold by Hobart Brothers Co., Troy, N. Y. Prices and payment terms on application.

Sepco Steam-Electric Vulcanizer. In this vulcanizer temperature variation in the plate is controlled within one or two degrees by an ingenious pressure gauge, which opens and closes the electric circuit as the steam pressure rises or falls



one pound. The steam generator is a seamless steel tube two inches diameter on which is wound an electric heating coil, imbedded in an insulating compound. The cable connection can be plugged into any electric light socket and the vulcanizer can be used anywhere without regard for fire ordinances.

Sixty pounds of steam can be obtained in 10 or 12 minutes after connection is made and after the necessary temperature is obtained the current draft is only half the time. In actual operation the current is closed and broken at one minute intervals, the circuit being regulated automatically.

These vulcanizers are built in two sizes, one with four pressure arms and a plate eight by 20 inches, and the other with six pressure arms and a plate eight by 30 inches. The heavier of the two weighs 125 pounds complete and one square yard of floor space is required for it.

Sepco Vulcanizers are constructed of steel throughout, insuring great strength and light weight. It is stated the tube plates have been tested to pressures of 600 pounds to the square inch without rupture. Because of the automatic control of temperature the machines are claimed to be safer than other vulcanizers, including those with thermostat control. The pressure gauge regulation is stated to be the simplest and most positive and is patented. Other devices made by this same concern are Sepco celluloid plates, Sepco glue pots, etc.

Manufactured by the Steam-Electric Products Co., Cleveland, O. Prices and literature on application.

Mormiles. This is a chemical compound that is manufactured in the form of a tablet that is put into the gasoline tank and dissolves in the fuel. It is claimed to energize low grade gasoline so that it is

wholly consumed and produces full power. The maker maintains that unlike a liquid it becomes a part of the gasoline, as it evenly dissolves, and the ingredients pass out of the engine with the exhaust. It is in convenient form and may be added to the gasoline in the ratio of one tablet for each gallon.

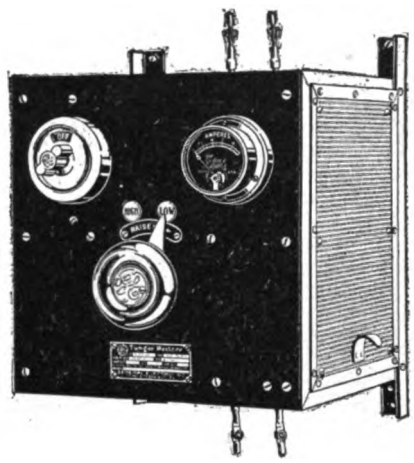
Is guaranteed by the manufacturer not to damage the engine, to increase the mileage, to increase the power and to keep the engine free from carbon, or the money will be refunded. In red cans only.

Manufactured by Mormiles Co., 226-8 S. La Salle St., Chicago, Ill. Price, $1.

Tungar is a battery charging rectifier for public garages and service stations. The six-ampere 75-volt type of Tungar rectifier is a simple, low priced, highly efficient charging set that will charge from one to 10 three-cell starting and lighting batteries at a six-ampere (or lower) rate from an alternating current supply.

Tungar rectifier superiority and efficiency may be attributed to the bulb transformer—the essential difference between the Tungar rectifier and other rectifiers dependent upon mechanical transformers. Because of this ingenious invention Tungar insures a low first cost, a low operating cost and absolutely elimin ates the possibility of the battery discharging through the rectifier. No. A 63,951.

A smaller size is sold by the same company, for the use of the private owner, and may be used in the car or in the garage. It is a six-ampere, 15-volt Tungar



rectifier developed by the Research Laboratory of the General Electric Co., and is a simple, economical rectifier for charging a three or a six-cell automobile starting and lighting battery. To charge a battery with the Tungar rectifier, simply connect the two leads to the battery, screw the plug into the nearest lamp socket and snap the switch. No. A 3411.

Sold by Pettingell-Andrews Co. (Automobile Division), 100 Brookline Ave., Boston, Mass. Prices and literature upon application.

Red Star Timer for Fords. The timer of Ford cars has always been more or less a source of trouble. In fact, this has developed to such proportions that the demand for a timer that would really wear has followed automatically, and this is the reason why the Red Star Timer for Fords has gained quick favor with Ford vehicle owners.

In building this timer special attention has been given to the parts that wear out the quickest, namely the race and roller. The Red Star Timer race is made of the best quality bone fiber. It is natural color and cured until it is very hard and durable. It is also made of one piece throughout and not built up in layers. Therefore, crumbling and coming apart are impossible.

The roller of the Red Star Timer is designed to roll under all conditions. The roller on a roller principle is applied, giving virtually a roller bearing roller. This reduces wear to a minimum and tends to give extremely long life and lots of service. Each Red Star Timer is stamped with a Red Star right on the timer shell.

Mauufactured by the Auto Components, Inc., 56 East Randolph St., Chicago, Ill. Price, $1.75.

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Veedol Products. Veedol products include a full line of oils and greases for all purposes for automobiles, trucks and tractors, and also includes a potash soap for washing cars. The Veedol oils are claimed to be free from sediment after being used a few days. Sediment is caused by the terrific heat of the engine breaking down the ordinary oil, and as a result friction takes place, causing loss of power, increased cost of oil and worn parts. Veedol prevents this formation of sediment because it resists heat. The Faulkner process, used exclusively in the manufacture of Veedol, causes 80 per cent. less sediment. This has been repeatedly proven in scientific and practical tests. Veedol will reduce the upkeep of a car from $50 to $115 a year. Try it the next time you buy motor oil.

Manufactured by the Tide Water Oil Co., Veedol Department, 11 Broadway, New York City. Prices and literature on application.

"Ospeco" Centrifugal Water Pump. The Ospeco Centrifugal Water Pump for Ford cars reduces the heat of the engine by forcing the water from the radiator through the water jacket surrounding the cylinders. This also serves to reduce the oil consumption considerably.

In construction it is very simple and is very easily installed. A small belt pulley is clamped on the fan shaft. On the ends of the water pump are clamped the ends of inlet and outlet hose of the radiator. A coiled spring belt is passed around the pulley on the fan shaft and the adjustable pulley on the water pump propeller shaft which propels a fan-like motor that circulates the water rapidly.

There are no parts to clog or get out of order. A by-pass assures circulation when the engine is not running. It can be installed in a few minutes. This, like other Ospeco products, is fully guaranteed.

Manufactured by the Michigan Auto Products Co., Detroit, Mich., and Cincinnati, O. Descriptive pamphlets of other Ford necessities on application. Price, $5.

Simmons Taper Roller Thrust for Ford Cars. The Simmons Taper Roller Thrust for Ford cars is designed to replace the steel or bronze thrust plate used in Ford rear axles at each side of the differential gearset. Manufacturer claims it is superior to other types of thrust bearings and that because of the longer bearing surface of the rollers it has greater service than ball bearings.

It is not necessary to replace bearings when a pair of Simmons Taper Roller Thrusts have been put into a Ford rear axle.

The construction of these bearings is such that if the differential gearset sags or drops contact is maintained. It cannot be damaged in any position because of the extremely heavy structure of the retainer plate, which is claimed to be eight times as heavy as any used in other types.

Assume 500 pounds actual pressure a thrust plate must take from the gears and add to this when turning a corner, the weight of the car, the weight of the passengers, the side thrust of the car on a wheel, which is taken by the thrust plate on the opposite side of the differential gearset. This, of course, wears the brass and steel plates, causing a variable gear mesh. The necessity for thrust plates on both sides of the differential gearset is seen.

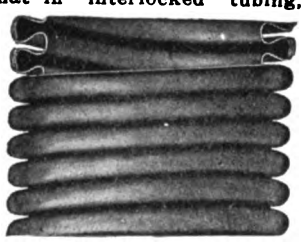
Simmons Taper Roller Thrusts are sold in pairs only. When installed the rear axle is entirely fitted with roller bearings. The bearings carry an unlimited guarantee.

Manufactured by the Simmons Manufacturing Co., 3405-11 Perkins Ave., Cleveland, O. Price, $3 a set.

Tite Flex All-Metal Hose. The Tite Flex Metal Hose Corporation makes gasoline and oil hose for unloading tank cars, filling barrels, garage tanks, etc., in storage and supply stations; gasoline and oil feed lines for gasoline engines; pressure tubes for tire inflation; speaking tubes, conduits for battery, ignition, lamp and electric horn wiring; tubing for hot air stoves, automobile heaters, speedometers and bulb horns, and flexible exhaust pipes.

All commercial flexible tubing is rolled from strip metal, and turned over in passing through the dies so as to make an interlocking joint. The flexibility in ordinary, full or semi-interlocked tubing is obtained from the sliding action of the joint parts, one on the other, within the joint, the coil remaining rigid.

All flexing in Tite Flex, as distinguished from that in "interlocked" tubing, takes

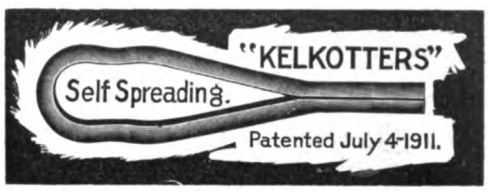


place within annular diaphragms which are substantially at right angles to the axis of the tube and formed by the sides of the U shaped convolutions that are characteristic of the Tite Flex section.

The interlocking portions comprising the seam are compressed under heavy pressure to make a continuous perfect and permanently tight cold welded structure. The seam is to all intents and purposes virtually solid metal. The flexibility is, therefore, entirely in the metal and the seam is primarily self-tight—not "semi-tight" or "near-tight" or depending in any way upon additional provision for tightness.

Manufactured by the Tite Flex Metal Hose Corporation, Newark, N. J. Prices quoted on request.

Kelkotter is the trade name of a new type cotter pin that is guaranteed can be driven into place with a hammer or other tool and the points of the pin will spread themselves. The Kelkotter cannot go into place without spreading equally, dividing the stress upon it. It is always uniform, is easily driven and easily removed by a quick pull and twist on the head. Kelkotters cannot work loose or rattle.



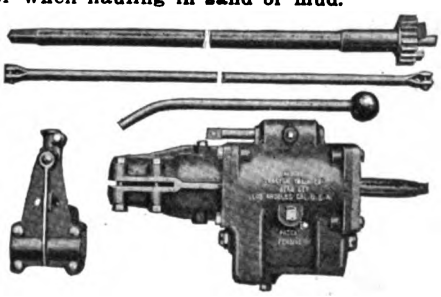
The time and labor saved by Kelkotters justifies their use for every purpose for which a cotter pin will serve. No sharp tools are required to spread and no possibility obtains for marring the work. A demonstration set of Kilkotter pins will be sent on request.

Manufactured by the American Cotter Pin Co., Pittsburgh, Pa.

Moore Transmission for Ford Cars. A Ford equipped with the Moore transmission has four separate and distinct speeds forward and two in reverse. A gearing for every load, road or speed condition that may be met with, economizing fuel, tires and oil.

In actual tests the maker claims the Moore transmission has delivered more power to the rear wheels than any similar devise constructed.

Is particularly well suited to Ford chassis hauling trailers or for Ford trucks and truck attachments. The low speed starts the machine easily, the intermediate will climb grades with heavy loads or when hauling in sand or mud.



The gears are constantly in mesh, much the same as the Ford transmission. With this construction it is impossible to strip gears. Changing of gear ratios is by means of a sliding jaw clutch. The gears are cut from solid steel billets, specially heat treated. The shafts are ground and hardened.

Hyatt roller bearings are used throughout. Lubrication is insured through a hollow shaft. All lower bearings are submerged in an oil bath and oil is carried by revolving gears to the upper bearings. A special oil retainer built into the transmission prevents the oil from getting into the differential housing.

Moore transmissions for Ford cars are in three models. No. 1 is for all Ford cars and chain drive attachments for trucks, rear end type. No. 3 is for all shaft drive truck attachments, such as internal gear rear axles, front end type. No. 4 is for installation on Ford one-ton worm drive trucks only, front end type.

Manufactured by the Tractor Train Co., 1346 Wall St., Los Angeles, Cal. Literature and prices on application.

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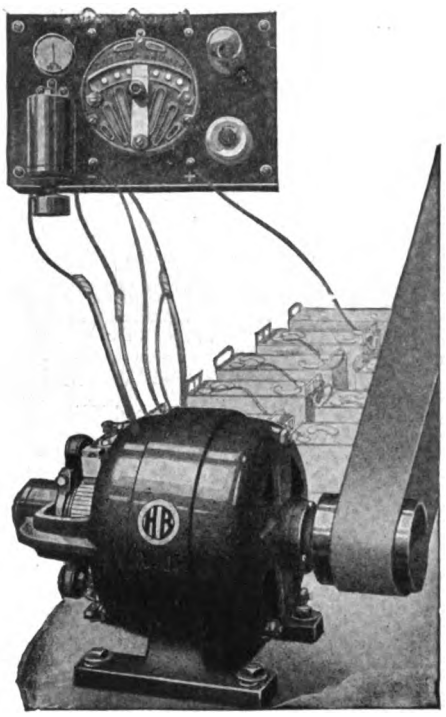


The H. B. Belted Charger. An ideal capacity battery charging outfit for the service station and garage that does not have electric current, and use gas engine power, is manufactured by the Hobart Bros. Co. of Troy, O.

The H. B. Belted Charger will charge seven six volt batteries or their equivalent at one time. It operates from a line shaft or engine. Only one actual horsepower is required to operate. The switchboard is furnished complete ready for use with ammeter, pilot light, field rheostat, circuit breaker, necessary fuses and cutouts. This charger is sold on easy terms, which enables the garage man to buy a dependable ample capacity battery charger, letting the profits from each month's business pay for the outfit. The company also manufactures a line of battery chargers operating from city current.

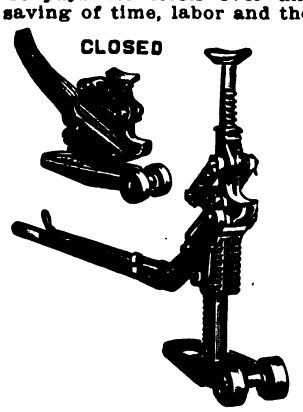
Manufactured by the Hobart Brothers Co., Troy, O. Price quoted at request.

Icy Hot Products is a complete series of Thermos bottles for all purposes and includes a number of innovations such as "carafes" for keeping drinking water three days without ice, for the home or hotel, khaki slings for carrying a hot water bottle on hunting and fishing trips, colored carafe's trays to match for hotel use of several colors and combinations of

carafe and stand with glasses. Icy hot pitcher for the dining room, bedroom or sick room keeps drinking water icy cold, or coffee, tea, etc., hot for days without fire or ice. A novel, convenient and attractive service for afternoon teas, small receptions, etc. Icy hot lunch and beverage cases are for use by automobilists, having carrying capacity of a jar, lunch box and one bottle, or a lunch box and two bottles, or for three bottles. Icy hot auto lunch consists of a complete luncheon outfit in a compact case for the auto. The case is the highest grade of leather craft work. The set includes enameled drinking cups, plates, napkins, knives, forks and spoons for six persons, salt and pepper shakers and two large nickel plated lunch boxes. Icy hot motor restaurant is a dust proof, serviceable auto equipment, made in four and six party sizes. Icy hot lunch boxes for the individual consist of a Thermos bottle and lunch box combined.

Manufactured by the Icy Hot Bottle Co., Cincinnati, O. Prices and circular on application.

Excel Auto Jack. A heavy tool constructed to endure the continuous hard usage of the garage and service station and meets the demand for a powerful, substantially built, quick acting jack. It is made of high grade malleable castings—drop forgings where necessary—with all wearing parts hardened. It will last for years under the most severe conditions. It pays for itself over and over by the saving of time, labor and the usual

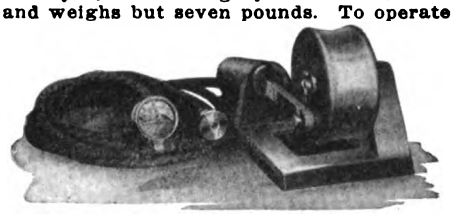


breakage of small jacks which have little value except for emergency road work.

The Excel Jack is too large to be misplaced, is positive in action; it can be placed under the hub, axle or frame very easily and it always works. Excel Jacks are indispensable in public garages, service stations, repair shops, tire agencies, race track pits, and are frequently used in private garages.

Manufactured by the Randall-Faichney Co., Inc., 76 Atherton St, Jamaica Plain, Boston, Mass. Price $25 (subject to change without notice).

The S-H Tire Pump. Designed with the intention of eliminating tire inflation trouble, the S-H Tire Pump should prove a boon to the motorist. This little pump is only 10 inches long by four inches wide and weighs but seven pounds. To operate



it is only necessary to jack up one of the rear wheels, place the friction wheel of the pump under the tire, start the engine and a steady flow of air for tire inflation is furnished. The equipment consists of the pump, a tire gauge and a long, flexible air hose.

Manufactured by the S-H Pump Co., Chicago, Ill. Price complete, $8.

Steven's Service Cabinets. Nothing leaves such a lasting and favorable impression upon the accessory buyer as quick service, in fact, service may well be said to be the key to success. To facilitate service, accessories and parts must be conveniently located and kept in order. Many sales are lost because the dealer has forgotten where the part in question was

located. To systematize the parts stock the Stevens service cabinets have been designed. Practically any combination of units may be assembled so that the dealer has a place for every part.

The cabinets illustrated show two possible and useful combinations of Stevens' units. The combination in the front is made up of three units and a top. The top units contain 172 small and medium sized drawers, which will hold small stock parts and bolts. The lower is fitted with 20 large sized drawers, which are suitable for larger and heavier parts, accessories or tools.

The combination in the rear is made up of three units, the two upper being the same as those in front. The lower section is fitted with doors and a shelf upon which may be stacked larger and heavier parts, such as cylinders, crankshafts or transmission parts.

All of the drawers are covered with heavy galvanized steel and may be fitted with compartments and cross divisions as desired.

Manufactured by Stevens & Co., 375 Broadway, New York. Price quoted at request.

Portable Grease Cabinet. A very convenient cabinet for use by garages, manufacturers, service stations and car owners is being marketed. The container has capacity for 20 pounds and delivers one-

quarter pound to each stroke of the pump and passes nothing but grease or fluid. The shipping weight, including pump and five feet of hose with nozzle attached is 14 pounds.

Made by the Townsan Auto Specialty Co., 822 Western Ave., Minneapolis, Minn. Price quoted at request.

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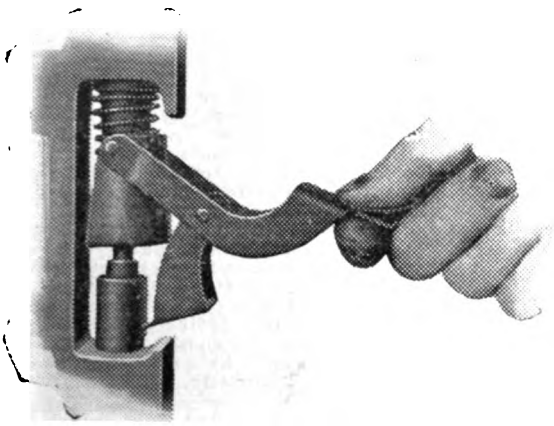


Tu-Ford Valve Lifting Tool is a handy tool for removal of Ford valves by compressing the springs so the keys may be taken out. It is small enough to be carried in the car tool kit. As shown in the cut it is a small lever like tool having a cup that may be placed around the base of the spring, the foot or pedestal bearing against the crank case and the push rod housing. Pressing the lever toward the foot and down and inward lifts the spring clear of the locking key and locks the tool in position for the key's removal. To remove the tool after the valve and key have been replaced, simply pull out the handle.

This tool will be very useful to the Ford repair man as well as the private owner who does his own valve grinding. It will save its cost price many times over in time.

Manufactured by the Tu-Ford Valve Tool Co., 210 Boutell Place, Bay City, Mich. Price, retail, 75 cents each.

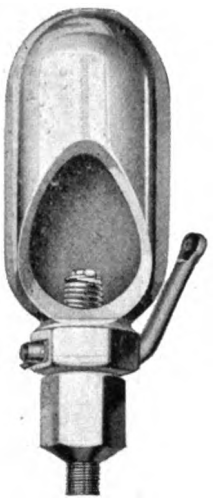
Exemplar Cleaning Polish. The polish for cleaning and washing your car. No matter how dirty or muddy it may be a single application of Exemplar Cleaning Polish will leave a bright, thoroughly clean polished surface and it will not collect dust. It is easy to use. No spraying is necessary. Simply rub over your car with a moistened cloth and then wipe dry. Exemplar Polish will positively re-

move tarvia or oil without scraping or otherwise damaging the finish. It is non-inflammable and will not deteriorate any finish.

Other articles handled by this company are Genolite, an electric starting motor for Ford cars; Speederator, an accelerator for Ford cars; Automatic Extension Reel for use with an inspection lamp in a garage; Eveready Madza Lamps for automobiles; the Eveready Starting and Lighting system for Ford cars, and the Eveready Storage Batteries.

Sold by Pettingell-Andrews Co. (Automobile Division), 100 Brookline Ave., Boston, Mass. Prices and literature upon application.

Interstate Autotomotive Whistles. These are operated by the compression of the engine and produce far reaching tones that really warn. They can be attached



by anyone in a few minutes on the engine in a priming cup opening. The explosion produces the warning sound. Costs nothing to operate, no battery is necessary, nothing can break or cause failure, requires no adjustment and is operated by a cord attached to the steering column or any convenient place.

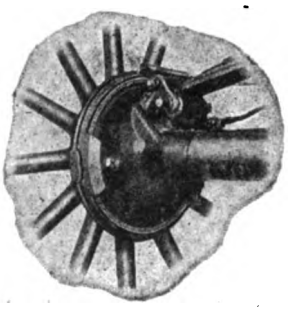
Inter-State Tri-Tone Whistles are constructed essentially the same as Inter-State Whistles, but these produce three distinct tones. They are designed for motorists and motor boat owners who desire a really Deluxe warning signal. Every quality of Inter-State Compression Whistles is afforded by Inter-State Tri-Tone Whistles. These signals can be used for Ford cars where there are no priming cups by installing special spark plugs. These spark plugs are made ⅛ inch for Ford cars; for Maxwell and Briscoe cars, ⅞ inch; for Chevrolet, Oakland and Buick cars, ⅞ inch extra special spark plug. When special spark plugs are wanted be sure to mention the make of car.

Manufactured and sold by the Inter-State Tool and Manufacturing Co., 3419-21 Rutger St., St. Louis, Mo. Prices, Inter-State Compression Whistle, $3.50 complete; Inter-State Tri-Tone Whistle, $5 complete; special attachments for engines not fitted with priming cups, $1.25.

Moore Rear Wheel Service Brake is a braking device for Ford cars and takes the place of the transmission brake. The Moore brake is a full wrap contracting type that acts on the original Ford brake drums and is operated by the service brake pedal. The transmission brake band is disconnected. The Moore brake is 100 per cent. efficient. It is positive in action, whether backing or going forward.

The Moore brake obviates chatter of the transmission and differential. The shoes are Thermoid lined and when necessary the shoes are quickly and easily relined. The brakes are operated by heavy cables, which will not stretch or rattle. The brake is perfectly equalized. This largely overcomes skidding and also insures equal wear of tires. The brake shoes are covered by protective housings. The brake can be easily and quickly attached with ordinary hand tools. Only one 5/16-inch hole to drill. Cars equipped with "W.-C.," "H. & D" or "Hassler" shock absorbers will require special extension spring perches at an extra cost of $2 a set.

Manufactured by the Tractor-Train Co., Los Angeles, Cal. Price, $16 f. o. b. Los Angeles, Cal. Installation extra.

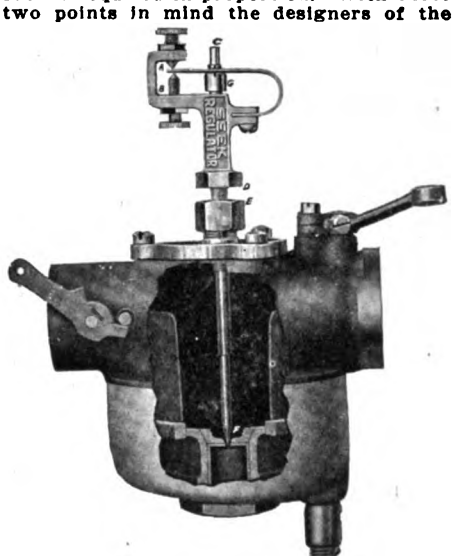


The Smith Auto Signal is a practical and efficient safety device. It is conspicuous from the front and rear. It is electrically operated from a switch on the steering wheel. It thus prevents the frequent accidents caused by removing a hand from the wheel at critical moments. The words, "left," "right" or "stop," appear at the will of the operator, and these words are clearly discernible day or night. It signals

only when you want it to, giving definite information and warning when needed in ample time to guide both those in front and those in back of you. It operates from a single-handed, three-way switch under the driver's hand. Very little current is used. It is simply constructed and easy to install.

Manufactured by the Smith Signal Corporation, 53-55 West 66th St., New York, N. Y. Retail price, complete, $20.

Seek Thermo Regulator. Every automobile owner has learned that though a rich mixture is necessary for starting, the gasoline may be partially turned off after the engine has "warmed up." Then again the faster the engine runs the greater the amount of heat generated and the less fuel is required in proportion. With these two points in mind the designers of the



thermo regulator have designed this device so that varying degrees of heat will raise or lower the needle valve, thereby admitting more or less gasoline into the mixture chamber. To apply the device it is only necessary to remove the needle valve of the carburetor and screw the device into place. After it is once adjusted the regulator automatically provides for a richer mixture for starting, and as the engine is warmed up the mixture is gradually made leaner.

Manufactured by Seek Manufacturing Co., 224 South 24th St., Philadelphia, Pa. Price, $5.

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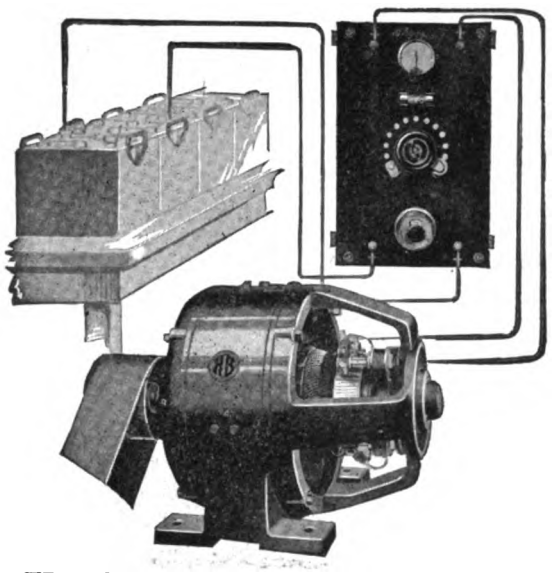


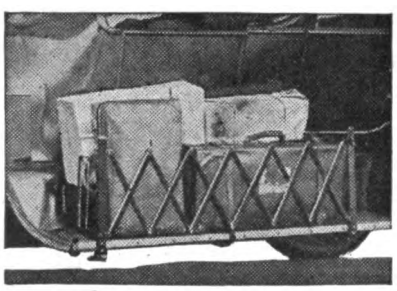
HB Lighting and Battery Charging Set. With the HB Lighting and Battery Charging set, the garage that does not have electric current available from any public plant can make its own electric light and at the same time have the power necessary to handle the profitable business of recharging automobile storage batteries. The generator is a specially wound machine, 110 volts, direct current, speed 1800 revolutions per minute, weight 300 pounds. It operates from line shaft or engine, requiring four horsepower at full load. It supplies ample capacity for brilliant lights at low cost, and it will recharge at one time from one to six six-volt auto storage batteries or their equivalent.

Since brilliant lights attract trade and improve service, and since battery charging is developing into such a profitable business, this outfit should be warmly received by the garage trade for which it is intended.

The HB Lighting and Battery Charging set is furnished complete in every respect, ready to belt to engine and operate. It includes generator, base tracks, field rheostats, charging panel and pulley with six-inch diameter and four-inch face. No switchboard is necessary.

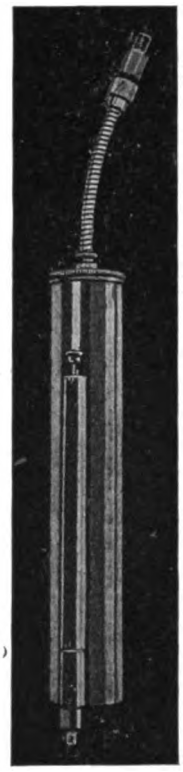
Made and sold by Hobart Brothers Co., Troy, O. Prices on application.

Standley Carrier. The "Standley Carrier" is a convenient and quick detachable luggage carrier that can be attached



to the edge of a running board by clamps, forming a basket for carrying luggage of all kinds. The clamps are provided with lock nuts that securely fasten them so that they cannot work loose. When not in use the carrier may be folded and stowed under the seat. It is provided with a strap to hold parcel and luggage away from the body. It is adjustable to any length from 10 to 44 inches. It is a very handy article for use by hunters, campers and fishing parties or traveling men. In construction it is simple, strong and efficient and takes only a moment to install.

Manufactured by the Standley Skid Chain Co., Boone, Ia. Price, $4.



Atlantic Pneumatic Grease Gun. This new grease gun is a brass cylinder one foot long and two inches diameter that will hold 16 ounces of grease. It is operated by air pressure through a tube connecting the gun with either a power or foot pump or with a spare tire or a compressed air system. The gun is operated by pressing a button on the gun with the thumb of the hand holding it. Some owners use oil in preference to grease as it is difficult to use hard grease, but oil has the disadvantage of collecting dust and dirt.

By using the power gun hard grease may be forced into joints with force that will expel the remaining lubricant and replenish the supplies.

The volume of air necessary to operate the gun to grease a car is small; if drawn from a spare tire would probably not reduce its pressure two pounds.

The gun can be held and operated with one hand and the other hand is free to open and close the grease cups. Other guns require both hands to operate them. All parts are well machined and the gun is nickel plated. A unique filler and one nozzle are furnished with each gun. Extra nozzles are supplied at additional cost.

Manufactured by the Atlantic Motor and Supply Co., 1045 Tremont Building, Boston, Mass. Price, $6.

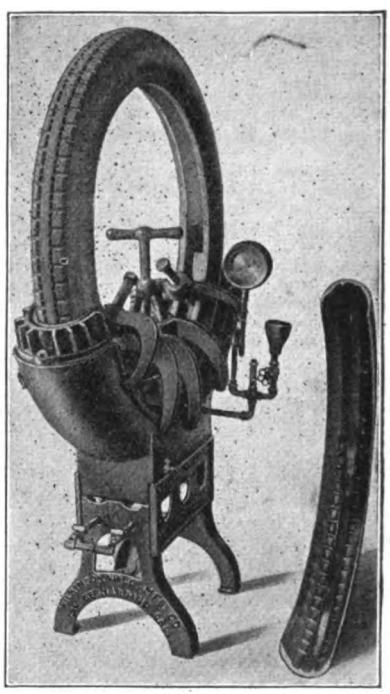
Rubrback and Khaki Back Patches. Two self-vulcanizing tube patches have been added to the Norwesco "Chemically Correct" series of automotive utilities. Rubrback Tube Patch is manufactured from highest grade materials and under a special process that insures a perfect repair. This patch is designed for repairing both punctures and blow outs and expands with the tire so that it will not pull loose when the tire is inflated. Khaki Back Tube Patch is made from the same quality of materials as Rubrback, except that it is reinforced by a covering of khaki cloth. This patch is especially effective where a non-stretching repair is necessary.

These patches are effective under extreme heat or cold, and can be applied either in the owner's garage or as an emergency on the road. They are as efficient for all articles made of soft rubber as for automobile tubes.

They are packed in screw top containers, two sizes. Each outfit containing sufficient cement and emery cloth for making numerous hasty and permanent repairs. No motorist's outfit is complete without the tire protection afforded by these Norwesco Patches.

Manufactured by the Northwestern Chemical Co., Marietta, O.

Wilkinson Perfected New Model Steam Vulcanizer. This machine represents the latest development in the Wilkinson dry cure process and has the new non-skid matrix, which, it is anticipated, will revolutionize the tire industry. With its use the tire man is able to rebuild an old casing into an apparently new tire, adding from 2000 to 5000 miles at a very nominal cost. This machine is equipped with all of the latest Wilkinson patented features, such as the aluminum non-skid or ribbed tread matrix and the radiating insulated flange to protect the tire from overcuring at the laps. The machine requires no separate boiler, as it has a boiler self contained and is also equipped with steam safety valve and gauge.



Tire experts all over the United States have passed upon the Wilkinson process and declare it to be as near perfect as can be made. Racing car drivers are using dry cure retreads with much success, while owners of passenger vehicles and small trucks are cutting down tire expense by restoring shoes that have not been structurally damaged though the original treads were worn to the breaker strip. Wilkinson equipment is now installed in many large repair shops in the East and Middle West and is very generally used on the Pacific coast, where automobile touring is at maximum. The Wilkinson organization is now negotiating with large concerns all over the country to handle this equipment in various zones and is tripling the capacity of its plant to care for the demand.

Manufactured by Wilkinson Vulcanizer Manufacturing Co., San Bernardino, Cal. Prices, models H, K and L sell for $159, $188 and $198 respectively.

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RECORD OF BUILDING OPERATIONS FOR MAY

Contracts Made and Plans Contemplated for Alterations or Erection of Garages, Repair Shops, Service Stations and New Plants.

CONTEMPLATED PLANS AND SPECIFICATIONS.

Mobile, Ala.; Adams Machinery and Manufacturing Co.; three-story brick, glass and steel garage and machine shop, 113x168; $100,000.

Phoenix, Ariz.; Overland-Arizona Co.; one-story garage, 137x175; $30,000.

Fort Smith, Ark.; Leon Williams; one-story garage, 50x155.

Bakersville, Cal.; Taft Motor Co.; one-story garage; $20,000.

Fresno, Cal.; George R. Andrews; one-story garage; $12,000.

Keota, Cal.; Guy D. Vawter; one-story garage, 60x80.

Los Angeles, Cal.; G. P. Shroeder; one-story garage, 50x74.

Los Angeles, Cal.; Harriet Harvey; one-story garage, 60x140.

Los Angeles, Cal.; D. H. Hewitt; one-story garage, 50x150.

Riverside, Cal.; Central Garage; one-story garage; $1500.

Sacramento, Cal.; S. W. McKin and S. J. Lubin; one-story garage, 40x60; $7500.

Visalia, Cal.; F. H. Whipple; one-story garage and salesroom, 55x112.

Hartford, Conn.; Older & Rosenberg, 1026 Main street; four-story garage, 64x91x128; $80,000.

Stratford, Conn.; H. and H. Lepold, 1493 Main street, Bridgeport, Conn.; one-story garage; $5500.

Waterbury, Conn.; Frank Mulesky; one-story public garage, 44x71; $9000.

Waterbury, Conn.; D. E. Carroll; one-story garage, 66x90; $35,000.

Washington, D. C.; General Auto Truck Co., 217 Woodward building; two-story garage, 80x120; $75,000.

Washington, D. C.; E. S. Schimmer, care Randall Hagner, 1209 Connecticut avenue; one-story garage, 50x135; $25,000.

Gainesville, Fla.; J. H. Alderman; two-story brick garage, 60x110; glass front.

Tallapoosa, Ga.; R. H. Thornton; one-story showroom and repair shop, 80x100; tile roof, tile floor for showroom and cement floor for shop.

Ferdinand, Ida.; R. J. Alcord; one-story garage, 50x120.

Gooding, Ida.; Hume Brothers; one-story garage, 60x75.

Kamiah, Ida.; Fuqua & Frasier; one-story garage, 50x101.

Belleville, Ill.; Meyer Brothers Auto Co.; one-story garage, 75x120.

Chicago, Ill.; W. A. Gelbach, 7444 Malvern avenue; one-story garage, 48.4x88; $4500.

Chicago, Ill.; Jefferson Jackson, care Arthur Foster, 155 N. Clark street; one-story garage, 100x225; $25,000.

Chicago, Ill.; Weinstein & Wieberg, Kedzie and Grenshaw street; one-story public garage, 30x125; $15,000.

Danville, Ill.; Sheet-Ingersol, Daniel building; one-story public garage, 54x100; $10,000.

Eldorado, Ill.; C. C. Skelton; one-story garage and salesroom, 100x122½.

Galesburg, Ill.; P. & M. Garage; one-story garage; $45,000.

Hillsboro, Ill.; H. S. Butler; one-story garage, 45x120.

Matton, Ill.; Kizer & Reynolds; one-story garage, 68x140.

Milton, Ill.; Virgil Hoover; one-story garage, 40x70; $2000.

Newman, Ill.; Burgett & Baxter; one-story garage, 95x105.

Rockford, Ill.; Denel & O'Shap; one-story public garage, 79x100.

Windsor, Ill.; Q. B. Richards; one-story garage; $2500.

Anderson, Ind.; John J. Ryan; one-story garage; $15,000.

Bluffton, Ind.; J. H. Fulk; one-story garage, 26x50.

Centerville, Ind.; Mull Brothers; one-story public garage, 50x140; $7000.

Decker, Ind.; James D. Sisson; one-story garage, 62x78.

Mt. Vernon, Ind.; John Staples; one-story garage, 35x80.

Nampa, Ind.; A. E. Lindsey; one-story garage, 80x140.

Shelbyville, Ind.; A. Schneider; one-story garage, 40x132.

Terre Haute, Ind.; Dr. T. W. Moorehead; one-story garage, 80x160.

Adel, Ia.; Dr. A. R. Neale; one-story public garage, 60x100; $30,000.

Centerville, Ia.; S. Fisher; one-story garage; $35,000.

Davenport, Ia.; Davenport Oil Co.; one-story garage, 80x100.

Greenfield, Ia.; Hutchinson Auto Co.; one-story public garage, 30x80; $12,000.

Waterloo, Ia.; F. R. Fisher; one-story garage, 12x50; $8000.

Webster City, Ia.; Hanson & Tyler; one-story garage, 67x99.

Burlington, Kan.; Woodford & Gifford; one-story garage, 50x120; $8000.

Clay Center, Kan.; Schrader Auto Co.; one-story garage, 50x140.

Cottonwood Falls, Kan.; Frank Hael; one-story garage, 44x110.

Halstead, Kan.; C. Roper, Jr.; one-story garage, 50x60.

Hesston, Kan.; J. S. Baer & Son; one-story garage, 50x110.

Hiawatha, Kan.; Fred Gampper; one-story garage, 50x100.

Hutchinson, Kan.; George W. Lee; one-story garage, 50x150.

Jules Centre, Kan.; Nolan Allery; one-story garage, 70x200; $20,000.

Larned, Kan.; Motor Sales Co.; one-story garage; $15,000.

Lawrence, Kan.; J. J. Simonds; one-story garage, 20x30; $2000.

Manhattan, Kan.; W. S. Tobey; one-story garage, 30x50.

Peabody, Kan.; J. W. Musbaum; one-story garage, 100x150.

Topeka, Kan.; Whitaker Brothers; one-story garage, 75x100.

Topeka, Kan.; J. V. Deever; one-story garage; $15,000.

Wichita, Kan.; R. J. McKee, 1123 E. Douglas street; two-story garage, 50x140; $12,000.

Wichita, Kan.; Arnold Auto Co.; 215 Lawrence street; three-story garage and salesroom, 50x140; $75,000.

Wichita, Kan.; J. A. Butts; one-story garage, 125x140; $50,000.

Wichita, Kan.; Baker & Shriber; one-story garage; $40,000.

Falmouth, Ky.; J. J. Austin; one-story garage, 50x100.

Lewisport, Ky.; J. B. Taylor; one-story garage, 20x104.

Lexington, Ky.; Mammoth Garage Co., 420 W. Main street; one-story fireproof garage; $100,000; $50,000.

Richmond, Ky.; Richmond Motors Co.; one-story garage, 57x100.

Alexandria, La.; Mutual Loan and Investment Co.; two-story brick garage; lessee, Crawford, Jenkins & Booth, Shreveport, La.

New Orleans, La.; H. M. Field; one-story brick and stone garage, 60x170.

Baltimore, Md.; Julia R. Emory; five one-story garages, 11x21 each; $2000.

Baltimore, Md.; G. Richard Good, 512 N. Eutaw street; one-story garage, 50x75; $7500.

Baltimore, Md.; E. Crouch, 3002 York road; one-story garage, 81x200; $25,000.

Baltimore, Md.; Forest Park Garage; one-story brick garage on Liberty Heights avenue, west of Garrison avenue, 50x58.

Frederick, Md.; Kepner & Smith; one-story garage; $5000.

Princess Anne, Md.; William Fitzgerald; one-story garage, 65x75; $8000.

Boston, Mass.; Portland Cement Garage Co.; one-story garage; $200,000.

Boston, Mass.; C. F. Brown; one-story garage, 18x52; $2000.

Fitchburg, Mass.; Couture Brothers; one-story public garage, 50x100.

Lowell, Mass.; C. H. Clapp; one-story garage, 50x126; $9000.

New Bedford, Mass.; Abraham Kroudvird; one-story public garage; $6000.

North Adams, Mass.; Robert Groves; one-story garage, 50x150.

Worcester, Mass.; Bernard Press, Granite street; one-story public garage and show room, 50x80; $20,000.

Worcester, Mass.; A. A. Wheeler; one-story garage, 160x210; $50,000.

Worcester, Mass.; Maurice Barsky; one-story garage; $50,000.

Worcester, Mass.; T. Hanson; one-story garage, 74x111; $30,000.

Detroit, Mich.; Cudahy Brothers, 508 E. Forest avenue; one-story garage, 50x80.

Detroit, Mich.; David Sloan, 180 E. Perry avenue; one-story garage, 45x75; $5000.

Detroit, Mich.; Erdman Guider Co., 2290 Woodward avenue, 54x91; $5000.

Detroit, Mich.; Otto H. Kavieff, 712 Empire building; one-story garage, 37x72; $6500.

Duluth, Minn.; F. O'Rourke; one-story garage, 50x100; $25,000.

Grand Rapids, Minn.; Hughes & Gildemeister; one-story garage, 50x140.

Lamberton, Minn.; J. H. Roth & Son; one-story garage, 50x100; $10,000.

Lonsdale, Minn.; C. Barta & Brothers; one-story garage, 40x60.

Minneapolis, Minn.; G. F. Rabehl Building Co., 2952 Nicollet avenue; one-story public garage, 120x140.

Nankato, Minn.; J. H. Roth & Son; one-story garage, 50x100.

Pipestone, Minn.; Charles Destiche; one-story garage, 50x74.

Willmar, Minn.; C. E. Wallin, 916 Litchfield avenue; one-story private garage, 18x30; $2000.

Carthage, Mo.; W. C. Bryant; one-story garage; $7000.

Caruthersville, Mo.; T. F. Ford; one-story garage 36x104.

Caruthersville, Mo.; William W. Long; one-story garage, 140x150.

Kansas City, Mo.; Frank Grantello, 551 Cherry street; one-story garage, 22x30 at 3117 S. 10th street; $1500.

Kansas City, Mo.; L. Goodman, care A. H. Buckley, 821 Gloyd building; one-story garage, 33x111.

St. Louis, Mo.; George Swimeyer, 7100 Washington street; one-story garage, 23x25; $2500.

Sedalia, Mo.; R. F. Boehm; one-story garage, 95x120.

Sikeston, Mo.; Yount & Galeener; one-story brick garage, 80x150; steel trusses and wood roof; concrete floor; $17,020.

Billings, Mont.; E. S. Holmes; one-story garage, 50x70; $8000.

Great Falls, Mont.; Charles Calkins; one-story garage, 24x50.

Harlowtown, Mont.; S. Hanson; one-story garage, 25x45.

Bridgeton, N. J.; McBride & Broomall; one-story garge, 66x150; $7000.

Bridgeton, N. J.; G. Givinni; one-story garage, 70x100; $5500.

East Orange, N. J.; Max Naiman, 344 Main street; one-story garage, 36x48; $3500.

Elizabeth, S. J.; Emmett C. Rowan, 733 Newark avenue; one-story private garage, 36x40; $3000.

Jersey City, N. J.; T. C. Kinkead, 565 Pavonia avenue; one-story public garage, 52x86; $14,000.

Newark, N. J.; Philip Mackinson, 225 S. Seventh street; one-story public garage, 49x100; $10,000.

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Newark, N. J.; Max Krueger, 790 Broad street; three-story public garage, 40x300x140; $150,000.

Newark, N. J.; Morris Pankin and Hyman Cohen, 98 Quixman street; one-story public garage; $11,500.

Newark, N. J.; Israel Cohen, 36 Mercer street; one-story public garage; $15,000.

Paterson, N. J.; Joseph De Rose, 119 Ellison street; one-story public garage, 60x85 at 417-21 Summer street; $7000.

Paterson, N. J.; Jacob Levine; two-story public garage, 50x100; $20,000.

Ridgewood, N. J.; Paddon, 120 Broadway, New York; one-story garage, 18x20; $1000.

Trenton, N. J.; E. C. Murray, Jr., care Empire Rubber Co., Clinton and Mulberry streets; one-story garage, 30x35; $3500.

Batavia, N. Y.; Paul M. Greene Co., Inc., 2 Main street; one-story public garage, 52x100; $8000.

Brooklyn, N. Y.; Jacob Levine, 1339 Sterling place; nine one-story garages, 10x18 each; $7000.

Brooklyn, N. Y.; Realty Supply Co., 215 Montague street; one-story garage, 100x150; $3500.

Brooklyn, N. Y.; I. Meyerson, 97 Pulaski street; six one-story garages, 10x18 each; $5000.

Brooklyn, N. Y.; Rhoda Realty Co.; one-story garage, 50x100; $35,000.

Brooklyn, N. Y.; Roselle Realty Co., 189 Montague street; one-story garage, 89x150; $35,000.

Brooklyn, N. Y.; Louis Oxfield Sons, 351 Stone avenue; one-story garage, 74x100; $20,0000.

Brooklyn, N. Y.; M. K. Strober, 56 Boerum street; one-story garafle, 100x157; $40,000.

Brooklyn, N. Y.; Lehman Sons Co., 56 Forest street; one-story garage, 57x75; $26,000.

Brooklyn, N. Y.; Theodore Heigle, Inc., 34 Kosciusko street; one-story garage; $20,000.

Brooklyn, N. Y.; Floria Realty Co., 16 Court street; one-story garage, 100x100; $25,000.

Brooklyn, N. Y.; David Werchen, 22 Belvidere street; two-story garage; $12,000.

Brooklyn, N. Y.; Drive Stone Improvement Co., 620 Saratoga avenue; one-story garage, 100x100; $25,000.

Brooklyn, N. Y.; Louis W. Boynton, 1183 Fulton street; one-story garage, 85x100; $30,000.

Brooklyn, N. Y; T. F. V. Laspia, 525 Grard street; one-story garage, 50x100 and 35x100; $20,000.

Brooklyn, N. Y.; Estate Helen A. Courtney, 391 Fulton street; one-story garage, 75x136; $18,000.

Brooklyn, N. Y.; M. Terpna, 6005 14th avenue; one-story garge, 13x19; $5000.

Brooklyn, N. Y.; Carmine Monteforte, 260 N. Seventh street; one-story garage, 50x100; $18,000.

Brooklyn, N. Y.; Estate Richard Remsen, 1024 Ocean avenue; one-story garage, 50x58; $3500.

Brooklyn, N. Y.; Walter Kraslon, 188 Montague street; one-story garage, 10x18; $2500.

Brooklyn, N. Y.; M. E. Finneyan; one-story garage, 50x100; $35,000.

Brooklyn, N. Y.; Morris Goetz, 241 E. 26th street; two-story garage, 60x119; $41,000.

Brooklyn, N. Y.; Mary Peranti, 59 Fulton street; one-story garage, 45x52; $5000.

Brooklyn, N. Y.; George Von Buhren, 34 N. Oxford street; one-story public garage, 24x100; $5000.

Brooklyn, N. Y.; Liebmann Sons Brewing Co., 50 Forest street; one-story garage, 57x70; $25,000.

Brooklyn, N. Y.; Rell Realty Corporation, 39 W. 113th street, New York; one-story garage, 120x140; $15,000.

Brooklyn, N. Y.; L. Lapidus; one-story garage, 100x100; $22,000.

Buffalo, N. Y.; Miss Nellie Norton, 46 Hodge street; one-story public garage, 51x93; $6000.

Elmira, N. Y.; C. L. Andrews, City Clerk, City Hall; one-story garage, 34x75; $7000.

Elmira, N. Y.; Arms Co.; one-story private garage, 31x50; $4000.

Jamaica, L. I., N. Y.; Benjamin Felder; four one-story garages, 10x18 each; $2000.

Long Island City, L. I., N. Y.; Ferdinand Kempf, 826 Manhattan avenue, Brooklyn, N. Y.; one-story garage, 85x100; $5000.

New York, N. Y.; Philip Hause; one-story garage, 45x75.

New York, N. Y.; Samuel Rosenblaum; one-story garage, 200x225.

New York, N. Y.; West Eightieth Street Garage; one-story garage; $30,000.

New York, N. Y.; Greenwood Cemetery; one-story garage; $40,000.

New York, N. Y.; Practical Garage Co.; one-story garage, 50x99; $10,000.

New York, N. Y.; Marcus Joodman, 370 E. 149th street; one-story garage, 25x109; $7000.

New York, N. Y.; Estate John M. Jones, 15 Exchange place; two-story public garage, 100x203; $200,000.

New York, N. Y.; James H. McManus, 504 W. 56th street; one-story garage, 50x100; $9000.

New York, N. Y.; Mary Handley, Smithtown, L. I., N. Y.; one-story garage; $28,000; lessee, Sarah J. Brooks, 349 W. 56th street.

New York, N. Y.; George Backer, 15 W. 55th street; two-story garage, 75x100; $20,000.

New York, N. Y.; Emma J. C. Zehe, 111 Kimball street, Brooklyn, N. Y.; one-story garage, 70x100.

New York, N. Y.; Theodore Klein, 675 W. 131st street; one-story garage, 50x100; $5000.

New York, N. Y.; Anton Long & Co.; one-story garage, 125x197; $100,000.

New York, N. Y.; G. W. Brown and K. W. Beller; one-story garage, 100x117.

New York, N. Y.; Buick Auto Repair Co.; one-story garage, 100x200; $400,000.

New York, N. Y.; Abraham Ruth; one-story garage, 125x175; $40,000.

Rochester, N. Y.; J. W. McGill; 284 Alexander avenue; one-story brick garage, 22x22; $1000.

Schenectady, N. Y.; Joseph Spetla, 200 Guilderland avenue; one-story public garage, 36x70; $3000.

Syracuse, N. Y.; Francis Wolff, 1101 Court street; two-story commercial garage, 55x100x25; $15,000.

Troy, N. Y.; William Fitzpatrick; one-story private garage, 22x36; $2000.

Yonkers, N. Y.; Joseph Montalto, 169 Tibbets road; one-story garage, 50x100; $20,000.

Burlington, N. C.; W. W. Brown; one-story garage, 75x90.

Charlotte, N. C.; N. J. Sherrill; one-story garage, 45x175.

Greensboro, N. C.; M. A. Pinnix; one-story garage; $18,000.

Leaksville, N. C.; Boulevard Motor Co.; one-story garage, 50x125; install garage equipment; $10,000.

Maryville, N. D.; Lindaas Auto Co.; one-story garage, 50x130.

Alliance, O.; Reeves, care Reeves Brothers, 845 S. Union avenue; two-story garage, 25x30; $5000.

Akron, O.; P. F. Romig, 884 S. High street; one-story garage, 57x90; $8000.

Canton, O.; Canton Association Realty Co., 104 Third street; two-story garage, 50x50; $14,000.

Canton, O.; Schlemmer & Craber, 12th and Cherry streets; two-story garage, 96x135; $50,000.

Cincinnati, O.; Louis J. Dolle, Mercantile building; one-story garage, 25x30.

Cincinnati, O.; Sig Meyers; one-story garage, 21x24; $2000.

Cleveland, O.; George A. Rutherford Co., 1922 E. 18th street; one-story garage, 20x80; $5000.

Cleveland, O.; Edward A. Curtis, 416 Guardian building; one-story public garage, 50x142; $10,000.

Cleveland, O.; J. H. Donahey; one-story garage, 54x200.

Cleveland, O.; William C. Bracken; one-story brick garage, 68x75; $5000.

Columbus, O.; Cheek Brothers, 55 15th avenue; one-story sales garage; $2600.

Crooksville, O.; Overland Garage; one-story garage, 16x65.

Dayton, O.; G. H. Shatzer Co., 832 S. Ludlow street; one-story public garage, 45x80.

Lima, O.; Elmer Dorsey; one-story garage, 100x160; $65,000.

Greenville, O.; Knuff Auto Co.; one-story garage and show room, 120x135; $20,000.

Xenia, O.; Green & Co.; one-story garage, 60x112; $10,000.

Xenia, O.; P. H. Flynn; one-story garage, 60x112; $10,000.

Bartlesville, Okla.; Wasage Motor Co.; one-story garage, 88x100.

Cherokee, Okla.; Northwest Ford Co.; one-story garage, 75x140.

Duncan, Okla.; J. C. Taylor; one-story garage, 80x125.

Frederick, Okla.; J. J. Holloman; one-story garage; $12,000.

McAlester, Okla.; J. D. Jones; one-story garage, 126x133.

Oklahoma City, Okla.; R. A. Brayton, 2112½ W. Hickory street; one-story garage, 50x140; $6000.

Pawhuska, Okla.; P. E. Voyles; one-story garage, 50x140; $12,000.

Tulsa, Okla.; John S. Davenport, 1230 S. Boston street; one-story garage, 18x40; $2000.

Tulsa, Okla.; A. B. Good, 315 W. Second street; one-story garage, 40x40; $3000.

Tulsa, Okla.; W. A. Reynolds, 2 Kirkpatrick building; two-story garage, 22x26; $3000.

Pendleton, Ore.; W. H. Evans; one-story garage, 40x50.

Portland, Ore.; J. L. Karmopp; one-story garage, 25x90; $3300.

Portland, Ore.; A. Fetsch; one-story garage, 50x100; $14,000.

Portland, Ore.; Beno & Ballis; one-story garage, 60x100; $7000.

Salem, Ore.; C. A. Campbell; one-story garage; $10,000.

Chester, Pa.; Walter G. Chew, 24th and Upland street; one-story private garage, 20x59; $2200.

Darby, Pa.; W. H. Snell, Chester road and Quarry street; two-story public garage, 50x150; $15,000.

Edgeport, Pa.; R. M. Trimble, 705 Ferguson building, Pittsburgh, Pa.; one-story private garage, 18x20; $7000.

Harrisburg, Pa.; Lawrence Tetrow, New Cumberland, Pa.; four-story public garage; $20,000.

Jenkintown, Pa.; Christ Frios, 8129 Pinewood, Fox Chase, Philadelphia; 1½-story private garage, 30x22; $5000.

Ogonts, Pa.; Commissioners of Cheltenham township; one and two-story garage and storage station, 18x30 and 30x80; $15,000.

Pittsburgh, Pa.; David G. Morgan, 3935 Hoosac street; three one-story private garages, 22x32 each.

Pittsburgh, Pa.; H. O. Eirhleay, care John Eichleay Co., S. 20th and Wharton streets; one-story commercial garage; $8800.

Pittsburgh, Pa.; Donaldson Transfer and Storage Co., 840 W. North avenue; one-story commercial truck garage, 100x270; $60,000.

Philadelphia, Pa.; J. E. Fieldstein, Penfield building; one-story private garage, 22x26; $3000.

Philadelphia, Pa.; J. P. Maher, 2733 W. Lehigh avenue; one-story garage, 23x123; $3000.

Philadelphia, Pa.; H. S. Swope, 5028 Frankford avenue; one-story garage, 30x67 and 20x100; $6000.

Philadelphia, Pa.; J. J. Kelly Construction Co., York road and Broad street; one-story garage; $8000.

Pottsville, Pa.; E. A. Griffith, South Center and Maunch Chunk streets; two-story public garage, 52x100; $20,000.

Reading, Pa.; Fritz Ehrasm, 922 Penn street; one and two-story public garage, 53x120; $8000.

Reading, Pa.; Schlegel & Seaman; one-story garage, 30x65.

Shamokin, Pa.; Martz & McCollum, 208 N. Rock street; one-story public garage, 85x98; $15,000.

Sharon, Pa.; Sharon Auto Co.; one-story garage, 80x125; $20,000.

Providence, R. I.; F. A. Decker & Co.; one-story public garage; $9000.

Charleston, S. C.; R. L. Riggs; three-story reinforced concrete garage, salesroom, repair shop and storage station, 159x170; $100,000.

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Columbia, S. C.; Burns Motor Co.; one-story garage and salesroom; $30,000.

Greenville, S. C.; W. C. Cleveland; two-story brick and tile storage garage, 75x82.

Rock Hill, S. C.; City Motor Car Co.; one-story garage, 15x103; $10,000.

Spartanaburg, S. C.; John G. Harris; one-story garage, 55x144.

Arlington, S. D.; Arlington Motor Co.; two-story public garage, 50x100.

Sioux Falls, S. D.; R. A. and H. Brooks and T. W. Dwight; one-story garage, 100x110.

Sioux Falls, S. D.; R. J. Huston; one-story garage, 100x158.

Wessington Springs, S. D.; G. Lammers; one-story garage, 50x140.

Lewisburg, Tenn.; B. M. Woods; one-story garage, 100x200.

Memphis, Tenn.; Shelby Co.; one-story garage, 80x120.

Nashville, Tenn.; D. E. Bradford; one-story garage, 100x175.

Belton, Tex.; Belton Garage; one-story garage; $10,000.

Fort Worth, Tex.; Q. O. Guither; one-story garage; $5000.

Paris, Tex.; Mammoth Garage; one-story fireproof garage site, 80x150; $10,000.

San Angelo, Tex.; Allen-Overland Co.; one-story garage; $25,000.

Abingdon, Va.; T. M. McConnell; one-story garage, 54x150; $15,000.

Alexander, Va.; Bell Haven Garage, care J. K. M. Norton, 128 S. Fairfox street; one-story public garage, 40x63; $75,000.

Bristol, Va.; Ralph Young; one-story garage, 75x100.

Front Royal, Va.; C. H. Updyke; one-story garage, 50x100; $10,000.

Norfolk, Va.; A. H. Ware, 231 Duke street; one-story garage; $2000.

Norfolk, Va.; William Sawyer, 1144 Tunstall avenue; one-story garage; $2000.

Norfolk, Va.; H. Garrett Smith, Citizens Bank building; two-story garage, 40x160; $40,000.

Norfolk, Va.; Olney Place; one-story garage, 55x100; $40,000.

Norfolk, Va.; Nathan Bundy; one-story garage, 30x112; $22,000.

Portsmouth, Va.; Winston Parrish; one-story garage; $10,000.

Cashmere, Wash.; Service Garage; one-story garage, 55x110.

Everett, Wash.; Paldock-Fowler Co.; one-story garage; $20,000.

Issaquah, Wash.; W. Tibbetts; one-story garage, 60x63; $10,000.

Oroville, Wash.; Bowen Auto Co.; one-story garage, 50x130.

Ridgefield, Wash.; A. N. Allen; one-story garage, 50x100.

Seattle, Wash.; Youngberg & Brown; one-story garage, 42x64.

Charleston, W. Va.; City Taxi Cab Co.; one-story garage, 29x100.

Huntington, W. Va.; J. B. Stetson; one-story garage, 60x150; $25,000.

Wheeling, W. Va.; Charles H. Keesor; one-story garage, 25x66; $12,000.

Kenosha, Wis.; White, White & Co.; public service building; two-story garage, 20x40; $5000.

Milwaukee, Wis.; Gust Wollaeger, 3130 Highland boulevard; one-story garage, 40x40; $4500.

Milwaukee, Wis.; H. P. Brunder, care "Herald" Brunder building; one-story garage, 25x27; $3000.

Milwaukee, Wis.; H. C. Hauser, Colby-Abbott building; one-story garage, 40x70; $5000.

Milwaukee, Wis.; H. V. Miller, 646 24th street; one-story garage, 100x100.

Milwaukee, Wis.; G. J. Francke; one-story garage and shop, 30x75; $5000.

Stoughton, Wis.; Thomas Oscar; one-story garage, 42x130; $10,000.

CONTRACTS AWARDED.

Denver, Col.; I. J. Lehrer; one-story garage, 50x125; $8000.

Hartford, Conn.; G. Cudemo, 348 Trumbull street; one-story garage, 30x75, for New Haven Dairy Co., 25 Walnut street; $7500.

Hartford, Conn.; W. A. Wilco, 327 Trumbull street, one-story private garage 25x35; for Col. R. L. Goodman; $6000.

Atlanta, Ga.; W. H. George, Atlanta Builders' Exchange; one-story brick garage, 100x200; for John W. Grant, 709 Grant building; $80,000; lessee, Brigman Motor Co., 491 Whitehall street.

Bloomington, Ill.; Bloomington Construction Co.; Corn Belt building; one-story public garage, 52x90; for W. T. Shorthase; $10,000.

Bluff Lake, Ill.; Gust Lindell, 2753 Fullerton avenue; two-story private garage, 24x32; for Curt Teich, 1745 Irving Park boulevard; $8000.

Cicero, Ill.; Urban & Klima, 1934 S. 56th street; one-story garage, 24x74; for Frank Zunt, 250 S. 60th avenue; $6000.

Chicago, Ill.; H. A. Munsterman, 5715 Superior street; one-story garage, 24x38; $2000.

Chicago, Ill.; Arthur Jacobs, 129 N. La Salle street; one-story garage, 48x71; $10,000.

Indianapolis, Ind.; L. M. Millikan, Inc.; one-story garage, 110x195; for Progress Realty Co.; $32,000.

Iowa City, Ia.; Theodore Stark & Co., 118 S. 11th street, Cedar Rapids, Ia.; 1½-story garage, 80x140; for J. A. O'Leary; $30,000.

Oelwein, Ia.; Theodore Stark & Co., 118 S. 11th street, Cedar Rapids, Ia.; two-story garage, 75x140; for Oilwein Auto Co.; $60,000.

Storm Lake, Ia.; Thomas Parks; one-story public garage, 50x86; for White Front Garage; $10,000.

Tiffin, Ia.; C. Wolfe; one-story garage, 40x50; $8000.

Baltimore, Md.; G. Walter Towell, 403 McCulloh street; one-story garage, 48x81; for Western Maryland Dairy Co., 117 Linden avenue; $6000.

Everett, Mass.; J. Nicholson & Son, 101 Tremont street, Boston; one-story garage, 21x41; for Everett Trust Co.; $3500.

Ann Arbor, Mich.; Artificial Ice Co., 301 W. Haron avenue, Detroit, Mich.; one-story garage, 50x100; $10,000.

Niles, Mich.; M. D. Baker & Son; one-story private garage, 20x23; for Walter Parking; $2000.

Kansas City, Mo.; Long Construction Co., 600 Rialto building; 1½-story garage, 25x26; for Robert Keith, 11th and Frand avenue; $5000.

St. Louis, Mo.; H. W. Herweck, Title Guarantee building; two-story garage, 75x154; for Ollie E. Haupt Motor Co., 4129 Olive street; $30,000.

Hastings, Neb.; W. H. Gedney; one-story garge, 44x125; for A. H. Jones Auto Co.; $25,000.

Omaha, Neb.; Peter Kiewitts Sons, 754 Omaha National Bank building; one-story garge, 24x30; for W. D. Hosford, 525 South 37th street; $3000.

Gottstown, N. H.; G. A. Golden, 64 Concord street; one-story public garage, 42x60; for Charles G. Barnard; $9000.

Atlantic City, N. J.; Thompson Brothers, 14 S. Ohio avenue; two-story garage and salesroom, 90x100; for C. E. Henkleman, 2213 Pacific avenue; $25,000.

Atlantic City, N. J.; Charles D. Thompson, Pleasantville, N. J.; two-story garage, 75x80; for Walter Busby, Dennis hotel; $20,000.

Blasdell, N. Y.; William Zuppinger; one-story public garage, 50x100; $5000.

Akron, O.; C. E. Ackerman; one-story public garage; $30,000.

Cincinnati, O.; Maisel Construction Co., 411 Ada street; one-story garage and shop for Ross Hardy, 2348 Chickesaw avenue; $2200.

Cincinnati, O.; Alexander Frank, 3244 Woodlawn avenue; one-story private garage, 20x30; $2000.

Cleveland Heights, O.; B. C. Hinig, 614 Garfield building; one-story private garage, 25x50; $2500.

Cleveland, O.; Swaffield Brothers, 3294 Hyde Park avenue, Cleveland Heights, O.; one-story garage for Mrs. A. M. A. Lucas, 1143 East 100th street; $6000.

Cherokee, Okla.; George L. Hockman; one-story garage, 40x100; for Harvey Brothers; $4600.

Muskogee, Okla.; H. P. Culp; one-story stone and cement automobile salesroom, 100x130; for Mrs. A. Z. Inslish and Mrs. Cook; $12,000.

Glen Riddle, Pa.; R. C. Ballingor & Co., 218 N. 13th street, Philadelphia; one-story garage, 21x48, for Walter M. Jeffards, Newton square, Pa.; $10,000.

Hanover, Pa.; W. J. Klunk, 486 Carlisle street; one-story private garage, 26x41; for Mrs. Emma Kendid, 131 Broadway; $4000.

Harrisburg, Pa.; Harold Whipple, 14 South Second street; one-story public garage, 50x100; for Edward and Fred Mosslein, Sixth and Broad streets; $7000.

Northumberland, Pa.; J. I. Mertz; two-story public garage, 37x66; $8000.

Philadelphia, Pa.; H. E. Sweger, 4435 Uber street; one-story garage, 26x40; for John Donahue, 4920 N. Fifth street; $2400.

Philadelphia, Pa.; Pringle Borthwick; one-story stone garage, 22.6x23, at 8646 Germantown avenue; for H. A. Laughlin; $3500.

Philadelphia, Pa.; Walter Smith; one-story brick garage, 21.6x114x30, at 35 N. 18th street; $2900.

Philadelphia, Pa.; Frederick Elvidge & Son, 1½-story stone garage, 22x25, at 821 Westview avenue; for A. M. Harrington; $2000.

Philadelphia, Pa.; William T. Clark; one-story brick garage, 24x54, at 1622 N. Broad street; $2000.

Philadelphia, Pa.; Robert Beatty & Brother; one-story garage, 16x22, at 1033 E. Tioga street; for Eugene R. Schuler; $800.

Philadelphia, Pa.; H. H. Wehmeyer, one-story brick garage, 15.6x40, at 729 Raymond street; for C. Webber; $750.

Philadelphia, Pa.; W. Fisher's Sons; one-story brick garage, 11x16, at 4960 North Ninth stret; $500.

Philadelphia, Pa.; W. H. Foulk; one-story brick garage, 9x13, at 20 West Willow Grove avenue; for Ernest Johnson; $880.

Philadelphia, Pa.; Nicholas Morrow; one-story garage, 9x15, at 6425 Vine street; for Luisa Zarilli; $500.

Philadelphia, Pa.; F. Deitrich, Jr.; one-story brick garage, west side Emerald street, north Atlantic street; for C. Frietag; $7000.

Philadelphia, Pa.; J. D. Fisher; one-story garage, 18x20, at 638 Woodbine avenue; for Frank Smith; $1250.

Philadelphia, Pa.; Calvin W. Rogers; one-story brick garage, 10.6x16.6, at 5825 Chestnut street; for Harry Lose; $500.

Philadelphia, Pa.; John Jamison; one-story brick garage, 16x17; north side Albert street, east Thompson; for John Rzepnichi; $600.

Philadelphia, Pa.; Pringle Borthwick, 8018 Germantown avenue; one-story private garage, 20x25; for Henry A. Laughlin; $2500.

Philadelphia, Pa.; F. Dietritch, Jr.; 1828 E. Schieler street; one-story garage, 50x100; for C. Froebag, 3615 Emerald street; $7000.

Philadelphia, Pa.; C. E. Lloyd; one-story brick garage, 10x21, at 6407 North Sixth street; for F. R. Whitney; $750.

Philadelphia, Pa.; C. E. Lloyd, Jr.; one-story brick garage, 16x20, at 6506 N. Eighth street; for M. C. Lloyd.

Philadelphia, Pa.; A. Rubiu; one-story brick garage, 16x34; east side Cadwallader street; south Thompson street; for A. Litman; $1250.

Philadelphia, Pa.; Charles C. Race; one-story brick garage, 12x20, at 6426 Sherwood road; for E. T. Parsley; $1200.

Philadelphia, Pa.; Concrete Construction Co.; one-story stone garage, 21x32, at 514 West Sedgwick street; for F. R. Taylor; $5000.

Philadelphia, Pa.; E. N. Simons, 150 W. Washington lane; one-story garage, 20x22; $2100.

Philadelphia, Pa.; J. J. Harding, 723 N. 26th street; one-story garage, 25x50; for Schuylkill Forge Co., Third and Sergeant streets; $2500.

Philadelphia, Pa.; Rush Brothers, 1100 Filbert street; one-story garage, 80x117; for Ellwood Snowden, 4830 Hawthorne street; $25,000.

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Pottsville, Pa.; Dr. J. B. Rogers, 310 W. Mahantoga street; one-story private garage, 24x30; for $3000.

Pottsville, Pa.; Gordon Nagle, Morris building; one-story garage, 20x21; for John Raring, 22 S. Center street; $2000.

Swarthmore, Pa.; F. W. Evans; two-story private garage, 20x36; for Dr. William E. Distler, 144 Park avenue; $2000.

Providence, R. I.; Interstate Construction Co., 29 Weybosset street; one-story public garage; for Michael M. Norton; $18,000.

Providence, R. I.; C. I. Bigney Construction Co., 898 Westminster street; one-story public garage; for J. C. Doran & Sons; $16,000.

NEW CONCERNS RECENTLY INCORPORATED

Monthly Record of New Business Houses for which Charters Have Been Issued in the Various States and Classified According To Nature of Business.

NEWLY ORGANIZED MANUFACTURERS OF CARS, TRUCKS AND TRACTORS.

Dover, Del.; Deill Tractor Manufacturing Co.; $1,000,000; Glen A. Deill, S. A. Bettie, Thomas Flourney, James Mahan, H. A. Litimer.

Dover, Del.; The Frost Norton Motor Car Co.; $75,000; H. I. Frost, F. L. Norton, O. L. Norton.

Brooklyn, N. Y.; Puritan Manufacturing Corporation; $100,000; H. Marisco, J. Galiguri, A. Trubiano.

Buffalo, N. Y.; The M. & M. Tractor; $300,000; J. L. Kenefick, C. M. Baldy, T. R. Wheeler.

Chittenago, N. Y.; Newton Motor Car Co.; $40,000; W. J. Newton, M. I. Newton, F. H. Newton.

New York, N. Y.; Interport Auto Trucking Corporation; $25,000; P. B. Kaplan, S. A. Goldberg, J. A. Bolvy.

Youngstown, N. Y.; Haskell Brothers Co.; $20,000; to manufacture autos, agricultural machinery, farm tractors, electrical equipment; Bradley D. Haskell, Nelson D. Haskell, Charles R. Haskell.

Harrisburg, Pa.; Keystone Tractor and Implement Co.; $50,000; Frank P. Ray.

PARTS AND FITTINGS MAKERS.

Wilmington, Del.; Lancaster Body Co.; $500,000; to deal in automobiles and parts; T. L. Croteau, P. B. Drew, M. M. Clancy.

Indianapolis, Ind.; Gueutal Spring Service Co.; $25,000; to manufacture automobile springs; Amile H. Gueutal, Charles Beaska, Ethel Bowen.

Richmond, Ind.; A. I. M. Manufacturing Co.; $200,000; to manufacture and sell spark plugs; John M. Lontz, George Seidel, Benjamin T. Hill.

Elizabeth, N. J.; Pfinstag Radiator Works; George Werner, Joseph Strauss, Barney Nowich.

Brooklyn, N. Y.; Puritan Manufacturing Corporation; $100,000; to manufacture automobile horns and warning signals; Gemma Marisco, John Caligiuri and Anthony Trubiano.

Dayton, O.; Burkett Closed Body Co.; $15,000; Lee T. Burkett, William Fetters, Charles M. Feldmaier.

GARAGES AND REPAIR SHOPS.

Hartford, Conn.; Federal Auto Repair Co.; $5000; to conduct a general automobile and repair agency; Peter Stumpf, John Nicolini, Abraham E. Durchill.

New Haven, Conn.; Triangle Garage; $50,000; Chester A. White, James A. McKay, Chester B. Smith.

Dover, Del.; The Garage Engineering and Equipment Co.; $150,000; E. R. Inman, W. D. Thompson, U. A. Brahms.

Chicago, Ill.; Pasco Garage; $5000; Fred W. Perry, Lee T. Allen, Henry Springer, Jr.

Phoenix, Ky.; Phoenix Garage; $200,000; Fred Bryant, Victor K. Dodge, N. W. Dodge.

Boston, Mass.; Twin Elm Garage, Inc.; $5000; L. G. Coney, W. G. Clark.

Long Branch, N. J.; Andy's Garage, Inc.; $50,000; to conduct a garage business; Alexander Lustbaum, Guy Edwards, Wm. C. Rogers.

Jersey City, N. J.; Hudson County Oakland Motor Co.; $125,000; to conduct a general garage business.

Toms River, N. J.; Berkeley Boulevard Garage; $25,000; to deal in automobiles and tractors; C. M. Thompson, R. M. Pels, J. R. Pels.

Brooklyn, N. Y.; Brooklyn Garage Co.; $10,000; R. Bloom, S. Bloom, P. Bloom.

Brooklyn, N. Y.; Brunner's Garage, Inc.; $5000; to conduct an automobile business; L. J. Murray, Julius Schwartz.

Brooklyn, N. Y.; Federal Garage, Inc.; $10,000; D. Hershman, M. Reichelsohn, J. Olesker.

Brooklyn, N. Y.; L. G. Garage Corporation; $5000; to conduct a garage business; Louis Grossman, Anna Grossman, Katie Trum.

Brooklyn, N. Y.; The Marvel Motor Truck Corporation; $100,000; to manufacture motors and to do automobile garage business; A. W. Beal, Alexander S. Rampell, Peter Rampell.

New York, N. Y.; Cherry Scammel Garage Co.; $10,000; K. Ziff, M. Katz, C. B. Sprung.

New York, N. Y.; E. & T. Garage Co.; $50,000; to conduct an automobile business; Robert Friedman, M. H. Hoffman, Frances Hartstein.

New York, N. Y.; Multiplex Garages; $100,000; metal garages; J. R. Ashley, J. B. Ashley, H. S. Mansfield.

New York, N. Y.; R. & H. Auto Garage Co.; $10,000; H. Karp, J. Berenson, S. Berenson.

North Pelham, N. Y.; Rooney Brothers; $30,000; to conduct a trucking and delivery garage business and repair shop; W. J. Buedingen, L. P. Delumen, E. V. Rupert.

Peekskill, N. Y.; Peekskill Garage and Supply Co.; $5000; F. A. Lent, F. W. Otto, E. M. Drum.

Queens, New York, N. Y.; Long Island Automotive Service Co., Inc.; $10,000; to conduct a general auto service station and garage; William H. Bennett, Fred M. Brandmeier, A. T. Brandmeier.

Schenectady, N. Y.; McCormack's Garage, Inc.; $7000; J. G. McCormack, B. McCormack, L. McCormack.

Asheville, N. C.; Cathey Trull Garage Co.; $5000; H. H. Cathey, Tom Trull, W. B. Cathey.

Cleveland, O.; Common Auto Repair Co.; $5000; H. M. Farnsworth, H. G. Pase, S. G. Taylor.

Muncy, Pa.; Vermilya Garage, Inc.; $50,000; E. Vermilya.

Irene, S. D.; The Irene Auto Repair Co.; $50,000; Sivert Liabo, Oscar Simonson, Ingvald Vognild.

Kelso, Wash.; Peters Garage and Machine Works; $25,000; C. A. Peters, R. L. Pinsch, F. S. Janes.

ACCESSORIES, EQUIPMENT AND SUPPLIES.

Little Rock, Ark.; The Crow-Burlingame Co.; $100,000; to conduct a wholesale automobile accessory and garage equipment business; president, W. R. Crow; vice president, Ed. Rackard; secretary, J. C. Burlingame; treasurer, Whitney Harb.

Britain, Conn.; American Tire Co.; $50,000; to manufacture pneumatic puncture proof and non blow out tires; George L. Giller, Albert Myers, Louis Fodt.

Dover, Del.; The American Tire Corporation; $1,000,000; H. Lindale, R. Kornfield, F. H. Travis.

Dover, Del.; The Wright-Standard Tire and Rubber Co.; $1,000,000; T. L. Croteau, P. B. Drew, M. M. Clancy.

Wilmington, Del.; Gibney Rubber Co.; $3,000,000; H. E. Knox, M. M. Clancy.

Wilmington, Del.; Matthews Auto Tire and Supply Co.; $100,000; to manufacture tires.

Columbus, Ind.; Union Tire Co.; $1000; to deal in rubber tires and tubes; George Mediam, Guy W. Chapman, Sherlie A. Deming.

South Bend, Ind.; Indiana Cord Tire Co.; $100,000; to deal in automobile tires; Alfred A. Peter, R. W. Thomas, Hannah Peterson.

Worcester, Mass.; Kork-Tred, Inc.; $90,000; to deal in automobile accessories; Murdock M. Graham, Charles W. Farmer, John H. Parker.

Springfield, Mass.; The U. S. A. Spark Plug Corporation; $25,000; Thomas L. Hisgen, Cornelius J. Brosman, Richard J. Talbot.

Newark, N. J.; Page-Edwards Tire Co.; $15,000; J. B. Sweet, E. C. Sweet, W. H. Gaines.

Brooklyn, N. Y.; General Carburetor Sales Co., Inc.; $10,000; to make carburetors; A. P. Clerck, Mrs. Gabrielle, N. R. Delorme.

Brooklyn, N. Y.; R and K Auto Service Co., Inc.; $5000; to deal in automobile supplies; F. A. Kunzing, Arthur C. Pippin, Carl Puluger.

Brooklyn, N. Y.; Kessel & Bruggs, Inc.; $500; to manufacture motors, engines, automobile bodies and tops; Charles Kessel, Leslie C. D. Kessel, P. E. Bruggs.

Buffalo, N. Y.; Harvey Rim and Wheel Co.; $10,000,000; to manufacture wheels, rims, tires and hubs; G. E. Harvey, W. B. Allison, L. B. Harvey.

Rochester, N. Y.; Coleman Tire Co.; $5000; J. D. Coleman, M. Batezold, G. I. Batezold.

New York, N. Y.; Arrow Tire and Rubber Co.; $15,000; W. Loewenthal, S. Bernheim, J. Jacobs.

New York, N. Y.; Geo. F. Briggmann Tire and Rubber Co.; $250,000; to manufacture automobile tires and rubber goods.

New York, N. Y.; Eastern Rubber Works, Inc.; $200,000; D. D. Deutsch, L. R. and C. L. Eastman.

Rochester, N. Y.; The Gordon Tire Sales Co. of Rochester; $25,000; E. C. Peterson, M. E. Euler, F. J. Euler.

New York, N. Y.; Ideal Tire Service Co.; $30,000; to deal in tires; D. Klein, L. Plancher, H. Goldberg.

New York, N. Y.; Manhattan Rim and Tire Corporation; $100,000; E. B. Raymond, F. P. Randolph, S. Vinton.

New York, N. Y.; New York Savold Tire Co.; $250,000; R. A. Maclean, F. H. Butehorn, A. E. Moore.

New York, N. Y.; Oval Tire and Rubber Co.; $4000; to conduct a tire manufacturing business; Joel Jacobs, Sydney Bernheim.

New York, N. Y.; Perkins Spark Plug Tester Corporation; $5000; E. D. Brown, V. Brown, V. Rothenburg.

New York, N. Y.; Tidewater Gasoline Co. of New York; $5000; W. Avery. J. Banfield, F. Banfield.

New York, N. Y.; Risse European Pross Tire Co.; $5000; E. Flander, S. M. Manson, L. E. Swartz.

Louisville, O.; Archer Cord Tire Sales; $10,000; E. E. Howard, Anna Delph, Mabel Lopp.

Cleveland, O.; F. M. Cawrse Tire and Supply Co.; $10,000; F. W. Cawrse, Joseph N. Ackerman, E. M. Stevenson.

Dayton, O.; Middlewest Tire House Co.; $10,000; George Serapin, Oscar A. Koolger.

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Toledo, O.; George Crow Tire Co.; $20,000; William Spranger Ramsay, Herbert P. Whiting.

Bennettsville, S. C.; The Breeden Auto Supply Co.; $10,000; James Breedem, J. F. Liles, W. P. Breeden.

Waco, Tex.; Bolton Auto Co.; to deal in auto accessories and supplies.

DEALERS IN AUTOMOBILES, MOTOR TRUCKS AND TRACTORS.

Demopolis, Ala.; The Liberty Motor Co.; $10,000; to sell and handle automobiles.

Mobile, Ala.; Forrest Auto Co.; $25,000; H. T. Taylor, R. W. Hankinson, James A. Swayne.

Bridgeport, Conn.; Knight Motor Car Co.; $3100.

Bridgeport, Conn.; The Motor Vehicle Trading Co.; $100,000.

Hartford, Conn.; The George D. Knox Motor Co.; George D. Knox, Mae Wilson Knox, Ralph W. Smiley.

Dover, Del.; Johnson-Strahern Motor Co.; $50,000; to sell automobiles; George H. Johnson, Charles W. Strahern, Charles B. Evans.

Dover, Del.; The Walker Motor Co.; $4,000,000; L. B. Phillips, Frank Jackson.

Cordele, Ga.; Parker Auto and Transfer Co.; $25,000; to buy and sell automobile trucks; Mrs. J. Cliff Parker, J. Cliff Parker, Mrs. J. T. Parker.

Dekalb, Ill.; Fisk Motor Co.; $10,000; P. W. Fisk, E. P. Ellwodd, H. D. Fisk.

Chicago, Ill.; Cadillac Sales Co.; $30,000; Thomas J. Condon, Lowell A. Lawson.

Chicago, Ill.; Century Motor Truck Co.; $50,000; Archibald Cattell, I. Sapiro, Carl A. Waldren.

Chicago, Ill.; Hamlin Motor Sales Co.; $1000; Arthur Clamitz, Herman V. Silvertrust, Louis Ziv.

Chicago, Ill.; Inland Motor Sales Co.; $5000; Wythe Denby, H. L. Williford, W. B. Bickford.

Gary, Ind.; South Shore Auto Co.; $25,000; James K. Stinson, Moses Rothchild, Eugene L. Shaver.

Indianapolis, Ind.; Automobile Renewal Co.; $40,000 Robert B. Insley, Ervin F. Jones, L. Roy Zapf.

New Albany, Ind.; The Miller Motor Co.; $15,000; to deal in automobiles and accessories; William F. Miller, Charles Troy, John B. James.

Waterloo, Ia.; Automobile Exchange; $25,000; to deal in motor vehicles, accessories and to operate a storage garage; F. A. Holmes, R. L. Holmes, A. M. Goodwin, H. E. Tullar.

Coffeyville, Kan.; The Great Western Automobile Insurance Corporation; to indemnify owners of motor cars against fire, theft, collision or tornado; C. F. Christianson, F. L. Black.

Boston, Mass.; Automobile Commercial Association; $50,000; to deal in automobiles; Meredith W. Palmer, John S. C. Nichols, William C. Miles, Ernest L. Freeman.

Boston, Mass.; Stewart Products Service Corporation; $30,000; to deal in automobiles; H. Winthrop, Chandler B. L. Eaton.

Boston, Mass.; W. J. Walker Co.; $25,000; to deal in automobiles.

Springfield, Mass.; The Wolohan-Ranger Motor Co.; $5000; H. P. Granger, S. J. Wolohan, J. M. Burton.

Clifton, N. J.; American 'Bus Co.; $50,000; to operate a 'bus line; Ernest Bukscar, Joseph Pantis, Peter Tonon.

Jersey City, N. J.; The Dauphin Motor Co., 191 Newark avenue; $100,000; Herman Linsen, Edward C. Allen.

Newark, N. J.; Roamer Automobile Co.; $10,000; Charles Rosenthal, L. W. Wehman, Toby Furst.

Newark, N. J.; Newark Motors Corporation; $100,000; to conduct a general automobile business.

Paterson, N. J.; New Jersey 'Bus Manufacturing Corporation; $50,000; Tony Argentu, Louis Minero, Fred Rege.

Hackensack, N. J.; New Jersey Auto Co.; $15,000; T. S. C. Halberton, H. C. Leonard, R. B. Altschuler.

Albany, N. Y.; Munson & Kent, Inc.; $25,000; to deal in motors, motor vehicles and automotive craft; Lawrence P. Kent, Eugene C. Doyle.

Albany, N. Y.; Universal Auto Specialty Corporation of Brooklyn; $10,000; John A. Ferguson, Julia Ferguson, Theodore Fertig.

Brooklyn, N. Y.; Woodside & Morris, Inc.; $10,000; to act as agent for the sale of various kinds of trucks; L. R. Woodside, R. C. Morris, F. M. Larkins.

Irwin, N. Y.; Irwin Auto Machine Co.; $20,000; I. R. Reichen.

Brooklyn, N. Y.; L. and M. Motor Co.; $10,000; F. X. McCormick, J. Abbott, G. C. Lewis.

Brooklyn, N. Y.; Sisbe-Du Temple Motors Corporation; $100,000; to deal in automobiles; Milton Hertz, Henry Weismann, S. F. Burkard.

Buffalo, N. Y.; Horse Auto Trailer Corporation; $250,000; George S. Bebee, Mary E. Hills, W. P. White.

New York, N. Y.; Aetna Motors Corporation; $50,000; J. C. Kennedy, D. E. Jacobson, J. C. Peters.

New York, N. Y.; The American Automobile Owners' Association; $25,000; to conduct an automobile business; M. Koenig, S. Gottlieb, W. N. Loew.

New York, N. Y.; Eastern States Motor Racing Association; $40,000; M. J. Knoechel, D. Hein, A. Goldberg.

New York, N. Y.; Gayette Motors Corporation; $50,000; A. Englehardt, J. E. Gorssoman, S. Stien.

New York, N. Y.; B. L. and J. Auto Delivery; $5000; C. Jacobs, S. Litsky, N. Rosenberg.

New York, N. Y.; Hulburt Motors, Inc.; $225,000; F. X. Carmody, M. J. Moon, G. A. McLaughlin.

New York, N. Y.; Public Service Transfer Corporation; $1,000,000; to deal in trucks and trailers and to conduct a general trucking business; H. V. Angevipe.

New York, N. Y.; Manhattan-American Motor Car Co.; $1250; to conduct an automobile business; Charles A. Collins, George G. Gates, C. L. Jordan.

Brooklyn, N. Y.; National Auto Equipment Co., Inc.; $500; to deal in automobiles, machinery and engineering appliances; Max Rechenberg, Jacob Silver, Jacob Blackler.

New York, N. Y.; H. C. Turner Sales Corporation; $25,000; to deal in motor vehicles and automobile supplies; F. Stasudel, G. B. Canno, E. B. Houser.

Poughkeepsie, N. Y.; Central Hudson Auto Sales Co.; $20,000; D. Harris, E. Harris, M. Harris.

Yonkers, N. Y.; R. and E. Motors Co.; $10,000; to deal in autos and airplanes; A. Russell, Jr., J. O. Ekblom, C. R. Ruynon, Jr.

Charlotte, N. C.; The Queen City Storage Battery Co.; $25,000; F. N. Laxton, G. T. Marchment, E. F. Walker.

Peaksville, N. C.; Union Motor Co.; $50,000; T. H. Barber, Dan F. Taylor, John B. Bay.

Barberton, O.; The Overland-Barberton Co.; $10,000; to deal in automobiles; Fred P. Hornsby, O. E. Anderson, Margaret M. Anderson, Elmer P. Brown, Elizabeth A. Brown.

Cleveland, O.; Mel Motor Car Co.; $50,000; Mel Stringer, W. K. Gardner, W. Bradfield, Thomas E. Mann.

Cleveland, O.; Wise Auto Livery Co.; $5000; H. E. Sobul.

Dayton, O.; Auto Electric Co.; $10,000; John M. Sheats.

East Liverpool, O.; Standard Motor Sales Co.; $20,000; Peter Mullen.

Elyria, O.; Simpson Motor Co.; $25,000; C. E. Blanchard, C. M. Braman, Lee Stroup, L. B. Fauver, H. L. Hamel.

Danville, O.; Willis Robinson Motor Co.; $4800; A. E. Willis, B. F. Robinson, H. B. Robinson.

Hopkinsville, O.; Melton-Ellis Motors Co.; $20,000; E. J. Melton, Louis Ellis.

Tiffin, O.; Crispin-Moorehead Motor Sales Co.; $15,000; B. M. Moorehead, Clara Heilman, Frank T. Dore, M. M. Jacobs.

Chester, Pa.; Montgomery Automobile Co.; $6000; S. A. Montgomery.

Philadelphia, Pa.; Meteor Motors Co.; $100,000.

Chester, Pa.; American Motor Co.; $50,000; C. T. Beers.

Maryland, Tenn.; Walker Kiser Motor Co.; $40,000; W. A. Dunlap, J. I. Walker, H. I. Kiser, W. L. Proffitt.

Nashville, Tenn.; Core-Holmes Co.; $50,000; to deal in automobile trucks; L. S. Core, H. J. Holmes, W. E. Moore, H. Core, J. W. Loch.

Orange, Tex.; Lester Auto Co.; $9900; R. L. Lester, W. L. Joiner, I. L. Hill.

San Antonio, Tex.; Nash South Texas Motors Co.; $65,000; Harry L. Miller, George D. Campbell, G. D. McGloin.

Waco, Tex.; Central Motor Co.; $75,000; J. M. Nash, J. M. Mitchell, Roy Eddins.

Abingdon, Va.; McConnell Motor Co.; $25,000; J. T. McConnell, Wm. McConnell.

Clarksburg, W. Va.; Garrett Automobile Co.; $50,000; to conduct an automobile and garage business; David F. Wilson, John Hawes Newlon, Michael Huber.

Huntington, W. Va.; Huntington-Nash Co.; $25,000; to conduct an automobile business; E. N. Pyle, B. L. Douglas, D. M. Williams, John Bowman, O. J. Deegan.

Bellingham, Wash.; Mills-Lynch Motor Co.; $10,000; Harry Mills, George O. Lynch.

Elizabeth, N. J.; Sanders Motor Car Co.; $100,000; Charles W. Sanders, W. F. Charlock, H. K. Corbin, all of Elizabeth.

Binghamton, N. Y.; Larrabee-Deyo Motor Truck Co.; increase of capital from $300,000 to $500,000.

Lexington, Mass.; Paul Revere Garage, Inc.; automobiles; $25,000; Theodore A. Custance, Howard E. Custance, Walter S. Beatty; all of Lexington.

Boston, Mass.; John L. Judd Co.; automobiles; $75,000; John L. Judd, Boston; Burton A. Clark, Allston; Robert W. Forest, Everett.

Newark, N. J.; Martin Motor Car Co.; $50,000; Lawrence P. Martin, Theresa M. Martin, Charles R. Martin, Helen S. Martin, Upper Montclair.

Manhattan, N. Y. C.; Teuseig Motor Corporation; auto business; $100,000; L. Teuseig, 304 East 67th street, New York City; C. Streit, 215 Greenwood avenue, Brooklyn; W. E. Richards, 377 Broadway, New York City.

CANADA.

SASKATCHEWAN.

Kamsack—Halling Bros. has selected site for $5000 concrete garage; desires prices on all material and equipment.

Dodsland Prairie—Jennings & Co. will build new garage.

Saskatoon—A. Dudley Sampson has opened garage and service station at 207 Wall street.

Norquay—Heskin & Cooper will erect $5000 garage.

MANITOBA.

Winkler—George H. Hiebbert Co. has changed name to the Union Traders, Ltd.; is remodelling garage and installing new equipment for service on Chevrolet and Maxwell cars.

Durban—C. E. and William R. Spencer have registered the firm name of Spencer Bros.; will conduct automobile and implement business.

Neepawa—Rutledge & Johnstone, Neepawa Garage, recently bought new garage as show room for McLaughlin, Chevrolet and Maxwell cars; will operate Eveready battery service station in connection with repair department.

BRITISH COLUMBIA.

Nelson—Fred Hume will build $10,000 garage and salesroom.

New Westminster—W. R. Sim and Albert James have opened garage with Dodge and Chevrolet agencies.

ALBERTA.

Calgary—Lee & Goulding will build $25,000 garage adjacent to Diamond garage.

Medicine Hat—Central Garage, 701 First street, S. E., is about to erect new building.

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FINANCIAL NOTES OF AUTOMOTIVE INDUSTRY

General Motors Provides Cash Capital for Increasing Business—Refinancing of Jordan Motor—Gray & Davis Strong

GENERAL MOTORS.

To provide cash capital for its tremendously increasing business, General Motors has sold $50,000,000 six per cent. debentures, a portion of the already authorized issue of $150,000,000. The new debentures are offered at approximately the market price of those outstanding, or 90. The sale is designed to increase working capital to the point where the company can continue to handle comfortably the great volume of sales already booked and in sight.

General Motors in the past year or two has been passing through a period of immense physical expansion, having absorbed the Chevrolet, United Motors and the Canadian companies. All these, to be sure, brought liberal working funds, but their business since the signing of the armistice has been increased by leaps and bounds.

At the same time work has been launched all along the line on the $48,000,000 plant expansion program in this country and in Canada. Boiled down, the new financing of General Motors will just take care of all of these big projects. With the additional funds, General Motors will have a working capital of over $200,000,000, and net assets, exclusive of good will, of practically $300,000,000.

In a letter to division syndicate managers in connection with the sale of $50,000,000 six per cent. debenture stock, President W. C. Durant of General Motors Corporation states: "A meeting of stockholders of the corporation has been called for June 12, 1919, to vote upon recommendation of directors to increase authorized amounts of debenture and common stocks to $500,000,000 each.

"No further issues, however, are contemplated at this time as proceeds of present issue of debenture stock is expected to provide for corporation's financial requirements for the next 12 months or more.

"Net earnings for first quarter of 1919 before taxes were $21,626,594, against $10,146,000 for same quarter in 1918. This does not include any benefits to be derived from investment of proceeds of above issue. On Dec. 31, 1918 net quick assets amounted to $150,390,492; of quick assets $59,488,639 was in cash and Liberty bonds."

Manufacturing capacity of General Motors plants for season from July 1, 1919, to June 30, 1920, will be as follows: Buick, 140,000; Cadillac, 25,000; Oldsmobile, 40,000; Oakland 72,000; Scripps-Booth, 15,000; Chevrolet, 220,000; a total of 512,000 passenger cars; "G. M. C." and other trucks, 40,000; Samson tractors, 25,000; farm implements, 75,000; making a total of 652,000 vehicles and implements.

JORDAN MOTOR.

Refinancing of the Jordan Motor Car Co. recently approved by stockholders, calls for the incorporation of a company of similar name. The old company was capitalized at $300,000. To this $1,200,000 7 per cent. preferred is to be added and 12,000 shares of common with no par value.

New company is to issue to each holder of preferred stock in the old company a like amount in par value of the new preferred, also 50 per cent. of the number of preferred shares in new common stock. Each holder of common stock in the old company is to receive a like amount in par value of new preferred stock and 50 per cent. of the number of shares in the new common stock.

New capital is to provide for additions and development.

AMERICAN BOSCH MAGNETO.

American Bosch Magneto Co. has just gathered in a handsome windfall through the disposal of its holdings of Eisemann Magneto stock, confirmation of the sale of which has just been made by the alien property custodian.

Eisemann, like Bosch Magneto, originally was German owned to the extent of 1500 out of its 2000 share capital. Of the 1500 shares, which the government ordered sold, American Bosch owned 900 shares. These it carried on its books at the nominal figure of $100 a share.

For the 900 shares it actually realized a price of $605 a share, representing a profit of $505 a share or a total of $454,500. This is the equivalent of $7.57 a share on the 60,000 shares American Bosch Magneto stock sufficient to cover 15 months' dividends.

Not only that, but with the cash from the sale of its Eisemann stock and surplus funds now on hand in the treasury, the Springfield company will be able some time this summer to anticipate the first block of $600,000 notes maturing this year. Within a few months there will be only the $1,200,000 1921 and 1922 notes ahead of the common stock.

April earnings of Bosch were considerably the best for any month this year, running in excess of $70,000, or close to a $15 rate on the stock.

The gain in earnings has simply reflected the steady increase in output. April shipments of magnetos were 12,181, against 9335 in March. It is figured that by September production will be a full 100% larger than when the plant was German controlled.

American Bosch shares have been listed on the New York Exchange.

ALLIS-CHALMERS.

The balance sheet of the Allis-Chalmers Manufacturing Co. as of Dec. 31, 1918, reveals total assets of $63,791,930, compared with $54,893,595 at the close of 1917. The inventory account shows an increase from $12,410,127 to $17,436,478; cash holdings compare $1,951,139 with $947,767, and notes and accounts receivable amount to $7,150,491, against $7,673,276. Securities owned are valued at $4,733,138, against $1,600,282 in 1917. Notes payable disclose a falling of from $1,849,610 to $400,000, but this is offset by an increase in the accounts payable from $754,774 to $1,569,907. The profit and loss surplus of the company at the close of 1918 is reported at $8,470,048, in comparison with $5,463,604 at the end of 1917.

UNITED STATES RUBBER.

Recent buying in United States Rubber common which put the stock above 100, has been predicted on the earnings outlook rather than on the possibility of big dividends in the near future. Gross and net are running at a figure which if maintained all year may eclipse the wonderful showing in 1918 when the company earned nearly $31 a share on $36,000,000 common stock from sales of $215,000,000.

CANADA G. M. C.

The General Motors of Canada, Ltd., has been formed in Montreal with an authorized capital of $10,000,000. The new concern is related to the General Motors Corporation of the United States. R. S. McLaughlin, president of the McLaughlin Motor Car Co. and a vice president and director of the General Motors Corporation, has been elected president of the new concern.

GRAY & DAVIS.

The operating profits of Gray & Davis for 1918 calendar year were $569,460, from which there was deducted nearly $29,000 of 1917 taxes and from which there is to come about $240,000 in 1918 taxes, leaving a net income of $340,000. After preferred dividends of $82,000 the balance of $218,000 was equal to a little better than $4 a share on the 54,452 shares of common.

The balance sheet, better than anything else, shows the transformation that has occurred in Gray & Davis affairs in the past 12 months. At the opening of the year 1919 there was on hand in cash or government obligations a total of $565,000, as against $77,000 the year previous.

The net quick assets have mounted to the respectable total of $1,316,000. Applying the negligible total of $141,000 preferred against the plant account carried at $380,000, the net quick assets of raising $1,300,000 are equal to practically $25 a share for Gray & Davis common.

At both Cambridge and Amesbury business is swinging rapidly back to normal. The company is making parts for Ford self-starters and has all the self-starter business of Chandler, Paige Motor, Bethlehem Truck and the new Cleveland Automobile Co. It is making about 50 per cent. of the Ford lamps and has contracts for the entire lamp requirements of Cadillac, Franklin, Apperson and Kissel. Hudson is a recent lamp customer. Certain new lines now well out of the experimental stage are also expected to be good earners this year.

WESTINGHOUSE.

The Westinghouse Electric and Manufacturing Co., Pittsburgh, it is announced, will begin the manufacture of small motors and automobile electric equipment in the largest of the three factories in Springfield, Mass., that have been operated by the New England Westinghouse Co. About $1,000,000 will be spent in equipping the plant and between 2000 and 2500 persons will be employed under maximum operation. The New England Westinghouse plants have been virtually closed for several months.

FISHER BODY.

Fisher Body has made a new high record. While President Durant of General Motors stated recently that there was no basis for reports of merger involving General Motors and either Maxwell or Ford, he did not deny the most persistent of all reports which has been that General Motors interests were acquiring control of Fisher Body in the open market.

WHITE MOTOR.

The White Motor Co.'s stockholders of record June 14 will have the right to subscribe to one share of additional stock at par, $50, for each four shares then held. At a special meeting June 10 the stockholders will vote on increasing the capital stock from $16,000,000 to $20,000,000. The stock not taken by the stockholders will be underwritten.

MAY HANDLE FARM TRUCKS.

Minnesota—Hardware jobbing houses are contemplating taking on the farm automobile truck as an additional line. Some years ago the jobbing houses took on the automobile, but it failed to work in harmany with their other goods. It is the consensus of opinion that the farm truck is a more attractive proposition, as it runs closely to implements. The outlook for good roads is bright.

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Stocks on New York Exchange

Securities and General Materials Markets

Automobile and Tire Quotations

Auto Stocks

	May 22 Bid	Asked
Chalmers	9¼	9¾
Chevrolet	220	..
Hendee Mfg. Co.	30	33
Hupp Motors	9⅛	9⅜
Inter Motor	35	..
Inter Motor, pfd	75	..
Inter Motor, 2nd pfd	55	..
Mitchell Motors	35	55
National Motor	15	20
Peerless	36½	37½
Scripps Booth	20	40
United Motors	46	49

AUTOMOBILE STEEL MARKET.

The steel trade has been released from government alliances of all kinds and is now free to go ahead and do business as it was done before the war.

The demand for highly finished sheets for the automobile builders is very heavy and is increasing. Some mills that make a specialty of automobile sheets are sold up for the next 60 days.

The tractor and agricultural implement industries, which heretofore have been rather active, have suffered a slump.

AUTOMOBILE SHEET MARKET.

(Based on No. 22 gage. Other gages at usual differentials.)

	Primes only per 100 lbs.	Primes when seconds up to 15% are taken per 100 lbs.
Automobile body stock	$5.95	$5.85
Automobile body stock, deep stamping	6.20	6.10
Automobile body, stock, extra deep stamping	6.45	6.35
Hood, flat, fender, door and apron, or splash guard stock	6.05	5.95
Crown fender, cowl and radiator casing, extra deep stamping	6.55	6.45
Crown fender, cowl and radiator casing, deep stamping	6.30	6.20

Automobile sheet extras for extreme widths:

Nos. 17 and 18 over 36 in. to 44 in., 10c per 100 lbs.

Nos. 19 and 21 over 36 in. to 44 in., 30c per 100 lbs.

Nos. 22 to 24 over 26 in. to 40 in., 40c per 100 lbs.

Nos. 22 to 24 over 40 in. to 44 in., 80c per 100 lbs.

Blank sheet extras to apply to narrow widths:

Oiling, 10c per 100 lbs.

Patent leveling, 25c per 100 lbs.

Resquaring, 5 per cent. of gage price after quality, finish and size extras have been added.

Seconds 10 per cent. less than the invoice Pittsburgh price for corresponding primes.

MATERIALS.

Acids:		
Muriatic, lb.	.02	- .03
Phosphoric (85%), lb.	.35	- .39
Sulphuric (60%), lb.	.008	
Aluminum:		
Ingot, lb.	.33	
Sheets (18 gage or more), lb.	.42	
Antimony, lb.	.07½	
Burlap:		
8 oz., yd.	.08¾	- .09
10½ oz., yd.	.10¾	- .11
Copper:		
Elec., lb.	.16⅜	- .16½
Lake, lb.	.16¼	- .16½
Fabric, tire (17¼ oz.):		
Sea. Is., combed, sq. yd.	1.40	
Egypt combed, sq. yd.	1.25	
Egypt, carded, sq. yd.	1.20	
Peelers, combed, sq. yd.	1.08	
Peelers, carded, sq. yd.	.85	
Fibre (⅛ in. sheet base), lb.	.50	
Graphite:		
Ceylon, lb.	.09	- .22
Madagascar, lb.	.10	- .15
Mexico, lb.	.03¾	
Lead, lb.	.05	- .05½
Leather:		
Hides, lb.	.25	- .46
Nickel, lb.	.40	
Oil:		
Petroleum (crude):		
Kansas, bbl.	2.25	
Pennsyl., bbl.	4.00	
Gasoline:		
Auto, gal.	.24½	
68 to 70 gal.	.30½	
Lard:		
Prime City, gal.	2.70	
Ex. No. 1, gal.	1.15	-1.20
Linseed, gal.	1.56	
Menhaden (dark), gal.	.75	- .80
Rubber:		
Plantation:		
First latex pale crepe, lb.	.46	
Brown crepe, thin, clear, lb.	.41½	- .42
Smoked, ribbed sheets, lb.	.45	
Para:		
Up River, fine, lb.	.56¼	
Up River, coarse, lb.	.34½	- .34¾
Island, fine, lb.	.47	- .47½
Shellac (orange), lb.	.62	- .68
Spelter, lb.	.06⅛	- .06¾
Steel:		
Angle beams and channels, lb.	.02½	- .03
Automobile sheet (see sp. table).		
Cold rolled, lb.	.04¼	- .04½
Hot rolled, lb.	.03½	- .03¾
Tin	.72½	
Waste (cotton), lb.	.12¾	- .17

MOTOR MERGER.

Bankers are understood to be at work on plans for a merger of automobile companies, which would present a solid competitive front to the $1,000,000,000 General Motors Co.

New York Stock Market

The motor stocks are again setting the market pace. General Motors, the bellwether of the group; Chandler, Studebaker, Willys-Overland and Maxwell continue to break all speed records.

Rubber and tire stocks have been stimulated by the fresh wave of speculation in the motors and have generally moved up to the best prices of the year, more than recovering the ground lost at the time the 15 per cent. cut in prices was announced.

	Close, May 22 Bid	Asked
Advance Rumely	31¾	32
Advance Rumely, pfd.	68⅝	70
Ajax Rubber	86¼	86¾
Allis-Chalmers	42	42⅛
Allis-Chalmers, pfd.	93	94
American Bosch	99	99¾
Cent. Foundry	23	25
Cent. Foundry, pfd.	48¼	49¼
Chandler Motor	165	166
Detroit Edison	118	122
Electric Stor. Bat.	72	76
Fisher Body	78	78½
Fisher Body, pfd.	100	102
General Electric	164½	165⅞
General Motors	185¼	186
General Motors, pfd.	90	90¼
Gen. Motors 6% deb.	90	90⅛
Goodrich, B. F.	70⅝	70⅞
Goodrich, B. F., pfd.	107⅞	108⅛
Kelly-Springfield Tire	118	118¾
Kelly-Springfield Tire, pfd.	95	96
Kelsey Wheel	50	58
Kelsey Wheel, pfd.	98	98½
Keystone	88¾	89¼
Lee Tire	32½	33
Maxwell Motors	43½	44½
Maxwell, 1st pfd.	70	70½
Maxwell, 2nd pfd.	33¾	34⅛
Pierce-Arrow	50¼	50½
Pierce-Arrow, pfd.	106½	107¼
Saxon	9	9½
Stromberg Carburetor	45¾	46
Studebaker	82¾	83
Studebaker, pfd.	96¼	100
U. S. Rubber	97¼	97½
U. S. Rubber, 1st pfd.	113⅞	114⅝
Westinghouse	57¼	57½
White Motors	56⅞	57
Willys-Overland	34½	34⅝
Willys-Overland, pfd.	96	96½

DIVIDENDS.

Company	Rate	Payable	Stock of Record
American Bosch Magneto	$1.50	quarterly June 30	June 15
B. F. Goodrich Co.	$1	quarterly Aug. 15	Aug. 5
B. F. Goodrich Co., pfd.	1¾ %	quarterly July 1	.....
Haynes Automobile, pfd.	1¾ %	quarterly June 1	May 20
International Harvester, pfd.	$1.75	quarterly June 2	May 10
Moline Plow, 1st pfd.	1¾ %	quarterly June 1	May 17
Moline Plow, 2nd pfd.	1½ %	quarterly June 1	May 17
Packard Motor, pfd.	1¾ %	quarterly June 15	.....
Pennsylvania Rubber	1½ %	quarterly June 30	June 15
Pennsylvania Rubber, pfd.	1¾ %	quarterly June 30	June 15
Standard Motor Construction	5%	semi annual June 2	May 7
Studebaker Corporation	1%	quarterly June 1	May 20
Studebaker Corporation, pfd.	1¾ %	quarterly June 1	May 20
Westinghouse Electric Mfg.	$1	quarterly July 31	June 30
Westinghouse Electric Manufacturing, pfd.	$1	quarterly July 15	June 30
White Motor	$1	quarterly June 30	June 14

MEETINGS.

	Date Held	Books Close	Books Open
General Motors	*June 12	.....	.....
Stutz Motor Co.	June 19	June 7	June 20
Westinghouse Electric & Manufacturing.	June 11	May 22	June 12
White Motor	*June 10	May 26	.....

*Special meetings.

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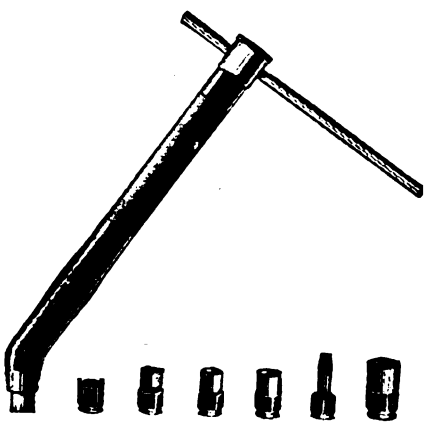
Billmont Master Wrench. The Billmont Master Wrench is a universal socket type, designed to do the work of a dozen or more wrenches.

The maker claims that with this wrench one can reach the nuts of the fourth connecting rod of a Ford engine without removing the unit from the frame. This alone would mean a considerable saving in time when adjusting the connecting rod bearings of a Ford car. The wrench should be placed firmly on the nut to be removed with one hand and turned with the other hand. After the nut is started a spinning motion of the hand will remove it.

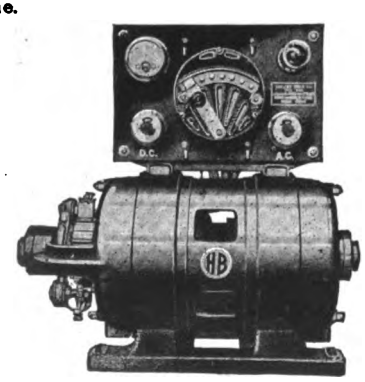


Such work as loosening or tightening nuts on radiator stud bolts, exhaust and intake manifolds, valves, rear motor supports, the clutch, starting motor—in fact, practically any part of the motor or body of a car, large or small, is reached with ease by the Billmont wrench.

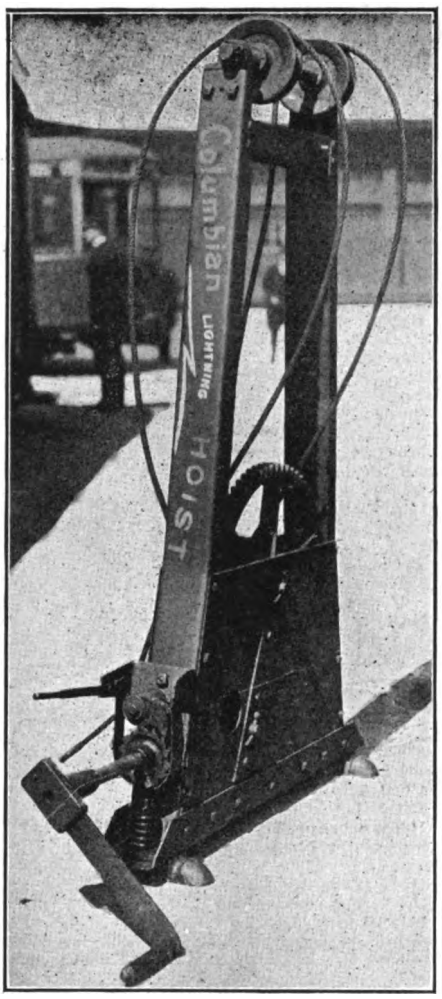
The Billmont wrench has a knurled handle so that it may be firmly held while in use, obviating the difficulty of keeping the jaws of the ordinary wrench squarely on the nut, and the nut can be spun instead of making ouly a quarter turn with each fitting of the wrench jaws.

Manufactured by the Edgar C. Guthard Co., 361 E. Ohio St., Chicago, Ill. Prices on application.

HB Motor Generator. This charger is a full 500-watt or ½-kilowatt equipment, with capacity and efficiency that guarantees quick, dependable charging and large profits. It is self-starting, using city power and from wires now installed. It will operate on either alternating or high voltage direct current. It has a special automatic universal voltage control, which makes it possible to recharge any automobile storage battery quickly and successfully. It will handle automatically six, 12 or 24-volt batteries at the same time.



Manufactured and sold by Hobart Brothers Co., Troy, N. Y. Prices on application.



The Columbian Lightning Hoist has an estimated test capacity of 30,000 pounds. It will handle with ease a five-ton load and elevate the load to a maximum height. It can be operated by one man with very little effort.

A dump body equipped with a Columbian can be raised to an inclined position of 30 to 50 degrees in less than two minutes. The hoist is designed on the principle of geared wheels. By a train of spurs and bevel gears the Columbian is so constructed that a load of five tons can easily be raised by one man at the crank.

The hoist occupies but eight inches of space back of the driver's seat. This is an important advantage, as it permits the body load to be set forward, relieving the rear tires, spring, frame and axle of an excessive share of the weight of the load.

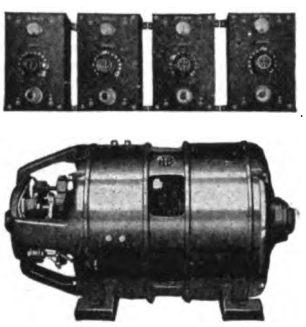
Another feature to be considered by the truck driver is the weight of his equipment. The Columbian is of the lightest weight consistent with the proper strength, thus allowing a dump body of a larger carrying capacity. It fits any chassis or frame, and can be easily and quickly attached. The appearance is attractive.

Manufactured by the Columbian Steel Tank Co., 1601-1621 West 12th St., Kansas City, Mo. Write for prices and further information.

HB Motor Generator Charging Sets. The HB two kilowatt generator set, or 32 battery charger, is designed for battery service stations, or garages that specialize battery charging, or wherever large capacity and economy of operation may be desired. It is equipped with an amply designed five horsepower motor and is built to give heavy service profitably.

It will develop at the generator end 60 to 70 volts and 30 amperes and has a charging capacity of 32 six-volt batteries or their equivalent at one time. The armature and rotor are mounted on one shaft supported by ball bearings, insuring absolute freedom from operating trouble and maximum economy in operation. This equipment is furnished in two or three-phase winding or for direct current, and by the addition of a starting box will operate on single phase 220 volts. A charging outfit of this large capacity cannot be used on single phase 110 volt lighting lines, but a public service company will put in the necessary power lines for this machine.

There are four separate charging lines, each with a maximum charging rate of 10 amperes, and capacity for carrying up to eight batteries. Individual panels make

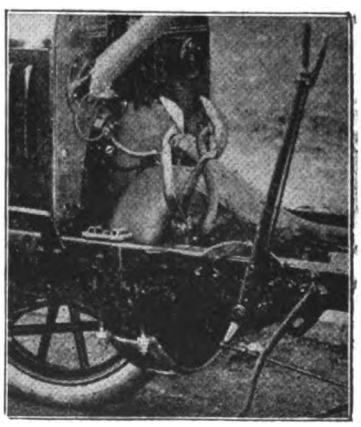


each charging line independent of the others, and provide the necessary balancing resistance in each line of batteries, and additional resistance on the line for varying the charging rate and for adjustment when less than eight batteries are charged on a single line. Each charging panel has its own ammeter, necessary fuses, cutouts, rheostat, with the resistance for balancing the line and varying the rate of charge. The panels are of clear black electrical slate, oil finished and beveled.

Manufactured by the Hobart Brothers Co., Troy, N. Y. Prices on application.

Liberty Motor Support. The Ford power plant is supported at the rear end by two brackets bolted to the flywheel bell housing. Should one bracket be broken the engine is supported by but one, which must take all the driving thrust upon the engine case. The Liberty motor support is attached beneath the flywheel case and fastened to the frame on each side. The maker claims that it will prevent the breakage of the brackets, will stop all vibration or shaking of the motor which crystalizes the forged brackets and causes them to break; that it will prevent slippage of the high speed and transmission bands, giving more pulling power.

This device not only prevents breakage of the crankcase brackets, but serves as a repair in case the brackets are broken until such a time as a repair can be made. The support can be installed in a very short time.



Manufactured by the Motors Support Co., 431 S. Dearborn St., Chicago, Ill. Sold through the dealer and jobbing trade. Price, $4.

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Big Parking Garage To Be Erected In Boston

A five-story fireproof garage, which, with the land, will represent an investment of nearly $1,250,000, is to be built on Eliot street next to the Plymouth Theater, Boston, for the Eliot Street Garage Co. The structure will cover more than five-eighths of an acre of ground, and will have more than four acres of floor space, to accommodate 600 cars at a time. A double spiral ramp, one within the other, by which cars will be able to ascend or descend on their own power, is one of the unique features. The George W. Harvey Co. is the contractor, and Clinton J. Warren the architect.

Located in the heart of the theatrical and hotel district and within a few moment's walk of the shopping and financial centers, the garage will serve the various interests, which in rotation require parking space during the day for business men, in the afternoon for shoppers and in the evening for theater goers.

As an added convenience to theater goers it is intended by means of a tunnel to connect the garage with the passageway running through the Little building, which joins the Majestic and Plymouth theaters. In this way theater goers will be able to check their cars and proceed to the theater without going outdoors.

Advantages of Ramp.

The use of the ramp instead of elevators will have a two-fold advantage. It will enable any number of cars to stream in or out of the building on their own power, thus avoiding delays and congestion. During certain periods of the day, especially before and after theater, the movement of several hundred cars in or out, almost at one time, will be necessary. With eight or even 10 elevators long delays would be unavoidable.

Then an important reduction in the cost of maintenance is made possible by use of the ramps. The installation of elevators would add considerably to the annual cost of the building. It is estimated that the cost of operating and repairing these elevators would be in the vicinity of $40,000 a year.

Keeping Cars Moving.

Another interesting feature of the proposed construction is in the use of concrete guides in the spacing of cars. These guides will be shaped like huge flat irons raised 4½ inches over the floor level, four feet wide and 10 feet long. Over this guide the car backs into place. A small bumper will be provided for blocking the rear wheels. In this way a car can back into place only when it is correctly placed.

A scientific plan has also been devised for facilitating the moving of cars in and out of the garage. Near the entrance will be an attache of the garage, who will have in front of him a flashlight device, which will show which berths are vacant and which are occupied. On basis of a vacant space he will hand to the chauffeurs as they pass by a check showing the floor and berth number. On each floor other attaches will guide chauffeurs to their berths, help check robes, etc. Congestion near the entrance will thus be avoided.

VAN DORN & DUTTON OPENS NEW BRANCH OFFICES.

The Van Dorn & Dutton Co., Cleveland, O., manufacturer of gears, has opened branch offices in New York and Chicago. At both cities it is the purpose to specialize in gears and pinions for electrical work. Harry F. Keegan, formerly

Harry F. Keegan.

with the Chicago surface lines and well known in the electrical railway field, will manage the Chicago branch, with offices at 1241 First National Bank building. His brother, John, will manage the New York end, with office in room 317, 30 Church street. He comes from the Interboro railway, where a third brother is now engaged.

ADAMS-WILLIAMS AGAIN ELECTS SCHWAB AS PRESIDENT.

At a special meeting of the directors of the Adams-Williams Manufacturing Corporation, New York City, maker of the A-W Convertible Tops, F. C. Schwab, who resigned as president when entering the service, was elected president. S. O. Crittenden, who also returned from service recently, was elected vice president. Leo W. Schwab was re-elected secretary and treasurer. Plans have been completed to enlarge factory space and to greatly increase production during 1919-20.

PURITAN MACHINE TAKES OVER DETROIT AXLE CO.

The Puritan Machine Co. has purchased the entire stock of the Detroit Axle company, both concerns being located in Detroit.

News of this transaction will be of especial importance to owners of all cars having the Detroit axle equipment, because of the fact that the Puritan Machine Co. will be the only source hereafter where parts for that make of axle can be obtained.

Great Motor Merger Being Planned by Bankers

Bankers are understood to be at work on plans for a merger of automobile companies, which would take in several more prosperous organizations, and present a solid competitive front to the $1,000,000,000 General Motors Co.. Chandler, Chalmers, Maxwell and Studebaker are mentioned as being definitely in the plan, which probably will include others.

Through the merger, it is planned to form an automobile company which would be prepared to turn out cars to fit every purse, from small, inexpensive ones to high grade touring cars.

Tractors and other farm machinery propelled by gasoline will form one of the main items of output.

The tremendous demand which has sprung up since the close of the war for automobiles has, of course, made financial and physical expansion necessary. Some of the companies named in the present rumors are already far behind on new business and booked to capacity for several months.

Studebaker is the largest of the quartet. It has $40,965,000 of stock outstanding, of which $30,000,000 is common and $10,965,000 is preferred. Maxwell ranks second in size with $38,050,000 stock outstanding.

Chalmers has $4,400,000 preferred and 400,000 shares of no par value, and Chandler has issued $7,000,000 worth of the $10,000,000 authorized of its one class of stock.

TRUMP JOINS STAFF OF CAMPBELL-EWALD CO.

Hal G. Trump, for the last four years manager of the Chicago office of the Green-Fulton-Cunningham Co., has joined the staff of the Campbell-Ewald Co., Detroit, Chicago and New York. Mr. Trump will make his headquarters at the Detroit office. Mr. Trump's experience has embraced the positions of space buyer, copy chief, service sales. He was at one time advertising and assistant sales manager of the Van Dyke Motor Car Co. and later advertising manager of the American Boy. While he has directed practically every variety of advertising account, much of his training has been along automotive and farm implement lines.

DILL TRACTOR EXPANSION.

Owing to the great demand that the highly specialized Dill tractor has created for itself by its efficiency in the rice and wheat fields, it has been necessary for the G. I. Dill Tractor Manufacturing Co., Harrisburg, Ark., to increase production. A factory site of 10 acres has been acquired in Little Rock, Ark., and the capitalization of the company has been increased to $1,000,000. A modern, reinforced concrete fireproof building will be erected as a manufacturing plant. The Board of Commerce of Little Rock has given a substantial cash bonus.

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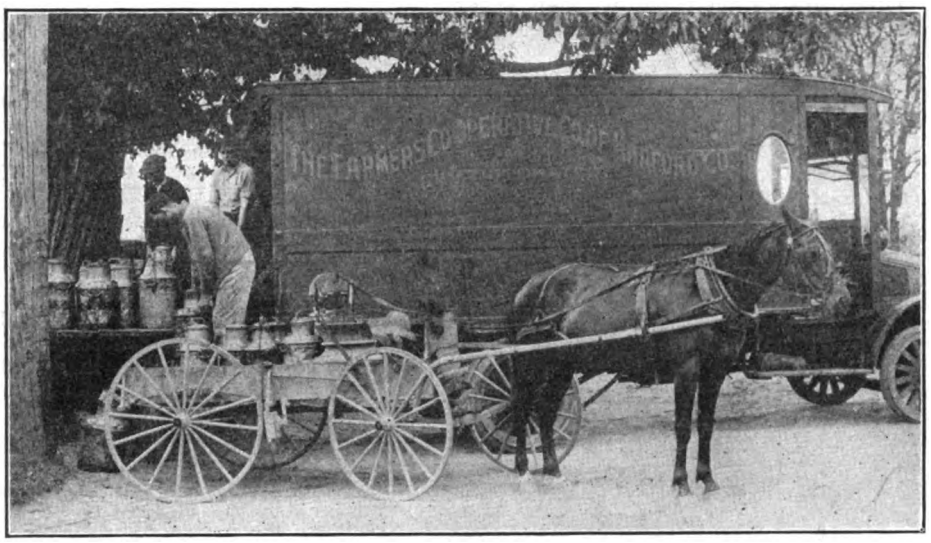
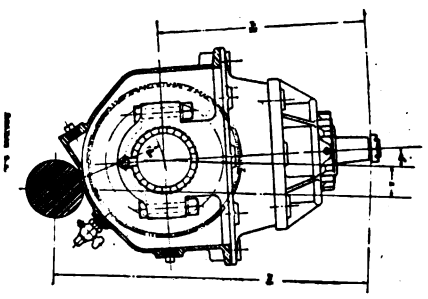
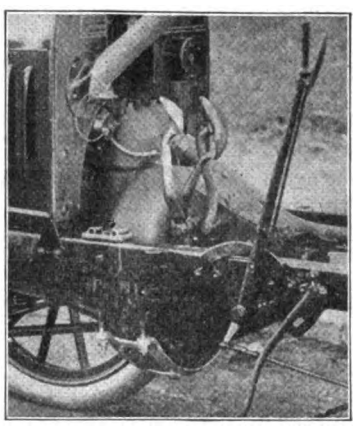
PICTORIAL NEWS OF AUTOMOTIVE INDUSTRY



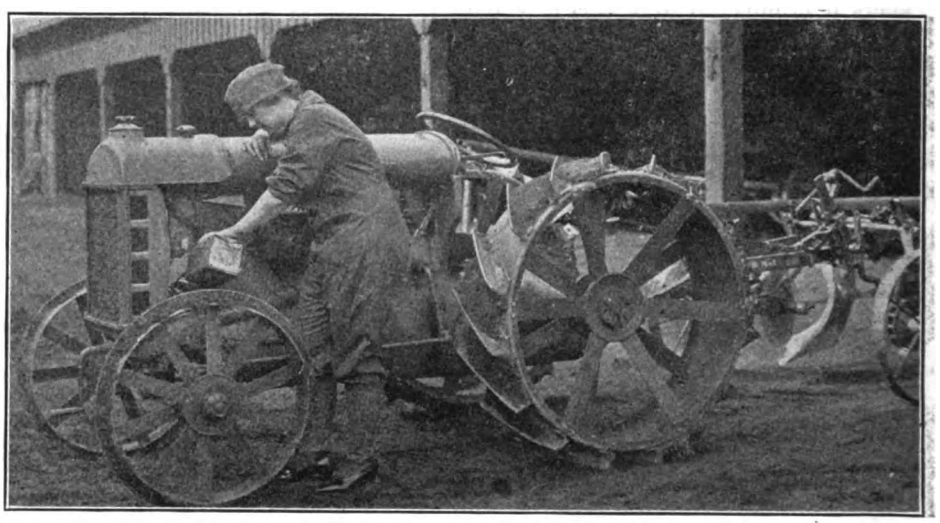
The Farmers of Harford County, Maryland, Operate a Motor Truck Route for Themselves with Entire Success. This Is One of Their Roadside Loading Platforms, to Which the Farmer Brings His Milk by a Short Haul, and the Truck Takes It to Baltimore.



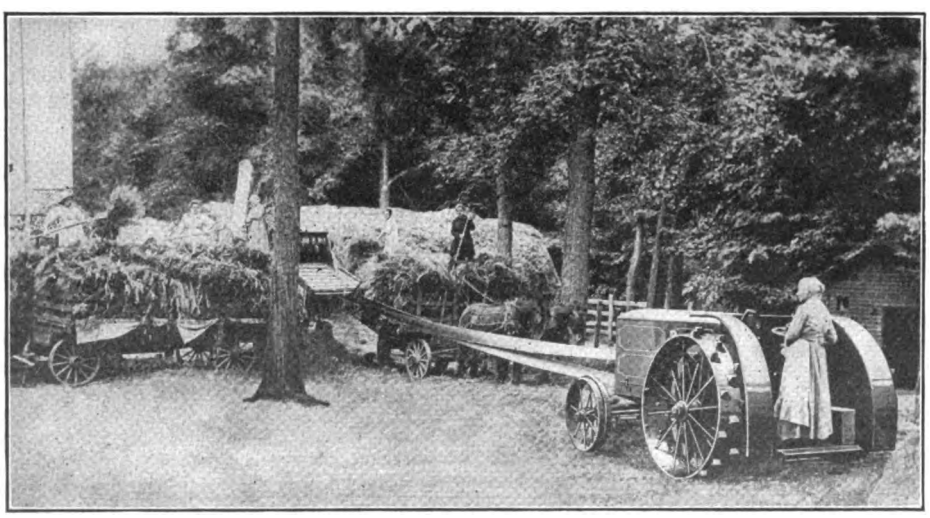
Cross Section of the Differential Housing of the New Russel Internal Gear Axle. This Is Made by the Russel Motor Axle Co., Detroit. The Axle Differs from Other Types of Internal Gear Axles in That the Load Carrying or Dead Members Are Round Section Steel Drop Forgings.



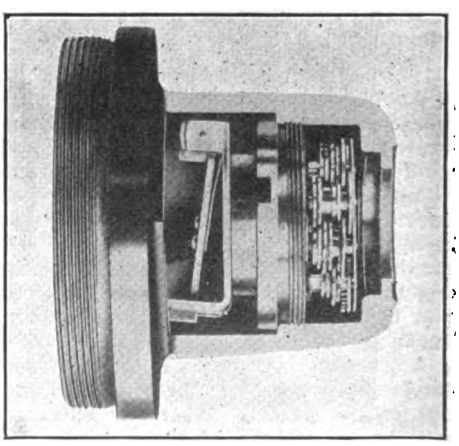
Liberty Motor Support for Ford Cars to Prevent Breakage of Crankcase Arms. Made by Motor Support Co., 431 S. Dearborn St., Chicago.



A Fordson Tractor and an Oliver Plow That Was Driven with Excellent Efficiency by a Woman, Who Is Shown Filling the Oil Reservoir.



A Lauson Full Jewel Tractor Running a Case 36-Inch Grain Separator, Being Operated Entirely by Women.



Cutaway Section of New Dreadnaught Hub Odometer to Show Recording Mechanism Drive. Made by American Taximeter Co., New York City.

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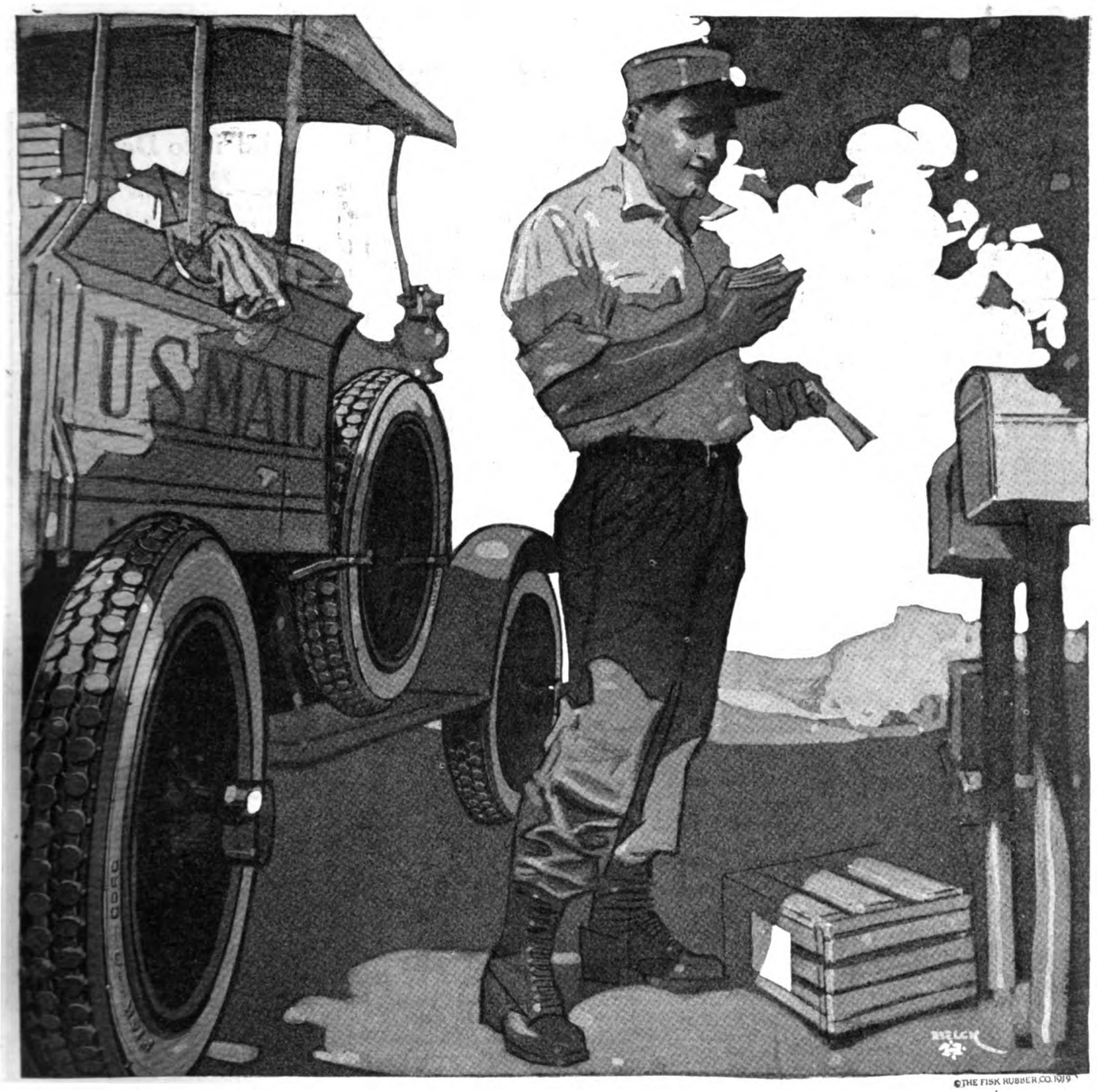

To make delivery quick and sure the Post Office Department is advocating the general use of motor trucks on rural mail routes.

UNINTERRUPTED MOTOR SERVICE speeds up action in business and has also an important and direct relation to individual and community interest.

FISK CORD TRUCK TIRES quicken service and economize cost when a truck is needed for long hauls and quick runs.

THEY REDUCE BILLS for repairs and fuel—protect mechanical parts from road shock and make for much greater speed. These are items which turn loss to profit.

A HEAVILY LOADED TRUCK on a slippery highway, without real traction tires, is a menace to the public, to itself and to its cargo. More than any other vehicle it should be shod for safety. The Fisk Cord Pneumatic is one of the few tires which meet the safety requirements.

FISK TRUCK TIRES

(When Writing to Advertisers, Please Mention the Accessory and Garage Journal.)

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TRADE OUTLET

THE SEASON'S OPEN!

It is time high prices are chased to the tall timbers. Glance over the following list—Note our prices—Remember we have been in business 18 years—We know how to buy so that we can sell right.

FOR YOUR FORD.

Bumpers, channel type	$5.00
New Era Accelerators	.65
Ever Ready Gasoline Gauge	.25
Valve Adjuster and Silencer	.35
Premo Fan Belt Adjusters	.15
Fan Belts for Fords	.18
New Era Pressure Gasoline Reserve Gauge	.25
Roller Bearings for front wheels, per set	7.50
Pistons—Standard and over-size—complete with piston rings, piston pins and bushings	1.50
Coil Points—K. W. Points for Ford Coil Units	.15
Lined Brake Shoes, per pair	.95
All Steel Cutouts	.25
Master Vibrators, Connecticut	1.98
Rubber Pedal Pads, set	.25
Ford Alarms. A horn button that attaches to the end of gasoline lever	.25
Wheel Pullers	.50
Waldren Transmission Band Wrench	.45
Bonnie Wrench Sets, set of end wrench fitting all Ford nuts	1.20
18-inch Steering Wheel	3.95
Crown Fenders, per set	18.00
Speedster Fenders; the long, sloping kind; complete set of four fenders	10.00
Tool Boxes, 22 inches long, will hold pump	1.35
Electric Tail Lamp	.55
Champion X Spark Plug; genuine; only four to a customer	.45
Muffler Cutouts	.50
Stewart Speedometers; not the instrument broad type	6.50
Timers	1.05
Spindle Arm Bolts	.21
Warner and Shaler Lens, per pair	1.75
Windshield Ventilators — makes the old type windshield a ventilator shield	1.05

SPARK PLUGS SPECIAL.

$1.00 ½ inch Sando Spark Plugs—each	35c
.90 ½ inch Champion X Plugs—only 4 to a customer	45c
1.00 Red Head Spark Plugs—all sizes	45c
1.00 A. C. ½ inch special plugs	19c
1.25 Marcy ⅞ plugs	19c
1.25 Marcy—Metric—Motorcycle size	19c
1.00 7.8" Spark Plugs	19c
1.00 Bethlehem ⅞" Extension A. L. A. M.	45c
1.00 Bethlehem ½" Extension	45c
1.25 Jumbo ¼" Extension	45c
1.00 A. C. 7.8" long—Dodge	45c
2.50 Mosler Spitfire ⅞ A. L. A. M.	45c

ACCESSORY SNAPS.

Rubber Pedal Pads for Overland, Chevrolet, Studebaker, Hudson, Maxwell and Cadillac, per set.... 25c

J. T. Windshield Cleaners	60c
Windshield Runner Weather Strips	40c
Electric Head Lamps, per pair	5.00
Electric Tail Lamps	65c
Warner and Shaler Lens—any size, per pair	1.75
Trojan Electric Motor Horns; 6 volt; $6.00 value for	2.95
$25.00 Klaxon, 12-volt Horn	15.00
Tire Covers, all sizes except 30x3½	75c
Bumpers—Channel type	5.25
Carbon Scraper, set	35c
$2 Marvel Tube Vulcanizer	1.60
Adamson M. T. Gasoline Vulcanizer	75c
1917 Model Dodge Fan Belt	25c
Brake Lining—Many sizes;	40% Off List
Piston Rings; reg. plain type; any size	20c
Battery Boxes for any standard 6-volt battery	90c
6-volt model G. G. Autolite Generators	12.50
6-volt Ward-Leonard Generator	15.00
6-volt Ward-Leonard Starters	15.00
Blacko Ignition Locks for 1917 Reo	1.75
1 lb. can value Grinding Compound	65c
Boko Collapsible Buckets	35c
Steel Running Board Mats	50c
Pioneer Grease Guns	75c
Hydrometers for testing storage batteries	42c
Rubber Aprons—Save your clothes	50c
Friction Tape, per pkg	5c
Rear View Mirrors	1.95

PAINT AND POLISHES.

$0.40 ½ pt. cans Whiz Rapid Repair Enamel	25c
3.75 1 gal. cans Peerless Tire Paint	1.45
.50 11 oz. bottle Wax-O Polish	25c
1.00 1 qt. bottle Wax-O Polish	50c
1.25 1 qt. cans Peerless Lamp Enamel	75c
65 1 pt. cans Peerless Lamp Enamel	45c
1.00 1 lb. can French Lustre	50c
.45 1 pt. cans Blue Ribbon Nickel Polish	25c
.90 ½ gal. cans Blue Ribbon Nickel Polish	45c
.45 1 pt. cans Glidden Metal Polish	25c
1.25 1 qt. cans Peerless Cushion Dressing	75c
1.25 1 qt. cans Auto Power Carbon Remover	75c
1.00 1 qt. cans Glidden Body Polish	50c
.60 1 pt. cans Glidden Body Polish	30c
1.60 1 gal. cans Beacon Metal Polish	95c
1.60 1 gal. cans Westchester Metal Polish	95c
1.00 5 lb. pails Whiz Soap	85c
.60 1 pt. cans effective Top Cleaner	30c
1.00 1 qt. cans Newtone Body Polish	50c
1.00 1 qt. Blue Ribbon Body Polish	50c

SPECIALS.

Timken Worm Drive Truck Axle—complete with hubs and drums	$85.00
1918 Abbott Clover Leaf Body, complete with top and windshield	$125.00
Brand new late model 5-passenger Packard Body, complete, top and shield	$200.00
5-passenger Studebaker Bodies	$50.00
Complete Steering Gears—left or right—Jacox, Gemmer and Warner makes	$15.00
6-volt Atwater Kent K-2 Unisparkers	$10.50
6-volt Atwater Kent coils	$5.00
6-cyl. Lyconing Motors	$150.00
1-inch Zenith Carburetors for Chevrolet 490	$12.50

NEW PARTS FOR ALL CARS

Gears, Axle Shafts, Bearings, Transmissions, Axle and Motor Parts. Piston Rings, Pistons, Universal Joints, Hubs and Hub Parts, Springs, etc.

Write us for quotations.

RIMS AND WHEELS

All makes for all cars—Let us quote you prices

RADIATORS FOR ALL CARS

Brand new Honeycomb Type for all cars. Write for price list

SPRINGS FOR ALL CARS

High grade standard Springs for all cars. Better prices; better service.

BEARINGS

All makes and sizes in stock. Bearings suitable for all cars. Immediate deliveries.

ELECTRICAL REPAIRS

Are you having trouble with your Starter, Lighting Generator, Magneto Coil, Switch, etc.?

LET THE PURITAN OVERHAUL IT

Better service. Better prices.

ELECTRIC LIGHT YOUR FORD

Complete lighting system. Includes generator complete, storage battery, electric side and tail lamps, switches, wiring, etc. Everything complete installation. Regular price $29. Our price, $17.50.

STARTING AND LIGHTING BATTERIES

BRAND NEW—guaranteed—with universal terminals will fit most every car.

6-volt, 110 ampere | $25.00
12-volt, 60 ampere | 36.00

Send for Our Circular (Electrical) H-400

PURITAN MACHINE CO., 605 PURITAN BLDG. **Detroit, Mich.**

EASTERN BRANCH, 245 WEST 55TH STREET, NEW YORK, N. Y.

Send it to Detroit

MAGNETOS.

Bosch DU4 Variable spark	$30.00
Bosch DU-4 set spark	25.00
Bosch D4 and Dr4	25.00
Bosch D6 and Dr6	30.00
Splitdorf 4 cyl. Dixie, high tension	25.00
Splitdorf 4 cyl., Models A, T, X and D	10.00
National 4 cyl. low tension	8.00
Briggs 4 cyl. low tension	8.00
Remy 4 cyl., type R L	15.00
Simms SU4 high tension	22.00

GENERATORS.

Deaco 6 volt	$12.00
Auto Lite 6 volt	15.00

COILS.

Splitdorf T S type	$10.00
Splitdorf box type	6.00
Bosch type A	10.00
Remy box coils	6.00
Remy type LC and LE	8.00
Briggs box coils	6.00

DETROIT MAGNETO REPAIRS ARE BETTER.

WE REPAIR any make magneto, coil, lighting generator or starter and give 24 hours service. Member Detroit Automobile Trade Association.

Detroit Magneto Exchange

192 Grand River Ave. Detroit, Mich.

AUTO SAVE 50-90% FOR 400 CARS PARTS

POPE, PACKARDS, PIERCE, BUICK, STEVENS-DURYEA, KNOX, OVERLAND, ETC.

Motors	$25.00 up	Presto Tanks	$ 4.50 up
Magnetos	4.00 "	New Spotlights	2.00 "
Carburetors	3.00 "	Generators	10.00 "
Rear Axles	15.00 "	Gears	1.00 "
Front Axles	5.00 "	Bearings	1.00 "
Cylinders	5.00 "	Radiators	10.00 "

$12 Diamond Bumpers.....$5.50

Jobbers in Bankrupt Auto Supplies.

BRIGHTMAN AUTO EXCHANGE

84 Wooster St., Hartford, Conn.

AUTO PARTS.

50% to 90% Off List.

24 Hour Service. Unlimited Stock.

Pope-Hartford, Columbia, Reo, Overland and 200 other makes.

Motors,	$20.00 up	E. Presto Tanks,	$4.00
Magnetos,	$3.50 up	B. Presto Tanks,	$4.75
Cylinders,	$3.00 up	Bearings,	50c up
Springs,	$1.00 up	Rims,	$1.00 up

1000 Other PARTS Bargains.

If you want any part not listed here,

Write Us—We Have It.

Conn. Auto Parts Co. Inc.

1070 Main St., Hartford, Conn.

Write

AUTO PARTS CO.

For

REPAIR PARTS

Our new bulletin of used parts and prices now ready.

With this bulletin in your shop you can supply repair parts for all makes and models of cars listed and increase your repair business.

It Is Free. Write for It Today.

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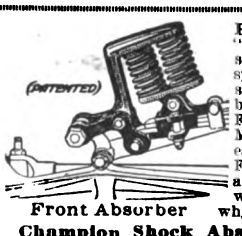
4103 Olive Street, St. Louis, Mo.



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FOR FORD CARS. "Champion" Shock Absorbers. The perfect spring suspension. Absorbs all jar and rebound. Easy to attach. Fully guaranteed. Makes Fords ride as easy as any $5000 car. Ford dealers, agents and owners, this ad is worth $10 to you. Ask why. Write today.

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EXPERT REPAIRING; every known Magneto and Ignition System, Starters, Motors, Generators. **Magneto Exchange and Repair Shop, 269 Halsey Street, Newark, N. J.**

LOZIER OWNERS—Why buy counterfit repair parts. We have all **Original Parts.** Made from original Patterns. Order from headquarters.

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Official
SALES AND SERVICE
For New England.

Complete stock of parts always on hand.

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Every Ford Owner Should Read "TRANSFORMING THE FORD." Tells how to secure smooth, positive brake action that no car can excel. A little "transforming" and your car will glide to a quiet, quick stop without the annoying, irritating clatter that you now experience. It will go into low or reverse without jumping or jerking and you can pick up speed with all the smoothness and ease of a high-priced car. All accomplished without additional expense and the result is a clear saving of 75 per cent. in one direction alone. "TRANSFORMING THE FORD" tells how it's done. Send for your copy this very minute. IT IS FREE. Cormack & Co., 500 Fifth Ave., New York City.

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Pistons—Rings—Piston Pins

Prompt Service—Prices Right

Ford Cylinders Reground, new Pistons, Rings, Wristpins and Bronze Bushings fitted.....$14.50 Net

We Use Genuine Ford Parts.

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329 S. CLINTON ST., CHICAGO, ILL.

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Send for our free complete Price List covering Auto Dealers, Owners, Ford Dealers, Truck Dealers and Owners, Garages, Auto Mfrs. and etc., any state.
A. F. WILLIAMS, Mgr. of List Dept.
166 W. Adams St., Chicago. Franklin 1182.

GARDNER CARBURETORS
FOR FORD CARS
Dealers write us for special price.
Salesmen with Ford Cars Wanted.
FACTORY SALES COMPANY
Sun Building, Detroit, Mich.

Classified Advertising
BRINGS BIG RETURNS
20 Cents a Line, Seven Words to Line.

MONEY MAKING BARGAINS IN TIRES AND TUBES

Our connections enable us to offer to the dealer at all times real bargains in factory blemished and surplus stock tires sold as seconds.

Our trade is enjoying big profits and satisfied customers. You can do the same by buying from us.

Write today. Your name will be placed on our mailing list for attractive propositions.

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INCORPORATED
250 West 5th Street NEW YORK CITY
You can't "Tire" us asking quotations

Watch Our Monthly Specials
JUNE
Bosch Magnetos
Single Spark

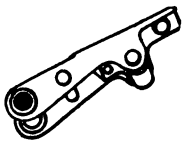
Independent Type	Description	New Price	Rebuilt
ZR 6	6 cylinder magneto	$65.00	$50.00
ZR 4	4 cylinder magneto	60.00	47.50
6 4	6 cylinder magneto	45.00	35.00
D 4	4 cylinder magneto	40.00	30.00
D 3	3 cylinder magneto	40.00	30.00
D 4½	2 cylinder magneto	40.00	30.00
DR 6	6 cylinder magneto	35.00	27.50
DR 4	4 cylinder magneto	30.00	22.50
DR 3	3 cylinder magneto	30.00	22.50
DR 4½	2 cylinder magneto	30.00	22.50
DR 8	8 cylinder magneto	65.00	50.00

The Dual Typed Magnetos $5.00 Additional.

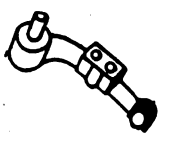
A most complete line of Magnetos, Coils, Generators, Starters and Distributor Systems. Also parts. FULLY GUARANTEED.

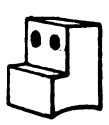
Write for Our Catalog. We have an expert repair department.

Meinert Magneto Specialty Company
1216 Prospect Avenue, CLEVELAND, OHIO.



Superior Parts and Brushes
FOR ALL
Ignition and Starting Lighting Systems
Used for Years by the Best Repair Shops Everywhere
"They Last Longer but Cost Less"
Write for Catalogue





Specialty Manufacturing Co.
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Send for our new wholesale catalogue—"THE TIMESCO DEALER." This is a combined Catalogue, Trade Journal and Dealer's Reference Book—for Dealers and Garagemen only. It tells you how to sell more auto supplies at a bigger profit. It represents the results of 14 years experience in retailing auto supplies, all of which is now placed free, at the service of any auto supply dealer or garageman. It lists everything and anything pertaining to automobiles at *lowest net wholesale prices.* It is a Book that every auto supply dealer and garageman should have.

SEND FOR IT TODAY, FOR IT WILL SHOW YOU HOW TO MAKE MORE MONEY.

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This handsome Wholesale Catalog and Dealers' Reference Book sent Free to any legitimate auto supply dealer, garage, or repairman.

THE ACCESSORY AND GARAGE JOURNAL
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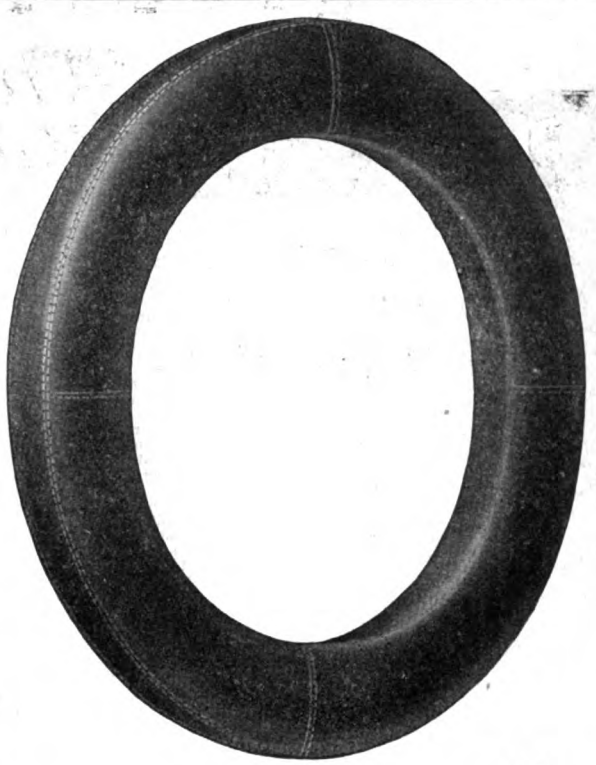

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TIRE COVERS

Made to **best** answer the purpose for which tire covers are intended—**service—protection.**

Toughest, most durable of fabrics. Hardiness—and wear that withstand rough usage and worst of weather. **Still** Badger Tire Covers have—and **retain** an appearance of class that harmonizes with the finish and equipment of the most costly cars. Dealers find tremendous demand. Exceedingly liberal profits. Write for particulars—and prices.

The best at the most reasonable price is always the greatest business bringer. Post up on the selling possibilities of the **entire** Badger line.

SEAT COVERS

The most comprehensive assortment on the market. Guaranteed perfect fit. For all makes of cars. Endless selection of beautiful fabrics and shades.

SLIP ROOFS

Newest thing in re-covers. Abolish all re-cover disadvantages. Simple in construction. Absolute fit. Cut by car manufacturers patterns. Come complete. Put on in few minutes time—by **unskilled** labor. Unlimited sales field.

BACK CURTAINS
With Plate Glass Windows

A welcome advancement. Most attractive back curtain that ever graced a car. "Pierce-Arrow" effect. For all cars. Crystal clear plate glass—instead of unsightly celluloid. Splendid profits. Keen demand.

Send now—for many money making facts on these four leaders in the accessory market.

Wisconsin Auto Top Co.

1 MAIN ST., RACINE, WIS.

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TIP-TOP AKRON TI-RE-PAIR OUTFIT

The Best Equipment

It pays to buy the best equipment if starting in the tire repair business or adding to present equipment. Tip-Top Ti-Re-Pair Equipment is regarded by tire manufacturers, tire repair schools and repair shops as representing the highest standard of quality in tire repairing equipment that it is possible to produce.

TIRE RETREADING

The high price of tires has created a big interest in tire retreading. Motorists who have worn down their tires until no longer usable want new treads put on.

Every tire repair shop should have one of these recently developed Type E Cavity Retreading Outfits, which operates on the same principle as the regular cavity vulcanizer used for repairing casing punctures and blowouts.

Cost of outfit with self-contained steam boiler is much less than that of a vulcanizing kettle and separate steam boiler. (The use of large and expensive retreading kettle outfits is no longer necessary since the development of this type of retreading equipment—and the elaborate, difficult and time-consuming system of wrapping tire is not required with the cavity method). Outfit is very compact and takes up little room in the shop.

TIRE REPAIRING

Motorists who have never bothered with tire repairing are now having casing and inner tube punctures and blow-outs repaired by the vulcanizing process.

Now is the timely time to start in the tire repair business.

We make a complete line of Tire Repairing Equipment—cavity vulcanizers of both the self-contained boiler and separate boiler types—Tube plates—Steam Boilers—Bead Molds—Tire Repair Tools. No matter what you have need of we are in position to supply it to best advantage.

Write us today for literature describing our full line of tire repair equipment, and data regarding vulcanizing and the possibilities for profit in the tire repair business.

THE AKRON RUBBER MOLD & MACHINE CO.

945 SWEITZER AVE., AKRON, OHIO.

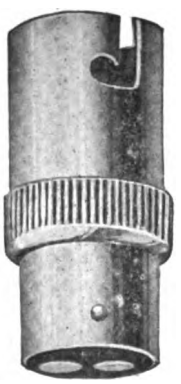
Pacific Coast Distributors,
GEO. W. ENO RUBBER CO.,
1059-63 Post St., San Francisco. 1026 So. Los Angeles St., Los Angeles.

Return This Coupon for Free Booklet. A.G.&J.

Name..... Address.....

A New Device for Ford Cars

HEADLIGHT EQUALIZER



THIS little device is inserted in the lamp socket of the right hand headlight, is locked into place by the knurled locking nut, and the lamp plug is then inserted into the open end of the Equalizer.

The following results are obtained:

Much brighter lights.
Uniform light at all speeds.
Bright lights at low speed.
Protection for the bulbs.

If one bulb burns out, the other remains burning.

Ford owners have always been bothered with poor lights at low engine speeds. This device corrects all this. No electrical or mechanical knowledge required for attaching, and the cost is insignificant.

List Price 75 cents each, subject to our regular trade discounts.

Culver-Stearns Manufacturing Company

WORCESTER, MASS. DETROIT, MICHIGAN

Distributed by

J. H. Faw, Inc., 37 Warren St., New York, N. Y. Manuel Bergman, 1777 Broadway, New York, N. Y.
M. A. Bryte, Inc., 543 Golden Gate Ave., San Francisco, Cal.; 2208 South Michigan Ave., Chicago, Illinois.

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GET A WATERHOUSE WELDING OUTFIT AND WATCH YOUR BUSINESS GROW

Boost your profits—Swing the big profitable welding business to your shop. Thousands of repairers are doing it and most of them use a Waterhouse outfit.

Time is money and a Waterhouse Welding Outfit saves the time as well as labor. It affords utility great enough to meet any shop requirement, yet no shop is too small to own one.

The great difference in welding outfits is all in favor of the Waterhouse. That means quality, utility, long service life, simplicity, dependability, low first cost and the best and most complete welding apparatus ever offered to the trade.

Write for descriptive catalogue, or better still, tell us your requirements. Do it today. We can supply the exact outfit for your needs.

All Waterhouse outfits are guaranteed.

WATERHOUSE WELDING COMPANY, 3 PELHAM STREET, BOSTON, - MASS.

FREE AIR COSTS MONEY

when the customers for whose convenience you provide an air station forget to turn off the flow after they have filled their tires.

Guard against this waste by attaching a

Schrader Universal Inflating Valve

to your air hose.

Thanks to this appliance your bottled air locks itself into the tank the minute it is taken off the tire-valve. You turn on the air by pressing the nozzle of the inflating valve against the tire-valve and you turn it off by removing the device from the tire-valve.

Made to fit any diameter of hose from ¼ in. to ⅝ in.

PRICE $1.50 in U. S. A.

Manufactured by **A. SCHRADER'S SON, Inc.**
800 Atlantic Avenue, Brooklyn, N. Y.

Schrader products were awarded a Grand Prize and two Gold Medals at the Panama Pacific International Exposition. "There's a Reason."

"The Most Trustworthy TIRES Built"

THE OLDFIELD TIRE COMPANY
BARNEY OLDFIELD, President
CLEVELAND, - - OHIO

FITS ALL MODELS OF FORD CARS

No Cost of Upkeep

BARRETT SELF STARTER AND PRIMER *for Fords*

No Wearing Parts

GUARANTEED 5 YEARS

10 Days Trial. Money Refunded if Not Satisfactory.

After many years of continuous experimenting we have perfected this starter. All imperfections of other starters eliminated; all good features improved upon. It will start your engine instantaneously even in zero weather. Made of the best material. Write us for full particulars.

BARRETT MOTOR STARTER MFG. CO., INC.
1777 BROADWAY, NEW YORK

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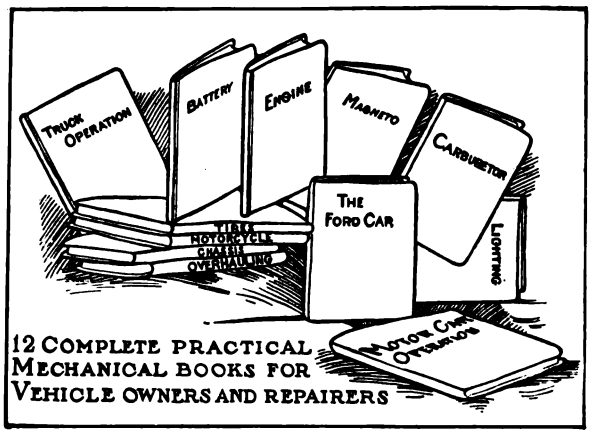

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Engine	35c	Chassis	25c
Magneto	35c	Lighting	50c
Carburetor	35c	Operation	50c
Battery	35c	Overhauling	50c
Tires	25c	Motorcycle	35c

Automobile Journal Publishing Co.
Times Building, Pawtucket, R. I.

STATEMENT OF THE OWNERSHIP, MANAGEMENT, CIRCULATION, ETC., REQUIRED BY THE ACT OF CONGRESS OF AUG. 24, 1912, OF

THE ACCESSORY AND GARAGE JOURNAL,

PUBLISHED MONTHLY AT PAWTUCKET, R. I.

For May 1, 1919.

State of Rhode Island, County of Providence.

Before me, a Notary Public, in and for the state and county aforesaid, personally appeared William H. Black, who, having been duly sworn according to law, deposes and says that he is one of the owners of the Accessory and Garage Journal, and that the following is, to the best of his knowledge and belief, a true statement of the ownership, management, etc., of the aforesaid publication for the date shown in the above caption, required by the act of Aug. 24, 1912, embodied in section 443, Postal Laws and Regulations, printed on the reverse of this form, to wit:

1. That the names and addresses of the publisher, editor, managing editor and business manager are:

PUBLISHER, WM. H. & D. O. BLACK....Pawtucket, R. I.
EDITOR, W. W. SCOTT.....Pawtucket, R. I.
MANAGING EDITOR, E. B. NORTON...Providence, R. I.
BUSINESS MANAGER, WM. H. BLACK..Pawtucket, R. I.

2. That the owners are:

WM. H. BLACK.....Pawtucket, R. I.
D. O. BLACK.....Pawtucket, R. I.

3. That the known bondholders, mortgagees and other security holders owning or holding one per cent. or more of total amount of bonds, mortgages or other securities are:

M. J. BLACK, Mortgagee.....Pawtucket, R. I.

4. That the two paragraphs next above, giving the names of the owners, stockholders and security holders, if any, contain not only the list of stockholders and security holders as they appear upon the books of the company, but also, in cases where the stockholder or security holder appears upon the books of the company as trustee or in any other fiduciary relation, the name of the person or corporation for whom such trustee is acting, is given; also that the said two paragraphs contain statements embracing affiant's full knowledge and belief as to the circumstances and conditions under which stockholders and security holders who do not appear upon the books of the company as trustees, hold stock and securities in a capacity other than that of a bona fide owner; and this affiant has no reason to believe that any other person, association or corporation has any interest direct or indirect in the said stock, bonds or other securities than as so stated by him.

(Signed) WILLIAM H. BLACK, Co-Partner.

Sworn to and subscribed before me this 7th day of April, 1919.

(Signed) CHARLES McALEVY, Notary Public.
[Seal] (My commission expires June 30, 1920.)

VICTOR
TRADE MARK REG. U.S. PAT. OFF.

VICTOR HIGHEST QUALITY COPPER ASBESTOS **GASKETS**

Accepted as the standard by the leading automobile, truck, tractor and gas engine manufacturers, as well as jobbers and dealers, the Victor trade mark is your guarante of super quality gaskets. Insist on the Victor. See that each gasket bears the Victor trade mark.

VICTOR MFG. & GASKET CO.
World's largest gasket manufacturers.
Troy and 21st St. Chicago, Ill.

GENEROMETER

The new and practical generator testing instrument. It will locate shorts and grounds in generator armatures where most of the trouble is of a Lighting System. You will need this instrument if you want to be 100% efficient in your electrical repair work. Further particulars upon request.

PAUL G. NIEHOFF & CO., INC.
232 E. Ohio Street, Chicago, Ill.

Niehoff Laminated Magnetizer

This is the most scientific and practical Magnetizer ever constructed. It will magnetize any size magnet from a Ford to all the various other magnets used on the different cars today. Due to the fact that it generates an enormous amount of magnetism, with a pulling power of about 75 pounds, you can more quickly remagnetize a magnet, and, therefore save much current. All magnetizers are subject to considerable wear. The faces will wear down according to their use. The top pieces of our Magnetizer are especially hardened and also detachable so that when worn down they may be replaced at a very small expense. We have two types; one for 6 volt storage battery and another for 110 volt D. C. current. Write for further information.

PAUL G. NIEHOFF & CO., INC.
232 E. Ohio Street, Chicago, Ill.

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A magazine that is read by more than 20,000 car owners every issue.
It Will Interest You—
Send for sample copy. Times Bldg., Pawt., R. I.

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HAYES WIRE WHEELS
NEW ENGLAND SALES & SERVICE
MITCHELL & SMITH INC.
1090-1092 COMMONWEALTH AVE. BOSTON, MASS
WE REPAIR ANY MAKE OF BATTERY OR WIRE WHEEL

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Electrical BASCO TRADE MARK *Specialties*

UNILITE

A Tail Light Outfit for Ford Cars

UNILITE OUTFIT

Unilite Adapter

The Unilite Outfit is especially designed to provide an electric tail light for Ford Cars, operated from the magneto when running and from dry cells when the car is parked. It is the only reliable tail light outfit on the market for Ford cars not equipped with a storage battery. It is much cheaper to operate than a storage battery and its first cost is very much less. The unit feature makes it possible to install one or both electric side lamps in addition to tail lamp at any time desired.

Outfit can be installed by anyone in a few minutes with no tools, except a screw driver.

Complete outfit consists of one **Unilite Adapter**, with bulb, as shown in cut, one **Unilite Controller** and **Switch**, as shown, and all wire necessary for installing. Complete instructions are packed with each outfit.

PRICE COMPLETE, $4.00.

Extra Unilite Adapter with bulb and wire for attaching to switch terminal on Unilite Controller

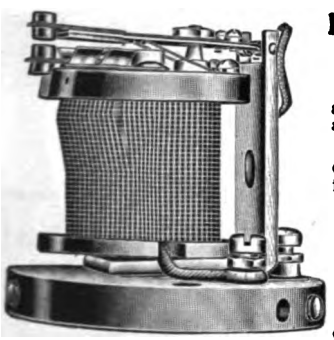
$1.60 EACH.

Separate Controller and Switch,

$2.40 EACH.

Write for our circular fully describing the Unilite.

Unilite Controller and Switch



Reverse Current Cutout No. 2

Automatically connects and disconnects the battery and the generator.

For Automobiles, Battery Charging and Farm Lighting.

	Price Each
6 volt—15 ampere..	$4.25
12 volt—15 ampere..	4.50
32 volt—15 ampere..	4.75
32 volt—30 ampere..	5.00
6-24 volt—20 ampere..	6.00

Combination Lighting and Battery Ignition Switch

The illustration represents a push key type lighting and battery ignition switch for series parallel or two bulb dimming.

A limited quantity on hand at

$1.35 EACH.

Dealers Write for Discounts and Further Information

Briggs and Stratton Co.

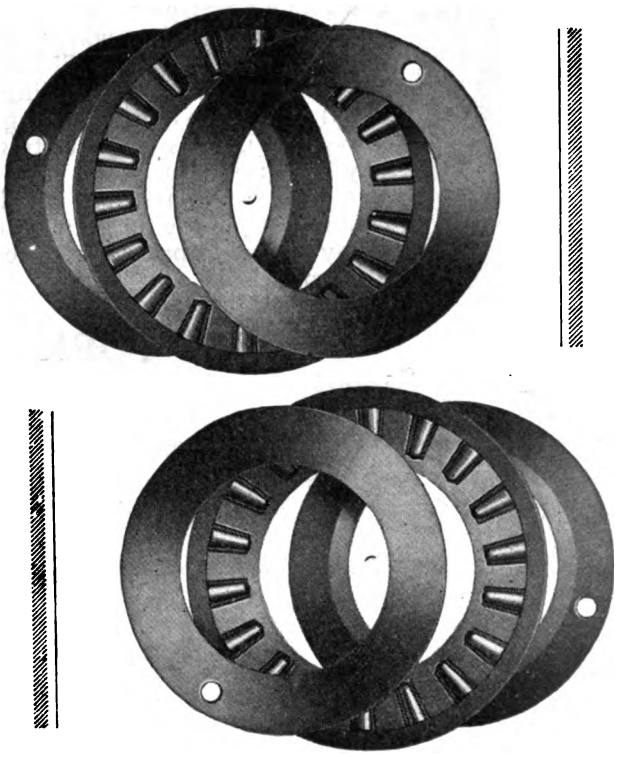
MILWAUKEE, WIS.

The Simmens Taper Roller Thrust for Ford and Chevrolet Cars

Prevents Rear Axle Troubles and Expense

A pair of Simmons Taper Roller Thrust plates makes the rear axle entirely roller bearing—roller thrusts on both sides of differential—thereby eliminating practically all rear axle trouble—a radical improvement over the regular Ford type of plain flat steel-to-brass bearing.

The present Ford type of brass-to-steel bearing wears rapidly, even under favorable conditions, causing "misalignment" and rapid wear of gears.



Complete Set

The Simmons Taper Roller Thrust has one hundred times more real bearing surface than any BALL thrust now on the market, and is used on both sides of the differential case. The entire differential is thereby protected from gear and end thrusts.

The construction of the Simmons Taper Roller Thrust is such that if the differential case sags or drops down, bearing contact is still maintained, because of the special construction of the retainer plate. Protection must be given to gears from sides of the differential case, which is subjected to extremely heavy strain when the car makes a sharp turn.

Your dealer or repair man recognizes this as the onl proper type of thrust bearing. If your dealer or jobbe cannot supply you, write us.

Price $3.50 Per Set of Two $5.00 in Canad

Sold in Complete Sets Only.

Mr. Jobber-Dealer-Repairman: Now is the time t place an order for a stock of Simmons Taper Rolle Thrusts.

WRITE FOR DISCOUNTS

Manufactured by

THE SIMMONS MANUFACTURING C

3405-11 Perkins Avenue, Cleveland, Ohio

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Big Business, Good Profits and New Customers is Your Ambition

New York Automobile Replacement Coils Have Contributed MORE to This End Than Any Other Line.
Ignition Coils Are Not an Accessory—They Must Be Procured IMMEDIATELY to Keep the Car Going.

TYPE D

Unless you are already handling our Replacement Coils and Resistance Units you cannot possibly believe the **tremendous existing demand.**

Ninety-five per cent. of all cars in use are Coil equipped—every one a prospect. This line does not require a large investment. A few dollars will start you, because a small quantity of different model coils fit all cars.

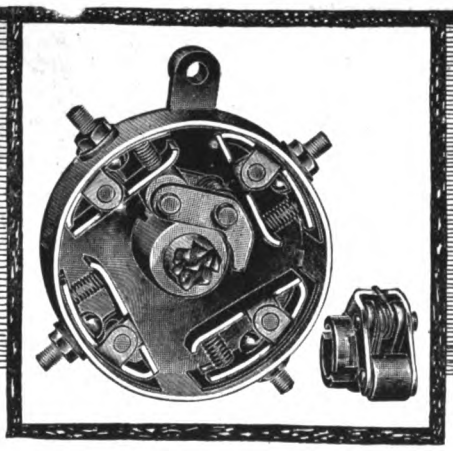
Fifteen years' coil building experience enables us to produce a coil that gives a crashing big hot spark—even when battery is low—that insures easy starting and perfect running on present day low grade gas.

They are guaranteed for the life of the car. Don't let your competitor get the nicest piece of business ever offered **but write today for** trade prices and circular giving list of proper coil for each model car.

TYPE A

NEW YORK COIL COMPANY
338 Pearl Street, New York, N. Y.

Out-wears Them All



THE BAY STATE TIMER FOR FORD CARS

POWER, EFFICIENCY AND ECONOMY DEPEND ON IGNITION

Ignition depends upon the timer—which must be positive in action and must be extremely enduring.
BAY STATE TIMERS are built to a design proven by experience to be far superior to all other types.
The parts are made from materials that especially resist wear—it is practically self-compensating.
In any period of service there can be no change of timing from timer wear. Breakage is the only possible cause of failure or variance.
BAY STATE TIMERS insure you car service, operating economy and repair expense, and fullest satisfaction.
Less important, but equally desirable, is quicker acceleration and absence of noise and
NO TIMER TROUBLE.
The BAY STATE is that dependable.

BAY STATE PUMP COMPANY

100 PURCHASE STREET,
BOSTON, MASS.

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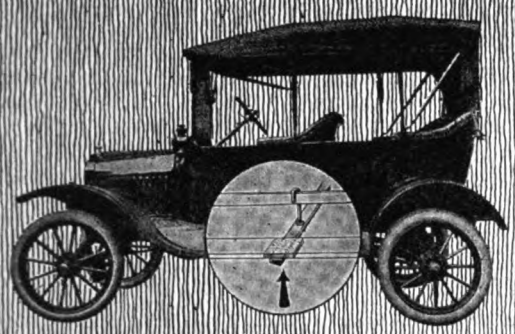


Dow Auto Body Brace

For Ford Cars

A real seller with the jobber and dealer.
Worth its weight in gold to the Ford owner.
Quantity sales with large profits.
Write for quotations and our Agency.

Dow Wire and Iron Works, Incorporated
Louisville Kentucky

DOW LOUISVILLE

THE MOST POPULAR TREAD ON THE MARKET

The favorite non-skid tread of America. Applied to repaired tires it increases their appearance 50%—and their value correspondingly.

The manufacturers—one of the largest rubber companies in the United States—will consider contracting their accumulation of blemished stock of these bands over a period of six months or a year, or fill minimum individual orders of 500 bands. The blemishes are slight. All the bands are good usable stock.
Full details and prices on request.

Address

Box No. 60.
Accessory & Garage Journal

Garages, Large or Small Can Get a Share of the BIG PROFITS from BATTERY CHARGING

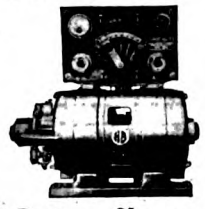
This big money-making business is open to every live garage man. Wherever cars are driven, there are batteries to be recharged and now, with all new Fords coming out with storage battery equipment, the opportunity is even greater. *Get in the game, get the big profits that battery charging pays.* No other part of your garage business pays anything like as big profits. With HB Equipment, it costs you only 12c to 15c to charge a battery, and the customer pays 75c to $1.50. Compare that profit with profits from other lines of your business. Battery charging can be made to pay from $100 to $400 a month. The business is at your door—go after it.

An HB Battery Charger for Every Size Business

You can get an HB Charger in any size you need. All HB Chargers are sturdy, dependable and absolutely reliable. Built of finest materials obtainable. Nothing to burn out, no expensive renewals or repairs. Plain, honest, profit-producing service 24 hours a day. No electrical or mechanical knowledge required to install or operate. No attention except occasional oiling. Uses power from any city lines. Big, quick, clean profits, easily made!

CHOOSE THE SIZE YOU NEED

HB 500 Watt Charger



Recharges 1 to 7 6-volt batteries or their equivalent at a time. Charger is 27 in. long, 26 in. high, weighs 280 lbs. Furnished complete with clear black electrical slate switchboard, with mountings of ammeter, field rheostat, voltage lamp, two controlling switches. A big money-maker for a small battery business.

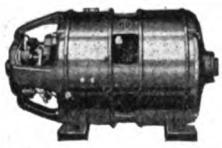
$15 cash.
9 Monthly Payments of $20 each.

HB 16-Battery Charger

Recharges 1 to 16 6-volt batteries or equivalent in 12 or 24-volt batteries at once. Motor 1 KW capacity. Operates on 2 or 3 phase current only. Furnished complete with 2 independent charging panels, each with capacity of 8 batteries. A splendid machine for every live, energetic garage owner wishing to get big profits.

$57 cash.
10 Monthly Payments of $23 each.

HB 32-Battery Charger



Recharges 1 to 32 6-volt batteries or equivalent at a time. Motor 2 KW capacity. Operates on any current. Four separate charging lines, each capable of charging up to 8 batteries. Permits individual attention to batteries on charge. Ideal equipment for big garage or battery service station. Will make as high as $250 to $450 a month *Clear Profit.*

$57 cash.
10 Monthly Payments of $30 each.

Sold on Trial Under HB Absolutely Money-Back Guarantee

All HB Equipment is sold under our absolute guarantee of complete satisfaction. If not satisfied after using any HB Equipment 10 days, you may return it and receive all you paid us. Monthly payment plan is an additional guarantee. Machines pay for themselves out of earnings.

Select the Charger You Need—Mail First Payment Check Today on Trial Order

HB Chargers Are the Motor Generator Type

There are many charging appliances on the market which on first impressions look good. Investigate the operating expense and the cost of parts that wear out or burn out, causing endless trouble, worry and needless expense. It should mean something to you that 75% of all HB Motor Generator Chargers sold replace other charging appliances. Remember, it is not first cost that is so important to you as the monthly bills for current, repairs, renewals, etc. Remember you are buying a battery charger for years of hard service. Get an HB Motor Generator Charger and be free from all expense and trouble. Motor Generator Chargers are sturdy, dependable and last for years under hardest usage. If in doubt, write us for full data on various types of battery charger. Buy *your* Charger for Long Service and Big, Steady Profits. You run no risk with HB Chargers.

HOBART BROTHERS CO.

Successful Manufacturers Since 1893
BOX C5 **TROY, OHIO**

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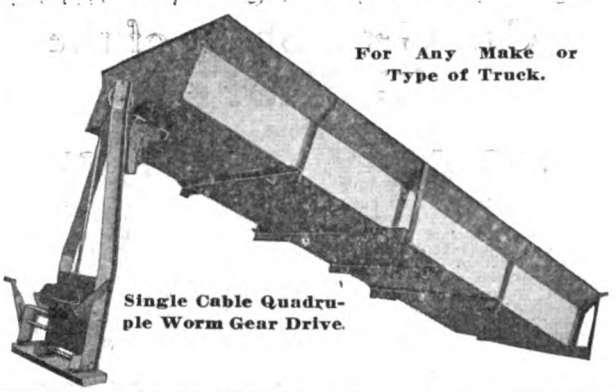
THE PEERLESS HAND HOIST



For Any Make or Type of Truck.

Single Cable Quadruple Worm Gear Drive.

A wonder in efficiency and speed. It will fit any chassis and body. Weighs but 200 pounds. Simple, fool proof, wholly dependable and will last for years in the hardest service.

Any one that can drive a truck can hoist the heaviest load to 30 or 50 degrees in the longest body in less than two minutes. The smaller the body and load the quicker the action.

But two gears are used, quadruple worm and gear (both machine cut) and housed to protect from dirt and dust. The single cable makes an even pull. Compact and can be installed without drilling holes in chassis frame. The body hitch is also furnished.

We specialize in building all-steel bodies for any need.

Write for complete information.

THE AUGLAIZE MOTOR CAR CO.

NEW BREMEN OHIO

Pound Cans, Each, $1.20.

The Standard Valve-Grinding Compound

Backed Up By An Uncontested Reputation.

Thousands of Users Have Quickly Triumphed Over the Worst Carbonized and Poorly Seated Valves. DEALERS—Meet the Demand!

Car Owners will not only demand and call for it—they will exclamatorily Shout for

EUREKA Valve Grinding Compound

Cuts Sharp, Clean and True

Package, 40c.

Eureka Compound contains no oil or grease and consequently does not run all over the engine or work. For this and other well known quality reasons, car owners prefer Eureka. It will grind valves in the worst possible condition in twenty minutes. It is put up in pound cans, each grade separate, especially for manufacturers and shops. Also put up in boxes containing three grades, coarse, medium and fine.

37 WARREN STREET, **J. H. FAW, Inc.** NEW YORK CITY.

Wanted: Distributors

Manufacturer of well known and nationally advertised automobile shop equipment will consider applications from jobbers and distributing agencies for exclusive territorial rights. This is one of the easiest selling and most profitable selling lines open today, and the opportunity is offered only because of a change in selling policy. In answering please state lines you are now handling on a similar basis, number of salesmen and territory covered. None but high grade connections will be considered, and inquiries will be treated as confidential. Address

John H. Thomas, Sales Manager

416 Anisfield Building, Cleveland, Ohio.

Mosco No. 200 Timer for Ford Car

Patented Oct. 31, 1916.

The case is made of extra heavy pressed steel, finished in aluminum. Gray bone fibre is used for raceway, with steel inserts dovetailed in and all lathe finished to a polished surface. The threaded terminals are insulated by fibre washers all the way through to contact points, thus removing cause of short circuiting common to this style of Timer.

PRICE, Complete with Brush, $1.50 EACH

Motor Specialties Co.

Manufacturers

WALTHAM MASS.

(When Writing to Advertisers, Please Mention the Accessory and Garage Journal.)

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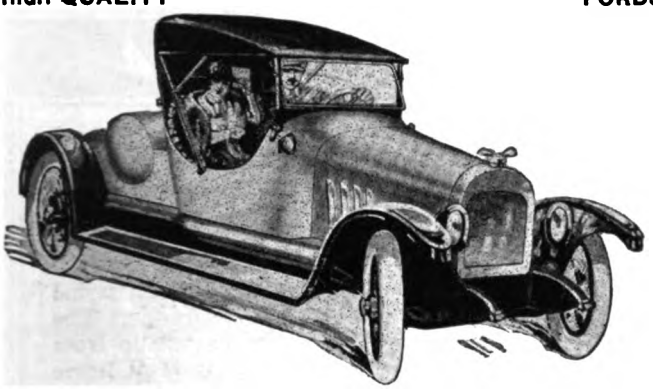
The Little Salesman

Our Dealers' Confidential Price List Shows These
LOW PRICES HIGH QUALITY FIDELITY BODIES FOR FORDS



You can make money on second-hand Fords by EQUIPPING THEM WITH FIDELITY BODIES. They are Handsome, Stylish, Sturdy and Comfortable and LOW-PRICED. Made in Runabout, Roadster and Touring Styles.

A SURPRISE FOR YOU!

It is our Dealers' Confidential Illustrated Net Price List of
AUTOMOBILE SUPPLIES

"The Little Salesman." Send for it to-day.
80,000 dealers get it every 60 days, and if you don't, it is because we haven't your address. Send us.

THE NEW ENGLAND MILLS CO.
1219-1221 So. Michigan Ave., CHICAGO.

WE SELL WHOLESALE ONLY!

ANNOUNCEMENT

The Warner Tire Company

is now prepared to distribute its product nationally

Exclusive territories and selling rights are available to live tire dealers

Write or wire for our liberal proposition to responsible parties

WARNER TIRE COMPANY

2202-2204 South Michigan Ave., Chicago, Illinois

Mormiles

TRADE MARK

Saves Gasoline *Adds Mileage* *Easy to Use*

In Red Cans Only

Every Package Guaranteed

Makes Your Motor Self-Cleaning

Mormiles

—makes every drop of gasoline **clean the motor as it goes.**

—energizes weak, logy, low grade gasoline.

—makes every drop deliver full power to the rear wheels.

—completely dissolves in the gasoline. Unlike a liquid it becomes an integral, evenly distributed part of the fuel which passes through the motor out of the exhaust.

—comes in convenient tablet form only. No messy, ill-smelling liquid to measure out, spill or evaporate.

—can be carried in tool box or under the seat —at hand whenever the gas tank is filled. **Use one tablet for each gallon of gas.**

Guarantee:

Not to injure finest motor; to increase mileage; to increase power; to keep motor free from carbon—**or money refunded.**

JOBBERS AND DEALERS:

Write for our proposition. It is unusually attractive.

Standard $1.00 Package FREE

THIS COUPON WORTH $1.00—USE IT TODAY

MORMILES CO., 226 S. La Salle St., Dept. L., Chicago:
Enclosed find $1.00 for two regular $1.00 cans of Mormiles, a special offer for introductory purposes only—where dealer cannot supply.

Name.....

Address.....

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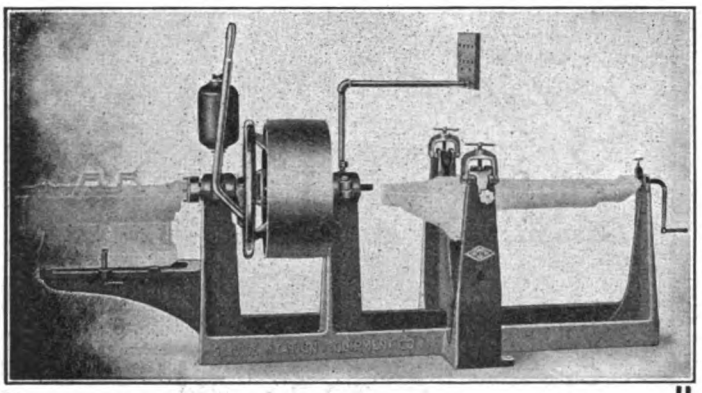


The American "Junior" Combination Bearing Burning-in and Motor Test and Running-in Stand

WITHIN THE REACH OF EVERY FORD DEALER AND REPAIR MAN

The **American Junior** is constructed so that the bearings of the Ford Block are exposed to the view of the operator while being burnt-in. The burning-in Base is constructed with openings large enough so that the Pistons and Connecting Rods can be installed or fitted without removing the Block from the machine. The Block is held in position with quick acting clamps set in guides.

The **American Junior** is constructed along the solid unit principle, no bolts or rivets are used in the frame. This eliminates vibration and also the danger of the frame shaking loose from constant use.

The Motor Test part of the machine can be operated independently or at the same time that the bearings are burned in. This machine has the quick adjusting alignment device on right hand motor support for aligning the Universal Joint quickly and accurate. The clutch is also equipped with a tryout wheel so that the stiffness of the motor and bearings can be determined without removing either unit from the machine.

The **American Junior** comes completely equipped with gasoline tank inlet and outlet water connections, and coil support as shown in illustration.

Price $197.50

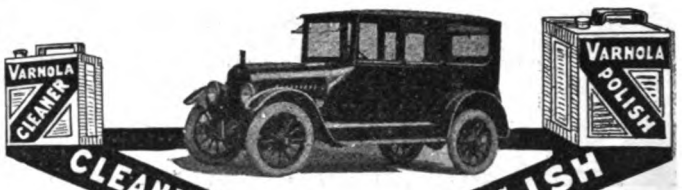
We manufacture a full line of equipment for Ford and Fordson Service Stations. Write for Catalogue.

All equipment manufactured by this company is approved by the equipment department of the Ford Motor Company before it is placed on the market.

SERVICE STATION EQUIPMENT COMPANY, Inc.

MANUFACTURERS

1201-1211 Cortland Street Chicago, Ill.



RENEW CAR FINISH PERFECTLY

THEY restore varnish and enamel, on wood and metal, to the original appearance. The Cleaner removes grease, dirt or corrosion from the surfaces and the Polish gives a high lustre that will endure from 30 to 60 days.

A pint can of the Cleaner and a quart can of the Polish will suffice for any size or type of car for six months. The price for the two, sold only in combination, is $1.50

JOBBERS AND DEALERS

You know the reasons why other automobile cleaners and polishes do not satisfy. Varnola products are sold with a guarantee of satisfaction. The demand is constantly growing. The sales probabilities are extremely large. Our trade discounts are very liberal. Write for them today

American Manfg. & Supply Company

BOSTON 9 WILTON STREET (Allston District) MASS

A-B-C STARTING & LIGHTING SYSTEM FOR FORD CARS

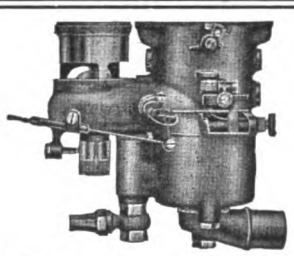
TWO UNIT

$115 Installed F. O. B. Detroit

Splendid Opportunity for Dealers
Prompt Deliveries—NOW

A. B. C. STARTER COMPANY

DETROIT, MICH.



YOUR CUSTOMER HAS BEEN LOOKING FOR SUCH A CARBURETOR FOR A LONG TIME

More Mileage—More Power—More Speed

Get him to try it for 15 days. Satisfaction guaranteed.

WEBBER MANUFACTURING COMPANY

Factory: 66 Stanhope Street, Boston, Mass. New York Branch: 1765 Broadway

SPRINGS—COILED AND FLAT.
Steel, Brass and Phosphor Bronze.
Spring Cotters, Small Washers.

16 lbs. Assorted Springs.....$2.00
25 lbs. Assorted Cotters..... 5.00
Subject to Market Changes.
Send for Catalogue.

PLUG READY TO EXPAND

SPECIAL POINTS (FOR QUICK ASSEMBLY)

Welch Patent Expansion Plug.
For Closing Core Holes.

M. K. HUBBARD SPRING CO., Pontiac, Mich.

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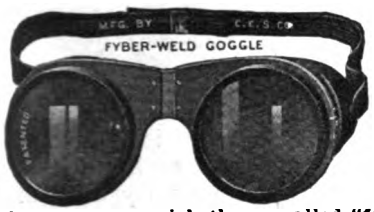
GOGGLES FOR WELDERS.

Fitted with "Essentialite" Lenses.

THE FIBRE WELD.



Frame: Vulcanized fibre, non-conductor of heat and electricity, non-inflammable and infusible not affected by moisture, leather center, ventilated side pieces, adjustable elastic head band. We have demonstrated conclusively that with these lenses we vanquish the so-called "fatigue-weariness" and headaches caused by Ultra Violet and Infra Red rays. Circulars and prices at request. Price each, prepaid, **$3 pr.**

Manufactured by

CHICAGO EYE-SHIELD COMPANY

2300 Warren Ave., Chicago, Ill.

SCAIFE COPPER-BRAZED AIR TANKS

are positively guaranteed to hold air indefinitely without loss of pressure.

(117 years old. Founded 1802)

WM. B. SCAIFE & SONS CO.

First Nat. Bank Bldg., Pittsburgh, Pa.
26 Cortlandt St., New York, N. Y.
First Natl. Bank Bldg., Chicago, Ill.

SCAIFE GASOLINE STORAGE OUTFITS

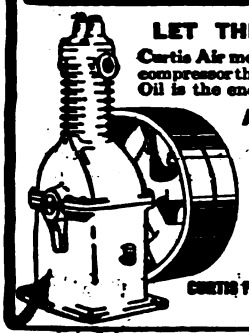
ARE IDEAL FOR PRIVATE GARAGES.

Send for catalogue.

CURTIS AIR FREE FROM OIL

MOTORISTS Have CONFIDENCE IN THIS SIGN

LET THEM FIND IT AT *YOUR* DOOR.



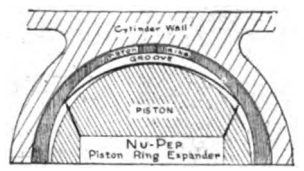
Curtis Air means more mileage, because Curtis is the only air compressor that can't flood cylinder with more oil than it can use. Oil is the enemy of rubber. It rots tires, causing blow-outs.

A Curtis Compressor is Dependable

requires practically no attention, costs very little, quickly pays for itself, always delivers the kind of cool, clean air that makes tires last longer.

5 sizes and 125 combinations. Write for full particulars and let us tell you why the Curtis will prove to be your best investment. Ask your jobber for prices—but be sure and mention Curtis—the name is your protection against substitution

CURTIS PNEUMATIC MACH. CO. 1621A Kienlen Ave. St. Louis, Mo.
Branch Office: 531A Hudson Terminal, New York



"Nu Pep" with Old Rings

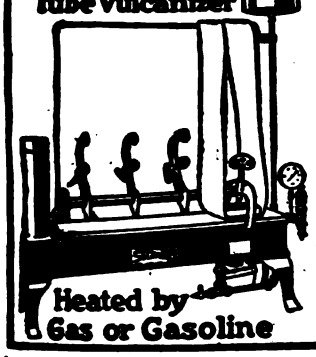
Just slip these spring steel Nu Pep Piston Ring Expanders behind the old piston rings. They will force the rings against the walls of the cylinder and prevent leaking. Better than new rings.

Nu Pep Piston Ring Expanders

RESULTS	Guaranteed	
More Power	to increase compression in any motor or money refunded.	4 cyl. set, $2.00
Less Carbon		6 cyl. set, $3.00
Gas. Saved	TRY A SET.	Mention car.

NUPEP MFG. CO., 1224 H Farwell Ave., Chicago, Ill.

SHALER Bench Tube Vulcanizer



Big Extra Profits for Every Garage

This handy Shaler Steam Heated Tube Vulcanizer makes four perfect tube repairs at one time—mends any kind of tear, cut or puncture in any tube perfectly.

Has automatic heat control—no danger of explosions or damaging tubes. Anybody can operate it—does quick work—has large capacity and makes money fast.

Can be had with either gas or gasoline burners. Outfit complete, only $35.00, Subject to Trade Discount.

Send at once for our large, illustrated catalog describing SHALER Vulcanizers for motorists, garages and tire repair shops.

C. A. Shaler Co., 253 Fourth St., Waupun, Wis.

NEW DEPARTURE BALL BEARINGS

Strength
Stamina
Service

The New Departure Manufacturing Co., Bristol, Conn.

Conrad Patent Licenses

The "FORD" Heel Rest

Size 7½ x 4½ x ¼ thick

Made of Frosted Aluminum

Used on mat or floor boards, sold by all Dealers, or will be sent Post-paid, **$1.00.**

Made only by

J. L. LUCAS & SON, Inc.

BRIDGEPORT, CONN.

TRADE AMBU MARK

Cadmium Tester

Enables you to test either set of battery plates, accurately and quickly. Consists of set of Cadmium leads and specially calibrated positive and negative voltmeter. Complete, $25. Voltmeter alone, $22.50. Leads alone, $3.25.

Automobile Storage Battery

Its Care and Repair

This leather bound book tells in non-technical words all about this vital part of every car—and how to correct all troubles. Every owner should have one—5 days' examination, $5.00, postpaid.

AMERICAN BUREAU OF ENGINEERING

1032 WABASH AVENUE, CHICAGO

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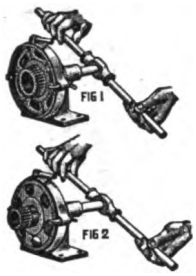
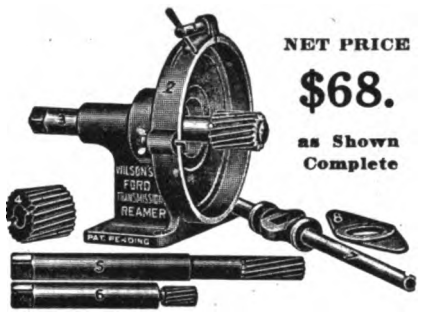
FORD REPAIR MEN

Cut Your Labor Costs to Just One-Third What They Now Cost You by Ordinary Methods and Do the Work Better Than the Best Job You Ever Sent Out.



This great saving of time means a big additional profit, but is now a loss. There is BIG MONEY in Ford repairing if you have efficient tools that save time and eliminate guesswork and experts. The two outfits listed here will save their cost on a very few jobs and enable you to render the quickest possible service to your trade.

TRANSMISSION REAMING MACHINE reams every bushing in a Ford Transmission to a perfect fit and alignment, so the gears mesh perfectly on their pitch diameter and run without noise or excessive wear. Impossible with any other tool equipment ever offered. 30 Minutes to Completely Overhaul and Re-Bush a Transmission, making it as good as new. Can you beat it.

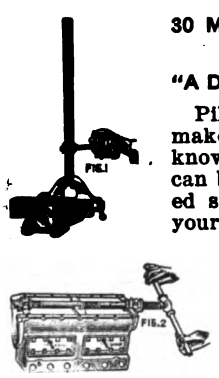


NET PRICE

$68.

as Shown Complete

Main Bearing and Connecting Rod Aligning Reamer



30 Minutes to Fit Perfectly All Main Bearings and Connecting Rods.

"A DAY'S JOB DONE IN HALF AN HOUR."

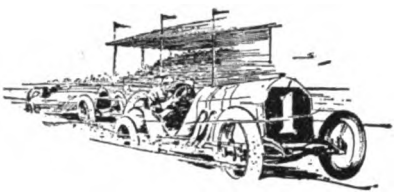
Pilots guide the reamer. No chance to make mistake. Far superior to any other known method. Motors put up this way can be started by hand. I have only a limited supply of this material on hand. Send your order promptly to avoid disappointment. One per cent discount if you mention this magazine. Send for catalogue of other special tools, reamers, etc.

Price $28.

I Make the BEST HONEYCOMB RADIATOR at any price.

K. R. WILSON

10-16 LOCK STREET BUFFALO, N. Y.



The fact that Dixon's Graphite Transmission and Differential Lubricant is regularly used by practically all the great racing drivers is sufficient proof of its superiority over all others.

DIXON'S GRAPHITE Transmission and Differential LUBRICANT

Dixon's Graphite Transmission and Differential Lubricants are made from a selected flake graphite—scientifically combined with the highest grade oils and greases—and produced in the proper consistencies to meet the special needs of the driving mechanism.

You should be getting the Dixon's Lubricant business in your community. We will gladly help you. Write for Booklet 49-G.

Made in Jersey City, N. J., by the

Joseph Dixon Crucible Company

D X N TRADE MARK Established 1827. D X N TRADE MARK

"OHIO CARBON PRODUCTS"

"OHIO" BRUSHES

FOR AUTOMOBILE STARTING MOTORS AND LIGHTING GENERATORS

GARAGEMEN TAKE NOTICE

Write for Our No. 5 Car List for Information on New Cars

THE OHIO CARBON COMPANY

1900 FULTON PLACE, CLEVELAND, O.

THE

"Official" Ford Filler Cap Gauge

USEFUL—ACCURATE—

A dependable instrument that tells the amount of gas in the tank at a glance by lifting off the cushion. It saves time, trouble and worry when desirous to know the gasoline supply.

Is simple in construction—nothing to get out of order.

GUARANTEED FOR FIVE YEARS.

No installing required—takes place of filler cap. Price, $1.25.

WRITE US TODAY FOR A CATALOG of our useful auto accessories. It will pay you.

AMERICAN AUTOMATIC DEVICES CO.

3264 W. GRAND AVE., CHICAGO

WELDERS!

There's economy in using the best fluxes you can find for particular welding jobs. Insure better and stronger welds, more easily and more rapidly made, by using

ANTI-BORAX COMPOUNDS

For Acetylene, Gas and Electric Welding

Anti-Borax WELDING FLUX

Best on the market for all grades of iron and steel. Weld at lower heat. Leave no scale. They cleanse the molten metal, assist fusion and improve the quality and appearance of your work. Guaranteed to give perfect satisfaction or your money refunded.

Write for sample and price list.

ANTI-BORAX COMPOUND CO.

FORT WAYNE, INDIANA

(When Writing to Advertisers, Please Mention the Accessory and Garage Journal.)

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The Opportunity Is Tremendous

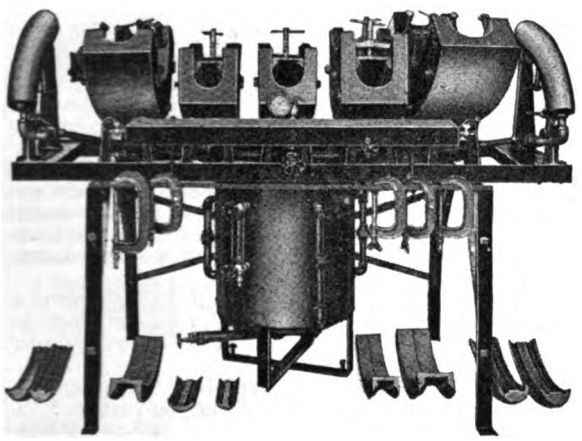
Hundreds of thousands of new automobiles being sold every year.

Open a Tire Repairing Shop

Most profitable business on earth requiring such small capital. In a short time you build up an enormous business.

VANDERPOOL VULCANIZER

repairs tires exactly as made at the factory. Capacity of $100 worth of work a day. Vanderpool Vulcanizer has improved features not possessed by any other. Write at once for FREE TIRE REPAIRING MANUAL and full particulars.



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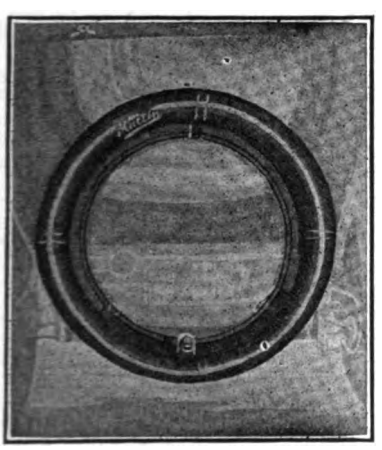
WM. VANDERPOOL CO., Springfield, O.

Martin Tire Covers

The lowest priced, highest quality, fastest selling tire covers made.



The Martin Style C Cover.

A "sale on sight" line with all dealers. Will fit any tire whether carried on or off extra rims.

Sold in sizes listed. Made of heavy selected enameled drill, long lasting and attractive in appearance.

Sizes	List Prices
30-30	$1.70
31-32	1.80
32-34	2.00
35-36	2.15
37-38	2.20
39-up	3.00

Jobbers and Dealers Write for Catalogues and Discounts. The Martin full line includes specialties that afford big returns to the trade.

MARTIN MANUFACTURING CO.
Lancaster Ohio

JEFFERSON AUTOMOBILE IGNITION COILS

STEADY PROFITS

in coil replacements—from a *small* investment.

ORDER JEFFERSON COILS

A small stock enables you to fit all makes of cars. Flexible caps, terminals, and brackets adapt these coils to all ignition systems.

You can count on the long life, dependability, and uniform high standard of Jefferson ignition coils —*we guarantee them fully.*

Prepare now for your *full* share of this steady, profitable business. *Today*—order Jeffersons—the only complete line of interchangable ignition coils.

SEND FOR COIL LIST

showing list of all cars that are Coil-Equipped and the types of Jefferson Coils and Brackets to be used as Replacements.

JEFFERSON ELECTRIC MFG. CO.
429 So. Green St.
CHICAGO, ILL.

BUNTING BEARING BRONZE B-B-B CO. No 1

Same quality as our finished bronze bushings and bearings used by manufacturers the country over.
Your repair stock is not complete without it.

All leading jobbers
Ask for catalog N

The Bunting Brass & Bronze Co.

727 SPENCER STREET
TOLEDO, OHIO.

CORED BARS

STOCK SIZES

PIECE NO.	Outside Diameter	Inside Diameter	Length	Approx. Weight
A	1	½	12	2
B	1⅛	½	12	3⅛
C	1¼	¾	12	5
D	1⅜	⅞	12	7
E	2	1	12	8⅛
F	2⅛	1⅛	12	10
G	2¼	1¼	12	11⅛
H	2⅜	1⅜	12	12⅝
I	3	2	12	13⅞
J	3⅛	2⅛	12	15⅛
K	3½	2½	12	17
L	4	3	12	21
M	4⅛	3⅛	12	20

BURKE AUTOMOBILE PRODUCTS

THE BURKE Ox-iliator

Ox-iliator

supplies the gasoline motor with additional oxygen (moisture) needed for complete combustion; consumes carbon; saves fuel; increases motor power. Inexpensive, easily installed.

Oxy-Genii capsules

double efficiency of any air moistener; surcharge water through which air passes with free oxygen. 30 capsules—3 months supply—75 cents. Write for booklets.

Oxy-Genii

AUTOMOBILE DEVICES COMPANY
PHILADELPHIA, U. S. A.

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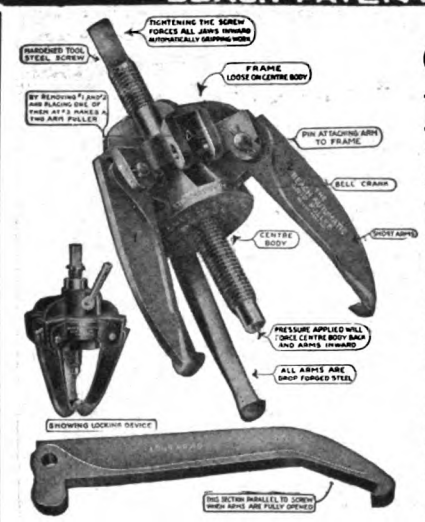
GREB AUTOMATIC GRIP PULLER
BEACH PATENT



Gear Pulling Made Easy

The GREB AUTOMATIC GRIP AND GEAR PULLER gets a job done quick and without danger or damage. This means larger profits and quicker work.

Scientifically designed, well made, quick acting, strong, simple and trouble-proof. Adjusts itself instantly to work—locks in any desired position.

We also make the GREB RIM TOOL and GREB AUTO LOCK.

A Combination of 2 or 3 Arms.

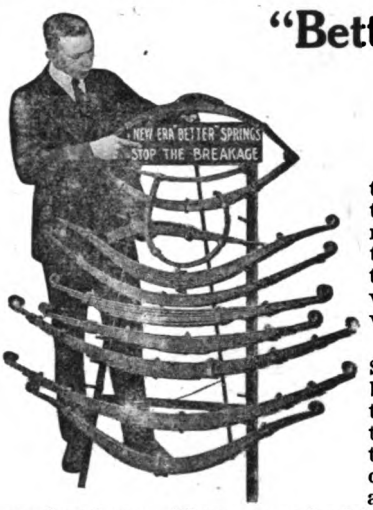
TWO SETS OF ARMS
Senior Size—Capacity 1" to 10" and 1" to 18"
Junior Size— " 1" to 4" and 1" to 7"

10 DAYS TRIAL

If your jobber does not have them, we will send you one. Try it ten days. If not satisfactory return it to us and we will refund your money.

THE GREB CO.
202 State Street, Boston, Mass.

NEW ERA



"Better" Springs STOP Breakage

The reason is: Scientific control of heat treatment, under a new method that tempers the leaves evenly over their entire length, provides greater strength, with resiliency.

New Era "Better" Springs are graphited between the leaves for two years' lubrication—they never squeak—they last long—they fit closely. They are guaranteed against sagging or breakage. They are priced low—offered to dealers at a good discount—sell readily, because they so surely satisfy.

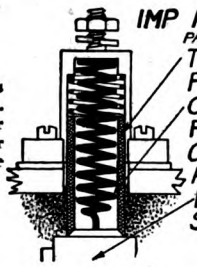
For eight years they have made good on cars of all makes. Look for the name NEW ERA on each leaf when you purchase; or order direct, giving your dealer's or jobber's name.

"Better" Spring Bumpers—Strapless Tire Carriers—All trade satisfying—May we inform you further?

NEW ERA SPRING & SPECIALTY CO.
1177 Hamilton Ave., GRAND RAPIDS, MICHIGAN.

Stop Magneto Troubles On Your Ford
WITH AN
IMP MAGNETO PLUG

Thousands in use. Ask your dealer about the IMP.



Permanent insurance against magneto troubles.

Price $1.00 $1.50 in Canada

The above cut shows the vital point of the Ford ignition system absolutely protected against all sediment formed by the wear of transmission bands and connecting rod bearings. The IMP is guaranteed to prevent all magneto and most ignition troubles.

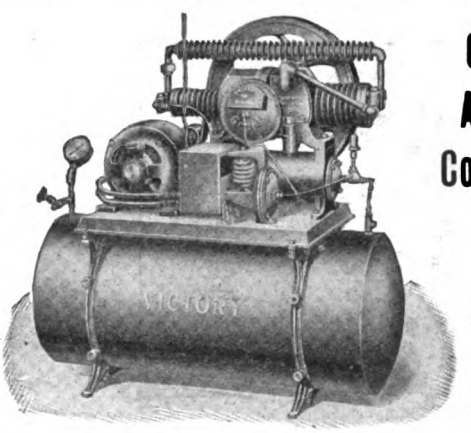
Short circuiting will eventually kill the finest magneto made. The IMP is the only sure protection against magneto troubles and expense. It lasts forever and can be attached in five minutes without trouble.

Sold on a money-back guarantee everywhere by good jobbers and dealers.

Manufactured by

THE IMPROVED MOTOR ACCESSORIES COMPANY
3405-11 Perkins Ave., CLEVELAND, OHIO

V I C T O R Y



Complete Automatic Compressor Unit

A C E O F A C E S

GLOBE TYPE B—Original Two-Stage Garage Compressor. Saves power, time and money.

WONDERFUL new system of AUTOMATIC LUBRICATION insures Oil-Free Air, provides abundant and continuous lubrication and wastes NOT AN OUNCE of lubricant.

Automatic Pressure Unloader protects belts, fuses and motors.

15 Sizes and Styles of LAST WORD Equipments from which to select.

Desk C.

Globe Manufacturing Co., Battle Creek, Mich., U.S.A.

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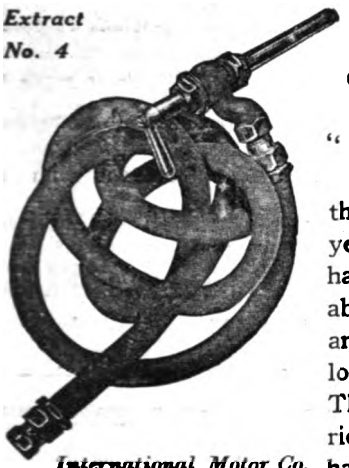
What Garagemen Think About "TRIPLEXD"

Extract No. 4



3 Years

"... WE purchased some of this hose about three years ago, which we have used for our portable tanks and used on an average of 500 gallons of gas every day. This hose is far superior to any which we have ever tried, and has proved satisfactory in every respect."

International Motor Co.
Edward Brockett,
N. Y. Service Dept.
West End Ave.,
163rd and 64th Sts.

Watch from Month to Month for *What Garagemen Think.*

TRIPLEXD
GASOLINE HOSE

METAL HOSE & TUBING CO.
INCORPORATED
227 Tillary St.
BROOKLYN, N. Y.

CAN'T RATTLE OFF

"M. & E." GREASE CUPS
PATENTED

The efficiency and dependability of the "M & E" Grease Cups has been recognized by many of the leading makers of motor vehicles.

The tops will not rattle off from vibration. They stay where they are put.

The pawl "B" in the illustration engaging in the corrugations "A" prevents the tops from getting loose.

Owners and manufacturers can insure against waste by installing the "M & E" Ratchet Top Grease Cup.

Made of Steel and Brass.
Sample and prices on request.

Kindly mark your inquiry Dept. 2.

MERCHANT & EVANS Co
NEW YORK PHILADELPHIA WHEELING
BALTIMORE CHICAGO
ATLANTA ST. LOUIS,
CLEVELAND KANSAS CITY

Lewis Combination Aligning Reamer For Ford Cars

A Connecting Rod and main bearing Reamer that does the work of a skilled mechanic. 100 per cent. Better and 500 per cent. Cheaper.

Reamer No. 2, Showing position on Connection Rods.
This Reamer will pay for itself on the first five motors over hauled in labor saved. It is absolutely perfect and fool proof. Will work equally well on full or under sized shaft.

Reamer No. 2, Showing Combination Reamer in position on main bearing.

It is the **only** reamer that will ream **connecting rods and main bearings** in **absolute alignment.**
It leaves a finished, perfect fitting, glass-smooth bearing. It is perfect in operation; **cannot chatter, dig or pull the babbitt. There is no end thrust.**
The Lewis Reamer **is not** of the ordinary type, but is a scientifically designed tool; positively the most accurate method ever devised for trueing or fitting bearings, and does away entirely with hand scraping or burning in.
It has been thoroughly tested by two years in actual garage work.

Operation: Place reamer in position and draw caps down.
For further information ask your jobber or write us.

Lewis Tool Company
Designers and Manufacturers.
High Grade Tools and Labor Saving Devices.
915 Washington Ave., So. MINNEAPOLIS, MINN.

Our Line is a Money-Maker for you—Stock Now—Immediate shipments.

Write for
CATALOG
illustrating our Complete Line with Prices

It Will Pay You

A. W. ROSEN & CO.
MANUFACTURERS
610-614 Broadway New York

(When Writing to Advertisers, Please Mention the Accessory and Garage Journal.)

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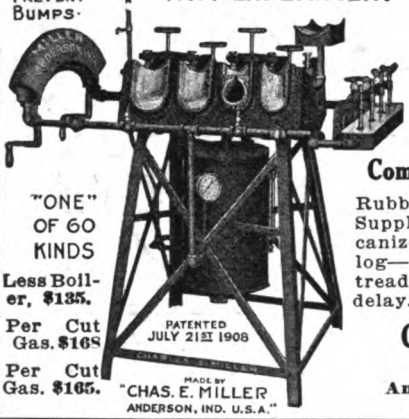
INSULATED AIR-COOLED FLANGES PREVENT BUMPS

USE MILLER'S WHY EXPERIMENT



"ONE" OF 60 KINDS

Less Boiler, $135.

Per Cut Gas. $168

Per Cut Gas. $165.

Extra Ply Tires, Tubes, Vulcanizers

60 kinds.

6 kinds Wrapping Machines—Tire Building Stands—Air Pumps—Repair Stocks—Reliners—Steam Boilers.

Complete Tire Shop Outfits

Rubber Workers Tools and all Supplies—Boot and Shoe Vulcanizer—FREE 84-page Catalog—Four Cavity Ribbed Retreader. Write today. Don't delay.

CHAS. E. MILLER
1402 Meridian St.,
Anderson, Ind. U. S. A.

TANKS

The tightest, safest, strongest tank it is possible to construct by any known method. Process originated by us over twenty-five years ago.

We also make a special portable emergency tank for filling tires. Throw it in your emergency car and take it with you.

Gasoline and Oil Storage Tanks and Pumps

AIR-TIGHT STEEL TANK CO.
Main Office and Works
PITTSBURGH, PA.

Guaranteed Bearings
We Exchange Rebuilt Bearings for old or worn ones
BILODEAU BALL BEARINGS WORKS

In Order to Obtain
EFFICIENCY and ECONOMY
in Bearings, send your worn bearings to us for repairs. We will rebuild them, make them as good and better than new at a fraction of the cost of new bearings.

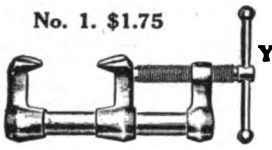
SATISFACTION GUARANTEED.

Garage and Repair Men cannot afford to miss this splendid service. **No delay.** We carry a big stock of Rebuilt Bearings to exchange for worn ones. Catalog sent and discounts quoted on application.

BILODEAU BALL BEARING WORKS
66 Stanhope Street, BOSTON, MASS.

Knowlson Spring Spreaders

No. 1. $1.75



Both Guaranteed.
Either or Both Delivered.
Your Money Back if You Want It.

They Fit Any Spring. Easy to Operate. Both Drop Forged.

DON'T RUIN YOUR SPRINGS BY NEGLECTING THEM!

No. 3. $1.25

Nickel-plated and polished.

100% EASIER RIDING.

SQUEAKING STOPPED.

Spring Breakages Eliminated.

Use a Heavy Grease (not oil) for real results.

Gun metal yoke, screw and handle nickel.

At your Dealers, or Sent Direct.
SPRING LEAF LUBRICATOR CO., Dept. 4, Ann Arbor, Mich.

The MANLEY GARAGE AND SHOP EQUIPMENT

Every garageman and repairman should get our catalog. You'll find in it just the time and labor savers you need, and their prices will astonish you by their moderateness.

Send for your copy of this catalog today

THE UNITED ENGINE & MFG. CO.
Hanover, Pa.

Your Prospective Customers

are listed in our Catalog of 99% guaranteed Mailing Lists. It also contains vital suggestions how to advertise and sell profitably by mail. Counts and prices given on 9000 different national Lists, covering all classes; for instance, Farmers, Noodle Mfrs., Hardware Dlrs., Zinc Mines, etc. *This valuable reference book free.* Write for it.

50¢ Saves Dollars on Your Purchases

Get several quotations on what you buy. It will save many dollars. For 50c (coin or stamps) we will send a few names of manufacturers, jobbers, dealers, or individuals who sell what you want to buy.

Ross-Gould Mailing Lists St. Louis

For sale by accessory and hardware dealers or by MAIL POST-PAID 50c EACH

RAIN-SNO CLEAR VIEW WINDSHIELD CLOTH

PREVENTS ACCIDENTS

Just RUB IT OVER THE GLASS and RAIN or SNOW cannot collect to obstruct the vision.

INSIST UPON THE "RED CL OTH"

Which is guaranteed to give continuous use for one year or money refunded. Made only by

SUFFOLK MANUFACTURING CO., INC., DEPT. D.
60 LONG WHARF BOSTON, MASS.

UNIVERSAL BATTERY CLIPS

Offer a quick and ready means of connecting storage batteries for charging. Simply fit your connecting cords with these clips and snap them over the battery terminals.

No. 21-A—lead plated—1½" spread of jaws.

Sample mailed postpaid for 15c in stamps.

Single Lots, Each 20c. Lots of 10, Each 15c.
Lots of 100, Each 12½c.

R. S. MUELLER & CO., 431 High Avenue, Cleveland, O.

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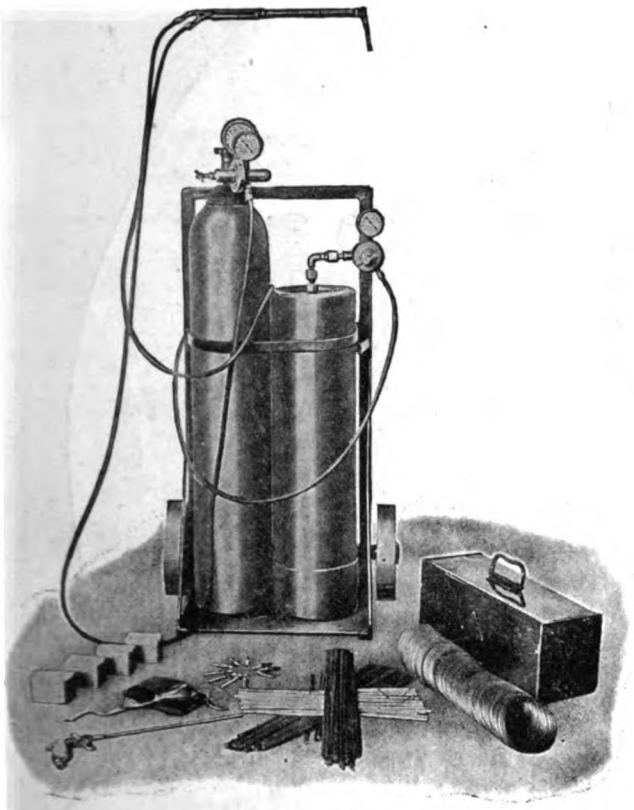
Dyer welding, cutting, carbon removing, lead burning and brazing-soldering apparatus has yearly increased 100% in popularity with garage and repair men because:—



Style A, Welding and Carbon Removing Outfit

The style A outfit which includes all the items shown in the cut except the cylinders, was especially designed for the garage or small repair shop. The welding torch is standard, covering a wide range of work. The regulators and gauges are the same as used on the large outfit. Carbon gun is of the popular pistol grip, trigger control type. The outfit is light and may be easily packed and used in emergency work.

Style B outfit includes all the items shown in the cut except the cylinders and will easily handle a wide range of welding and cutting. This outfit is complete in every detail, meeting most exact requirements.

Oxy-acetylene apparatus is very efficient for frame straightening, for heating and for brazing. Your jobber stocks, catalogues or can immediately get Dyer Apparatus.

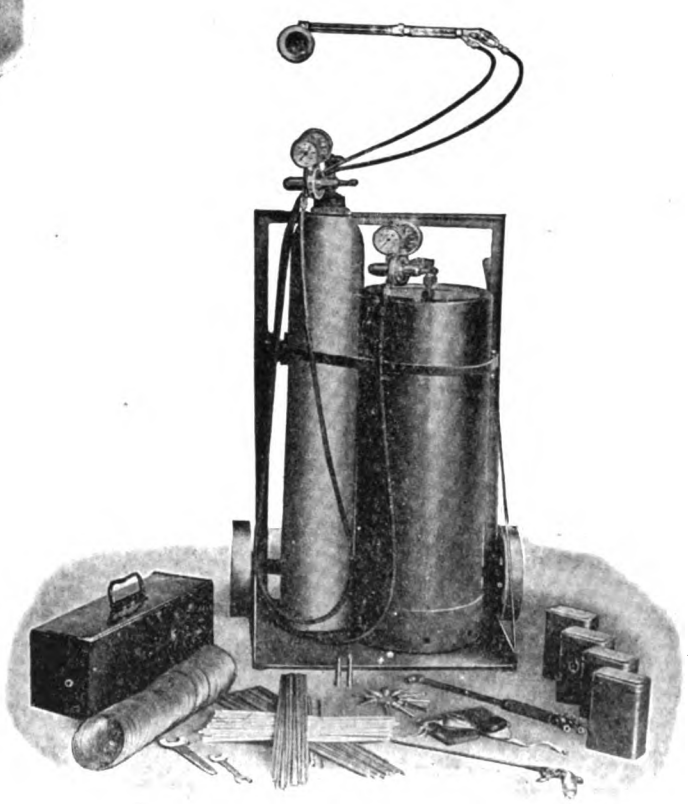
Prices Very Attractive

It is lightly and simply designed to give the highest efficiency during long hard service. We guarantee the best quality of materials and workmanship.

Dyer Apparatus is approved by the Factory Mutual Fire Insurance Company and expert knowledge is not required to operate it successfully.

Dyer torches are of the non-flashing, semi-injector type. They practically empty the cylinders and are economical in gas consumption.

Regulators are accurate at all pressures and strongly built. Best grades of gauges.



Style B, Welding, Cutting and Carbon Removing Outfit

THE G. H. DYER CO. 155 BROOKLINE STREET Cambridge, Mass.

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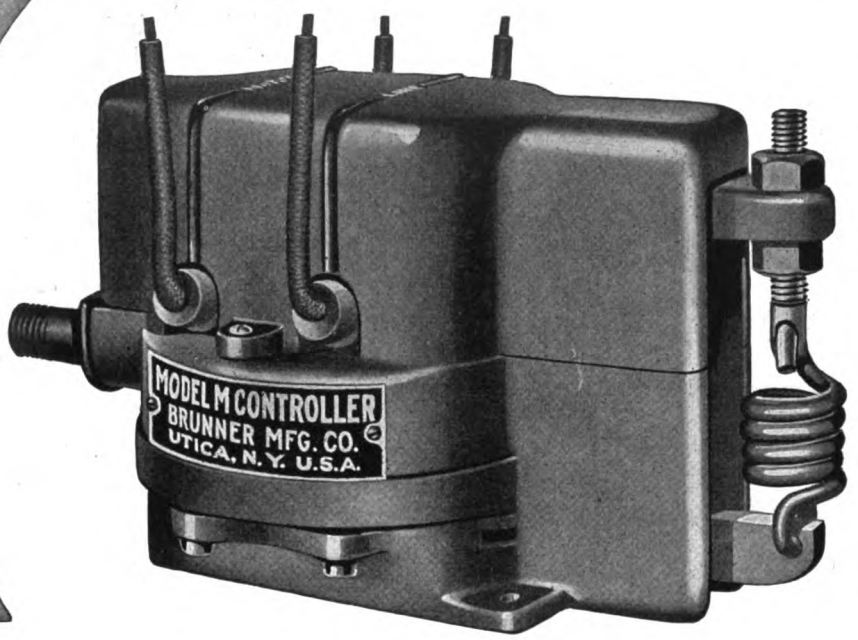
BRUNNER



Controlled Air Service

Your air compressor is in the back room---your profitable time is spent in the front. Suppose you start your compressor and are called away. What will happen if it is not automatically controlled ?

1st - you may have to leave important, profitable work to go back to shut it off -- several times a day this happens. A Brunner Controller will pay for itself in the loss of time and profit.

2nd - If your compressor has safety valves, these will open when the proper pressure is reached then you are just pumping into the atmosphere - burning up current and wearing out your machine. A Brunner controller will prevent this.

3rd - If your outfit does not have safety valves, the pressure may reach the danger point. A Brunner controller will avoid damage and personal injury.

Suppose on the other hand you forgot or neglected to turn the compressor on, you'll have disappointed customers. A Brunner controller automatically maintains a proper working pressure which means every customer served without delay.

Here again Brunner engineers have designed a special type of controller to meet the most exacting requirements.

A Brunner controller will work on other Compressors - write for details, name your jobber.

BRUNNER MANUFACTURING COMPANY

MAIN OFFICE and FACTORY, UTICA, N. Y.

Branch Cincinnati, Ohio.

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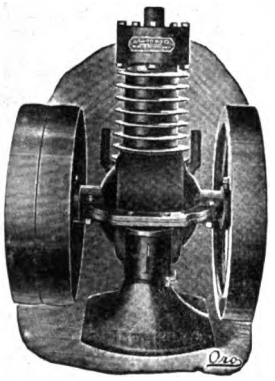
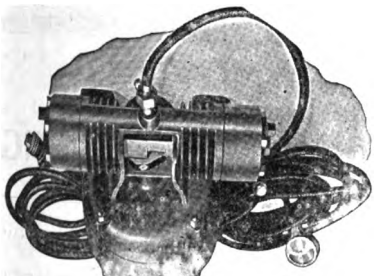
Oro
GOOD as GOLD

The Long-Lived Connecting Rod for Ford's



AU-TO AIR COMPRESSOR No. 0



Electric Driven AU-TO Air Compressor No 10

EVERY Ford that leaves your shop with one or more Oro Connecting Rods installed means that you have satisfied another customer—made another friend.

Hundreds of thousands of Oro Connecting Rods have made good because long service is built into them. There is no danger that they will let go and smash up a motor—and with it your reputation as a reliable repair man. The steel is the best obtainable—30 to 40 point carbon drop forged. The babbitt is a scientific combination requiring the minimum amount of lubrication and giving the maximum amount of wear.

You may be able to get a connecting rod a few cents cheaper—but does it pay? You make a reasonable profit on Oro and the replacement lasts for the life of the car—a constant reminder of your good work.

You build your business on a sound foundation when you use material like this. Your customers send their friends. Your business and your profits grow.

We are the manufacturers of the No. 0 AU-TO Air Compressor which is so well and favorably known. In ten years we have never made a charge for repairs on one of these machines. In common with our other types of AU-TO Air Compressors they work perfectly year in and year out.

Be sure to ask your jobber for Oro. He probably carries these rods, but if he does not, write us.

AU-TO COMPRESSOR CO.
WILMINGTON, OHIO

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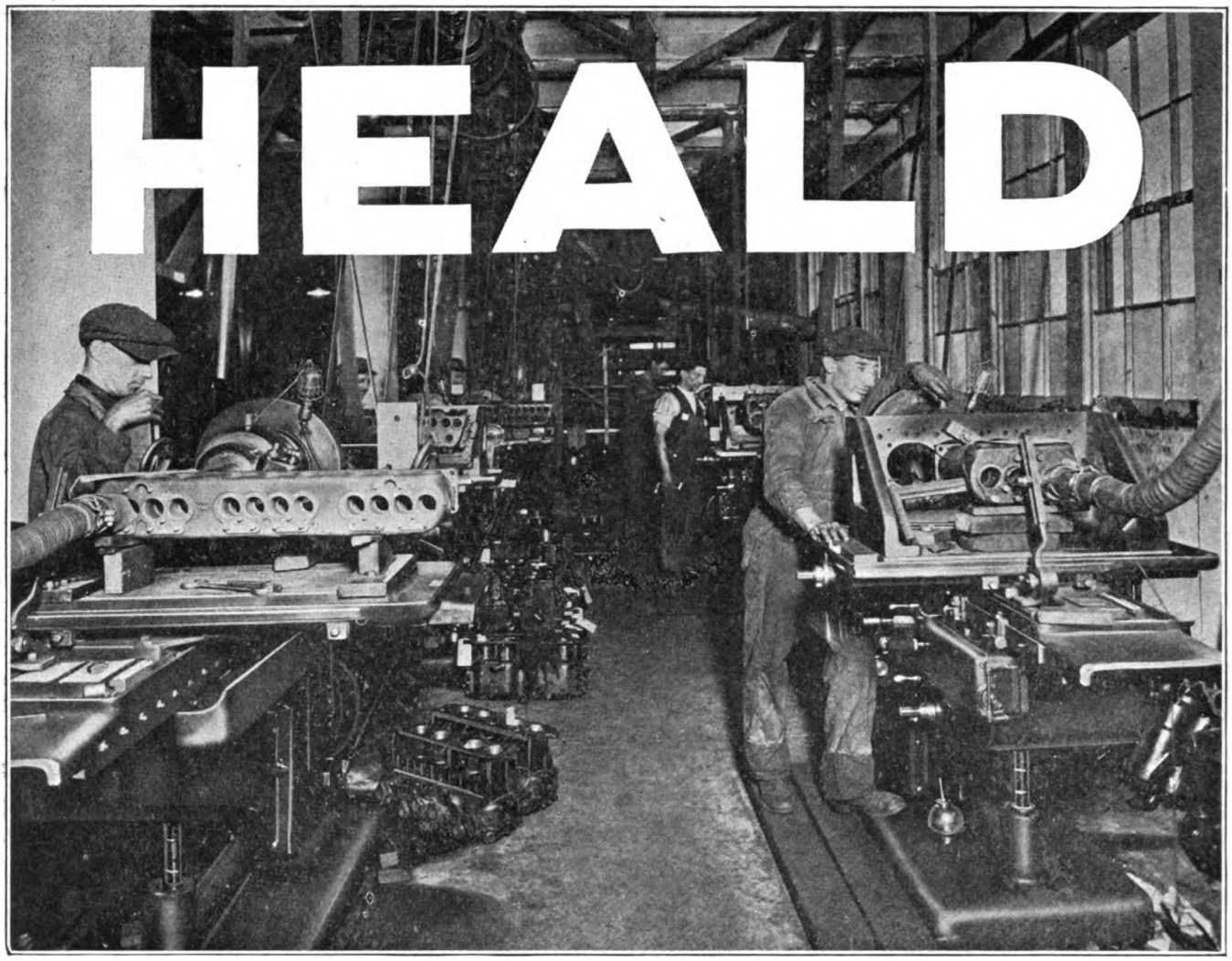

Houpert Machine Co., New York, where there are eight Heald Grinders working day and night regrinding automobile cylinders.

IN REGARDING THE BUSINESS OF REGRINDING CYLINDERS

If you have been contemplating going into any business in connection with automobiles consider that of regrinding cylinders. The automobile user now realizes that it is possible to have his engine put in shape as good, if not better than new, by having the worn and scored cylinders reground on a Heald Cylinder Grinder. He finds he gets better compression, developing more power with a smaller consumption of gas and oil.

There were 6,000,000 gas cars registered last year in the United States. With only a very few repair shops equipped to properly regrind cylinders. Not only is the business ideal at this time, but

HERE IS AN OPPORTUNITY THAT WILL NEVER HAPPEN AGAIN

There are a number of practically new second hand Heald No. 60 Cylinder Grinders now on the market These machines have been released by the Government from factories doing air-craft war work.

These second hand machines are ideal for automobile repair shops or garages and The Heald Machine Company will be glad to furnish information to prospective buyers where they can get full details in regard to these machines.

Write for Blue Border Bulletins, Series No. 6 on Cylinder Grinding.

THE HEALD MACHINE COMPANY
Worcester Massachusetts

Come up and see for yourself, or a telegram will bring our salesman to you.

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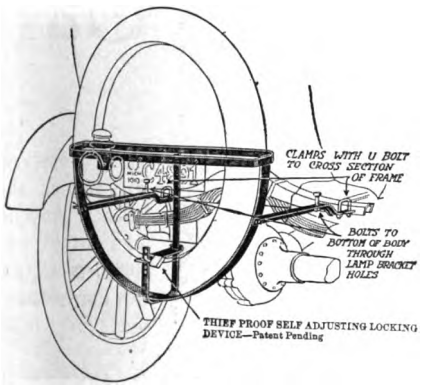
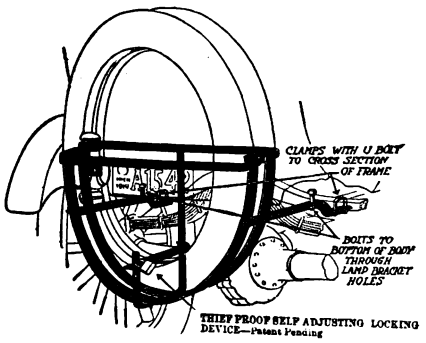
There will be a big demand for the

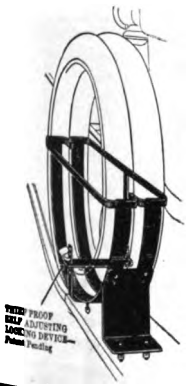
HASTINGS TIRE CARRIER



Rear Cradle type single for one 3 or 3½-inch demountable rim or demountable wheel—$4.50.



Rear Cradle type double for two (3 and 3½-inch) tires, two demountable rims or two demountable wheels, $6.00. This makes such a rigid carrier that two or three men could put their entire weight on it without bending mounting arms.



Side Carriers

For two tires (3 and 3½-inch) two demountable rims, or two wheels, $5.00. Also comes for single tire (3 or 3½-inch) demountable rim or demountable wheel. Price $3.50. These carriers fit close to the body and are absolutely rigid as fastened to the running board with four heavy bolts. Also additional support to the wind-shield.

Because it is

THIEF-PROOF---RIGID

and has a

Self Adjusting Locking Device

Fits the FORD

TOURING CAR—ROADSTER—SEDAN—COUPE

THERE will be a rush for the Hastings Tire Carrier this year. Ford owners have been waiting for a tire carrier that is absolutely rigid and thief-proof. The self adjusting locking device is a big step in advance. It will sell itself the moment a Ford owner sees it. These carriers are well made and easily attached.

Write for further particulars and discounts.

Ten Big Selling Arguments

1. A positive self adjusting locking device that makes this carrier thief-proof.
2. The adjustable feature of this Thief-proof locking device holds your tires, rims or wheels firmly in the carrier; thereby preventing tires from bouncing and chafing.
3. Its absolute rigidity and strength.
4. Parts are electrically welded.
5. The finish is high grade fired enamel.
6. Band is straight so does not accumulate mud and water to deteriorate your tires.
7. Holds your tire in vertical position at just the right height to add to the appearance of your car.
8. Fits Ford Touring Car, Roadster, Sedan or Coupe.
9. Single Carriers will carry 3 or 3½ inch tire, demountable rim, or demountable wheel.
10. Double Carrier will hold two tires (3 and 3½-inch), two demountable rims or two demountable wheels.

HASTINGS

MANUFACTURING CO.
Hastings, Mich.

Dept—A G.

Digitized by Google

Makes Any Ford A Perfect Riding Car

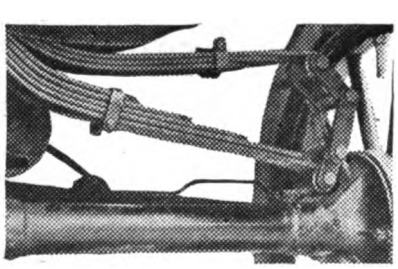
Completely absorbs all shocks. Controls the rebound, side sway and all chance of springs breaking

Easy to apply as any shock absorber. Anyone can do the work. 100% protection for Ford pleasure cars or trucks

The double action of springs is controlled by the opposite arch and suspension. Practical equipment that is guaranteed to afford full satisfaction in any service, not to break and made of the best alloy spring steel.

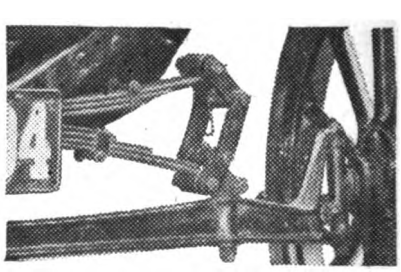
It greatly improves the appearance and makes the Ford look like a high priced car. For comfort, safety and efficiency it adds 100% to the service value and life of any passenger car or truck.

It Absorbs the Rebound or Upthrow



Rear View

Approved by the leading spring manufacturers



Front View

YOUR FORD NEEDS IT

It stops the squeaks and rattles. These springs cannot dent or bump the body. Easy to clean and will last longer than the car. Our trial offer money back iron clad guarantee goes with every sale.

JOBBERS AND DEALERS:

This is car equipment of the highest quality, efficiency and service. Sells right and will prove to be a leader with you. Write for details and trade discounts.

BECKMAN METAL PRODUCT CO
409 SUPERIOR AVE. NORTH WEST
BECKMAN BLDG
CLEVELAND, O

FORD OWNERS:

Save your springs and ride in comfort. The cost is moderate. Our guarantee protects you. Order from your dealer or direct. Catalogue at request.

(When Writing to Advertisers, Please Mention the Accessory and Garage Journal.)

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Masters

AUTOMOTIVE ACCESSORIES

To Dealers:—

The big sellers are those automobile accessories that are of real utility—and those that are made both for big volume on low-priced cars and of higher price for more expensive cars.

There's no more useful, more necesssry accessory than a **real** lock for a Ford—the most easily stolen car in America.

The Masters Steal-Proof Lock clamps the gears on the steering post. It cannot accidentally lock the car. It pays for itself out of the saved insurance. Price $6.50.

The most practical device for supplying moist air to the carburetor is the Masters Oxifier. It prevents carbon. Gives more miles per gallon of gas. Makes the motor run on a hot, dry day just the same as on a foggy evening. Made in three models for cars of different classes. Prices $8.50 $10.50, and $15.00.

This is a real accessory—not a crude collection of cumbersome parts.

Other high quality Masters Automotive Accessories are:

Gasoline Gage for the Dash
Boatmeters
Tachometers
Gasoline Meters
Marine Speed Recorders
Others in Process of development

Dealers—write for descriptive circulars, terms, etc.

Masters Manufacturing Company

Woolsey Square, Jamaica Plain, Boston, Mass.

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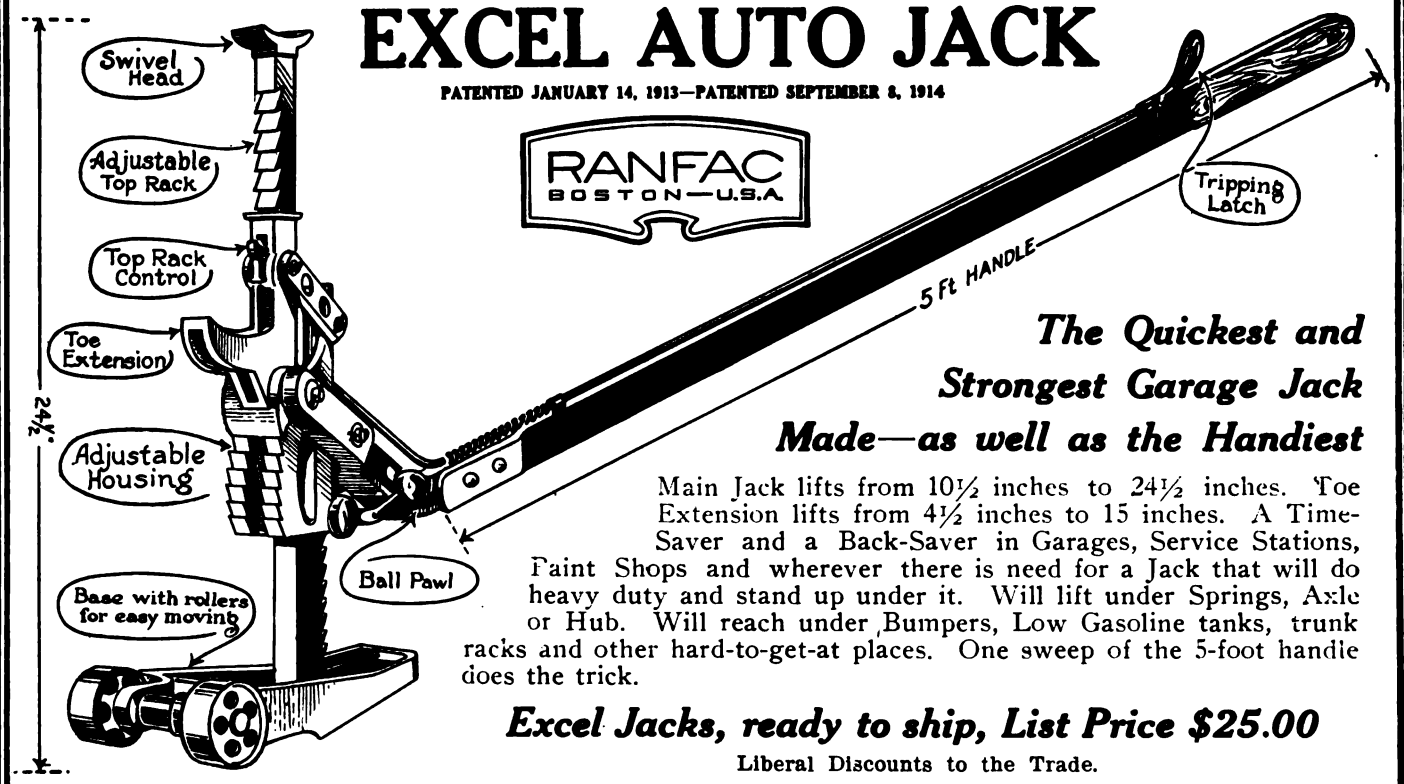
EXCEL AUTO JACK

PATENTED JANUARY 14, 1913—PATENTED SEPTEMBER 8, 1914



RANFAC
BOSTON—U.S.A.

The Quickest and Strongest Garage Jack Made—as well as the Handiest

Main Jack lifts from 10½ inches to 24½ inches. Toe Extension lifts from 4½ inches to 15 inches. A Time-Saver and a Back-Saver in Garages, Service Stations, Paint Shops and wherever there is need for a Jack that will do heavy duty and stand up under it. Will lift under Springs, Axle or Hub. Will reach under Bumpers, Low Gasoline tanks, trunk racks and other hard-to-get-at places. One sweep of the 5-foot handle does the trick.

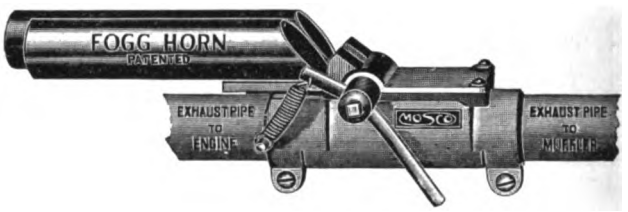
Excel Jacks, ready to ship, List Price $25.00

Liberal Discounts to the Trade.

Consumers will confer a favor by ordering through their Jobber.

Jericho-Fogg Horn

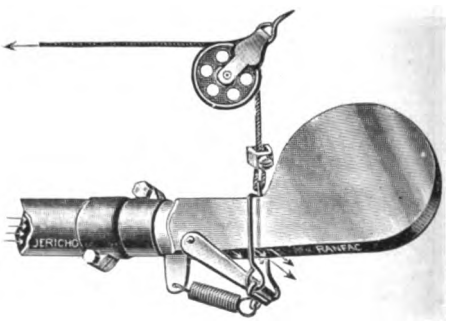
The BEST SIGNAL FOR FORD CARS



It does away with the Tail Pipe Problem because it is attached between the Engine and the Muffler. And so it makes no difference whether the FORD is of the Vintage of 1912 with **long tail pipe**—or a 1919 model with **no tail pipe.** The JERICHO-FOGG HORN blows loudly even when motor is running slowly. It throws the Sound **ahead of the car**—where its warning is most needed and where it can do the most good.

One size only—List Price $5.00—complete with all attaching accessories

Jerichos and Jubilees for Trucks



The Regulation JERICHO (Single Tone) and the JUBILEE Chime have the indorsement of careful drivers—because of dependability and performance.
Attached to Rear of Muffler. Operated by the Exhaust.

All sizes—List Price $5.00

Complete with attaching accessories

THE RANDALL-FAICHNEY COMPANY, Inc.

JAMAICA PLAIN, BOSTON, MASS.

Manufacturers of EXCEL JACKS, JERICHO and JUBILEE SIGNALS, BOSTON COMBINATION OIL AND GREASE GUNS, and other RELIABLE AUTOMOBILE ACCESSORIES.

Send for Catalog A-5

Digitized by Google

Every Sale Brings–Repeat Sale–Profits

Show any customer how it works--right in your store—and the sale is made.

Then he becomes a steady customer of yours—for Patch-&-Heat units to use with this vulcanizer.

Dealers sold more than a million Shaler 5-Minute Vulcanizers last year—and over 11,557,000 Patch-&-Heat Units. This is repeat business — repeat profits -- that comes to you **without effort.**

Every motorist should carry a Shaler 5-Minute Vulcanizer in his car for emergency use.

On the road—in the garage—or anywhere, it repairs tube punctures, cuts, etc., in 5 minutes—makes the tube as good as new, without delay—without trouble or annoyance.

Uses the combination Patch-&-Heat Units which include—the rubber patch—and the solid chemical fuel that burns without flame or blaze.

Our Big Advertising Campaign Makes It Easy to Sell

Just as you are now reading this ad, so Motorists will read the dominant, attention-compelling Full Page Advertisements that will run throughout the entire spring and summer in Saturday Evening Post, Leslie's Weekly, Literary Digest, Colliers, Popular Mechanics, and other national magazines —all motorists' publications, and a large number of farm journals.

Get These Quick-Repeat Sales Profits—

Order from your jobber now or write for full description and discount sheet if you are not familiar with this popular accessory.

C. A. Shaler Company, 255 Fourth Street, Waupun, Wis., U. S. A.

Oldest and Largest Manufacturers of Vulcanizers in the world

SHALER

5 Minute Vulcanizer

Digitized by Google

WHICH FORD SHALL IT BE?

PRICE $7.50

← this one —

with its commonplace, ordinary air?

or this one →

with an air of distinction that shows the owner has respect for his car's Quality?

STANDEX Rear Curtain for Ford Cars

Makes all this Difference between the COMMONPLACE and the DISTINCTIVE!

FAR BETTER FABRIC (mohair or rubber) than standard equipment. Window-light of beveled French plate glass, crystal-clear—no dingy, crinkly celluloid. Frame of Solid Aluminum, polished, untarnishable. Patented Interlocking Frame-Construction makes a perfect Can't-Pull-Out gasket of fabric—no sag, no rattle.

Backing Up STANDEX Dealers Is Our Absolute Guarantee—SATISFACTION OR MONEY BACK!

Would YOU let $10.00 stand between you and PERFECT LUBRICATION?

STANDEX Automatic Lubricating System

Spells Perfect Lubrication for Ford Cars

A MECHANICAL TRIUMPH OF ENGINEERING—This system automatically feeds JUST ENOUGH OIL on any grade whatsoever, absolutely avoiding an abnormal influx of oil on down grade. **BIG SAVING IN OIL**—gives 800 miles average per gallon, one quart going as far as a gallon heretofore. **ENDS CARBON TROUBLE**—Spark plug trouble—Overheating—Smoke trouble. **WONDERFULLY SIMPLE**—installed in fifteen minutes with a pair of pliers. **YOUR MONEY BACK** if you are not satisfied.

$2.50 your dealer or by parcel post prepaid

Would YOU take a chance for $2.50?

—on running out of "gas" twenty miles from Nowhere?

—on getting short measure every time you buy Gasoline?

—on Engine Troubles that would be caught in time if you always knew just what Gasoline-mileage you were Getting.

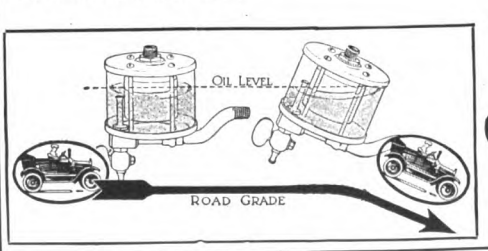
STANDEX Gasoline Gauge

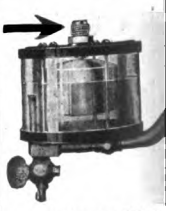
—is the only accurate mechanically actuated gauge.
—the only one graduated to the contour of a cylindrical tank and NOT merely to DEPTH.
—the only one that screws into the filling-hole, never has to be removed, is never in the way.

Perfect Satisfaction, or Your Money Back.

$10.00 complete

CONTROL CHAMBER—Showing the Wonder-Working Grademeter Tube within—the Heart of the System.





Note how tilting control chamber on down grade automatically stops oil feed.

Standex Manufacturing Corporation

341-347 East Ohio Street, Chicago, U. S. A.

(When Writing to Advertisers, Please Mention the Accessory and Garage Journal.)

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Mormiles

TRADE MARK

Makes Your Motor Self-Cleaning

Adds Mileage

Mr. J. Newton Roe, Prof. of Chemistry, Chicago, Ill., says: I take great pleasure in recommending "Mormiles Tablets" as in my personal experience with a high powered car, I increased my mileage 27% by using them.

I also find in analyzing these tablets, that there is nothing in them to injure the finest motor, or in any way interfere with the working of the carburetor.

In Red Cans Only

Increases Power

Garrett, Ind.,
March 31, 1919.

Mormiles Company,
226 So. La Salle St.,
Chicago.

Gentlemen:

Enclosed find check No. 3579 for $8.00. Forward us by mail 1 dozen dollar size boxes of Mormiles "Pills."

My fellows down here seem to think they cannot run without them.

Yours respectfully,
Rollins & Elson.

Here is a gasoline intensifier and carbon eliminator ***of real merit,*** guaranteed not to injure the mechanism of the finest motor, carburetor or vacuum-feed system.

Mormiles energizes weak, logy, low-grade gasoline; improves lubrication; gives uniform combustion, perfect ignition, easier starting, quicker "pick up;" diminishes wear and tear on motor and insures longer life.

Mormiles will add 20% to 50% more miles per gallon; insure 30% more power; will free engine from carbon accumulations and "keep it clean as a whistle;" readily dissolves and is equally effective in gasoline, kerosene or distillate and becomes an integral, evenly distributed part of the fuel which passes out of the exhaust.

The Most Effectively-Beneficial Intensifier on the Market

Enthusiastic, unsolicited letters are coming in every day. Write for them. Hear the really remarkable results obtained. *Mormiles* promises to be of universal service to automobile and tractor owners.

SOLD ON MONEY-BACK GUARANTEE. 100 tablets—enough for 100 gallons of gasoline—$1.

Jobbers and Dealers:
Mormiles is coming strong. Nothing can stop it. Get in early. Write us for attractive proposition.

This coupon worth $1. Use it today.

Mormiles Co., 226-8 S. La Salle St., Chicago. 99
Enclosed find $1 for two regular $1 cans of Mormiles, a special offer for introductory purposes only—where dealer cannot supply.

Name .....

Address .....

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Within 24 hours you receive the new part

REMEMBER that you are always within twenty-four hours by Parcels Post of a United Motors Service Branch or Authorized Distributor.

These are located in all the principal centers of the country.

There is one near you.

The next time you need a Delco, Klaxon or Remy service part—and want it immediately—call or wire the nearest United Motors Service Branch or Distributor and a genuine part will be put in the next mail for you.

United Motors Service Inc. is the service department of the manufacturers of Delco, Klaxon and Remy electrical equipments, and it exists solely to give you service.

Delco
KLAXON
REMY

We have a booklet just off the press containing many valuable hints on the care of the electrical system. Write for it.

General Offices: **Detroit, Michigan**

Branches in the following cities:

Detroit	Boston	Cleveland	Los Angeles
Chicago	Atlanta	Kansas City	San Francisco
Denver	New York	Minneapolis	Seattle
	Indianapolis	Philadelphia	

Represented by Authorized Distributors in the following cities:

Bakersfield, Cal.	Detroit, Mich.	Milwaukee, Wis.	Pittsburgh, Pa.
Baltimore, Md.	Grand Rapids, Mich.	Norfolk, Va.	Richmond, Va.
Buffalo, N.Y.	Houston, Texas	Oklahoma City, Okla.	San Antonio, Texas
Charleston, S.C.	Indianapolis, Ind.	Omaha, Neb.	San Diego, Cal.
Columbus, O.	Jacksonville, Fla.	Peoria, Ill.	Springfield, Ill.
Dallas, Texas	Little Rock, Ark.	Philadelphia, Pa.	St. Louis, Mo.
Des Moines, Ia.	Madison, Wis.	Phoenix Ariz.	St. Paul, Minn.
Tampa, Fla.		Toronto, Ont.	Utica N.Y.

UNITED MOTORS SERVICE
INCORPORATED

(When Writing to Advertisers, Please Mention the Accesscry and Garage Journal.)

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more money for garages

How often are you called on to locate and correct trouble in Electrical Starting and Lighting Equipment? You are bound to have more and more of such calls, especially if you earn a reputation for knowing the electrical side of an automobile and handling it right.

There is big money in Electrical Installations, Repairs, Adjustments, Renewals, etc. Some of the most wide-awake Garage Men have found it out. This year more money than ever before will be made that way, because there will be more electrical work than ever for the man who knows how.

Guess-work won't do. Every time you guess wrong you are likely to make yourself a peck of trouble and lose a customer in the bargain. What you need, and need right now before you find yourself losing opportunities to make money, is a

Weston

Model 280

Garage Testing Instrument

This complete Electrical Testing Equipment is made by the world's foremost Electrical Instrument designers and makers. It meets every requirement for making electrical tests in the garage. With this WESTON MODEL 280 you can handle anything that comes your way in electrical work. And it doesn't cost a small fortune, either—mighty little for what it will help you to make.

With the Instrument, we furnish full information showing you how to use it. And we have a staff of electrical experts whose advice is yours for the asking any time you think you need it.

We can make prompt deliveries if you send your order in early. Write us today for full particulars.

WESTON ELECTRICAL EQUIPMENT CO.
103 Weston Avenue, Newark, N. J.

New York	Detroit	Pittsburgh	Miami, Fla.	Winnipeg
Chicago	St. Louis	Richmond	Seattle	Vancouver
Philadelphia	San Francisco	Buffalo	Toronto	Calgary, Alta.
Boston	Denver	Minneapolis	Montreal	Havana
Cleveland	Cincinnati	New Orleans	Halifax	Mexico City

Do you want to be able to make quick, accurate tests to locate any defect in the electrical system? Or do you want to consume unlimited time taking apart every device and running a chance that you will discover the trouble sooner or later?

There are scores of places where trouble may occur. Unless you test electrically, you cannot eliminate any possible source of trouble without taking each device apart.

A poorly made, inaccurate electrical instrument merely adds to the uncertainty. What you need is reliable, positive knowledge. This Model 280 really is the equivalent of six separate Measuring Instruments of different ranges. It is extremely accurate, durable and serviceable. With it, you can do the work quickly and intelligently, putting yourself a long way ahead of any competitor who has not Weston Equipment.

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15TH ANNUAL TOURING NUMBER

AUTOMOBILE JOURNAL

ISSUED JULY 15, 1919.

The Biggest and Most Lasting Buy of the Year

The AUTOMOBILE JOURNAL is an A B C certified quality publication. It is one of the oldest in its class. Its rates are based on a distribution much less than the present circulation. Its advertisers are now enjoying a decided bonus in circulation.

In past years the demand for copies of the Annual Touring Numbers has been far in excess of the editions. This year, owing to the heavy cost of production, we have concluded to republish all touring data in regular book form, which will be sold at a nominal price.

The distribution will be general and country wide, and the sales will be through all book selling channels. Copies will be used in our circulation campaigns and distributed through more than 60 circulation representatives.

The price will be 35 cents a copy and a conservative estimate, including the regular edition and general sales, is that more than 75,000 copies will be sold during 1919.

Only touring data, maps and state laws will be included in the reprinted sections of this edition. Advertising appearing in the regular July issue will be published in the book. All copy, aside from cover advertising, will be printed in one color only unless special arrangements are made.

There will be no increase in the rates. The extra service is a bonus to advertisers and will be paid for through the sales of the reprinted books.

This combination of service affords advertising buyers publicity value equal to $500 on the basis of page space at regular rates.

Its Publicity Value to the Advertiser

1—The same volume of touring data in any other form would cost $10.

2—It presents all the good and practical qualities of the best touring books, which cover but a small section of the country. The 15th Annual Touring Number will be a NATIONAL TOURING ROUTE AND GUIDE BOOK.

3—It affords the full publicity value of any touring book, with the added value to advertisers of positive circulation. The distribution of any standard book is dependent upon the demand, which is an unknown and wholly unreliable basis for any claim.

4—Its readers are all car owners and car dealers—all potential buyers.

5—It will be issued and circulated at the beginning of the touring season.

6—It will be read and studied at home. It will stimulate the desire for touring. It will be carried in the car. It will be referred to constantly on the road. It will be read by all the passengers in the car, for the contents will generally interest men and women tourists.

7—It will be preserved and referred to during the entire season and until the next issue is available. It will be loaned to and read by others. Its publicity value will never lessen.

8—It will supplement all other touring information, for the data is the latest compiled and for that reason the most valuable.

9—The touring data will be reprinted in book form and sold at a nominal price through dealers, news companies, hotels and news stands.

10—It is a recognized and established annual guide and touring book, and aside from the regular distribution to subscribers the sales will be many times the regular issue of any motoring journal.

RATES: 1 Page $100.00 ½ Page $55.00 ¼ Page $32.00

Printing in colors, inserts and special service rates at request

Automobile Journal Publishing Company

PAWTUCKET, RHODE ISLAND

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"Send Us More New York Automobile Replacement Coils at Once"

is the request of every Jobber and Dealer who have ordered previously

TYPE D

Unless you are already handling our REPLACEMENT IGNITION COILS, you cannot realize the tremendous existing demand—they are not in the class of ordinary accessories. They must be procured immediately when coil troubles occur.

Fifteen years coil building experience enables us to produce a coil that gives a crashing big hot spark, even when battery is low, which insures easy starting, perfect running and full power from present day gas.

No article ever supplied the automobile industry has proven more beneficial alike to Dealer, Jobber and user. We make a coil for every car, that is guaranteed for all time.

Circular showing how to order for each model car with prices and other information upon request.

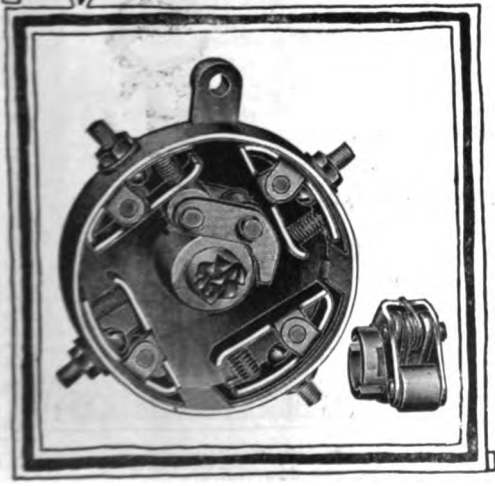
TYPE A

NEW YORK COIL COMPANY

338-340 Pearl Street, New York, N. Y.

FORD OWNERS ELIMINATE YOUR TIMER TROUBLES

BAY STATE TIMER



Insures You Car Service

Because it is designed to afford you results obtainable with no other type or design of timer.
Because it is constructed from materials that specially resist wear to a design that obviates wear.
Because it is self-compensating and timing cannot be changed by wear, no matter how long it is used.
Because the ignition is certain the fuel consumpion is reduced to minimum.
Because the expense of ignition restoration is obviated.
Because the engine will accelerate quicker.
Because there is practically no noise, and there is thorough satisfaction.
BAY STATE TIMERS are service proven. Every claim for superiority is conservatively made and based upon experience.
The standard of BAY STATE TIME design is owners' satisfaction. We guarantee this to you.

BAY STATE PUMP COMPANY

100 PURCHASE ST., BOSTON, MASS.

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DU PONT AMERICAN INDUSTRIES

Stock Pontoklene

The Tar, Oil Grease and Grime Remover and Cleaner that SELLS ITSELF

This season the demand for Pontoklene, THE TAR REMOVER WITHOUT A RIVAL, will break all records. There will be more freshly tarred roads than ever before. Four ordinary seasons of road building and repairing will be crowded into one. Pontoklene will be an indispensable part of every motorist's equipment.

To show just how good Pontoklene is we supply with every initial order for a case or more of Pontoklene a case of sample cans for free distribution by the dealer to his customers. Additional samples are furnished from time to time in reasonable quantities upon request. As a result of the liberal sampling Pontoklene literally SELLS ITSELF.

We also supply each dealer with circulars, imprinted with his name and address, hangers, road signs, show cards, envelope enclosures and electros.

The tar season will soon be here. Get ready for the big demand for the ONLY tar remover and cleaner. Order a stock of Pontoklene TODAY of your jobber or through our nearest office. We will see that you are supplied promptly with advertising matter. DO NOT DELAY.

DU PONT CHEMICAL WORKS

WILMINGTON, DELAWARE

BRANCH OFFICES:

New York, Boston, Chicago, San Francisco, Columbus

THE PRINCIPAL DU PONT PRODUDTS

Chemicals, Lacquers, Enamels, Pigments, Colors in Oil, Dyestuffs, Paints, Varnishes, Stains, Fillers, Pyroxylin Plastics, Leather Substitutes, Cleanable Collars and Cuffs, Explosives.

WHEN IN ATLANTIC CITY VISIT DU PONT PRODUCTS STORE

DU PONT

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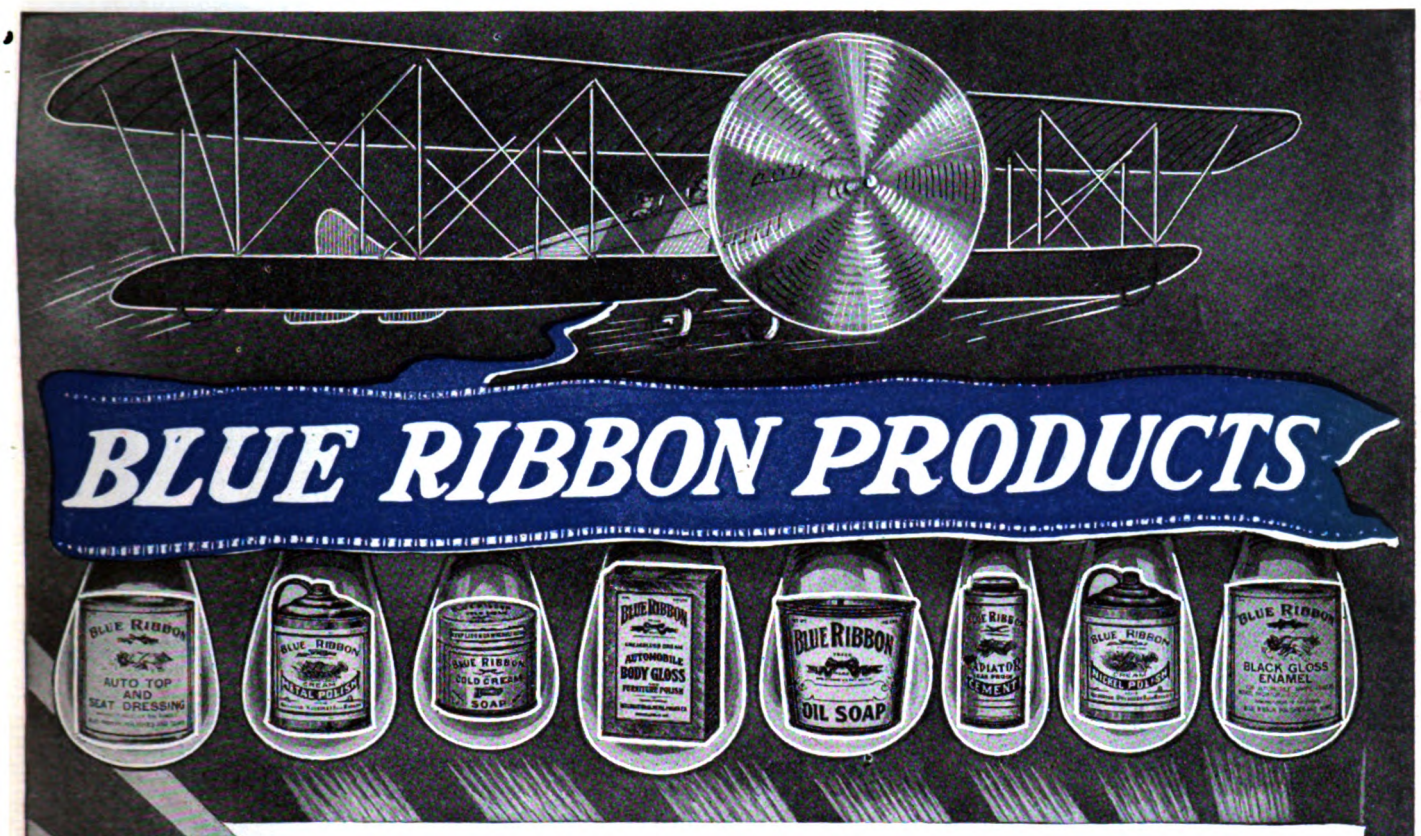

Are a Standard Line

Jobbers and Dealers stock the full Blue Ribbon line as they do all other tried, proven and constantly selling goods.

Blue Ribbon products are made by specialists who depend wholly on the quality and service giving satisfaction afforded by lines bearing their trade mark.

There can be no experimentation at the expense of the consumer, dealer or jobber. All Blue Ribbon Specialties must be as good as they are practical in every day use as it is possible to make them.

A nation wide trade, enormous expenditures devoted to development and promotion work as well as the maintenance and operation of the largest plant of the kind in America is too great a stake to gamble against quality.

Blue Ribbon Products today stand supreme. They are passed over the counters backed by an unqualified guarantee on the part of the trade that can leave no doubt as to their merits.

That is why Blue Ribbon Products are a standard line and will always continue to be so.

That is why all jobbers and dealers sell and list them in their catalogues.

Above all else that is why the consumer buys Blue Ribbon trade marked products. Blue Ribbon Products cost no more than others, yet represent the most profitable line that can be placed by the jobber or dealer.

If the **BLUE RIBBON** trade mark is to be seen on your shelves or counter you have a silent salesman in your store that is always working, always earning.

All Blue Ribbon Specialties are sold in quantities to meet any requirement.

The full line affords a complete line and it pays to specialize in known quality goods.

Blue Ribbon Specialties Include:

Blue Ribbon Cold Cream Hand Soap
Contains no pumice or sand.

Blue Ribbon Leak Proof Cement
A permanent radiator cement.

Blue Ribbon Nickel Polish
For nickel parts and trimmings.

Blue Ribbon Auto Body Gloss
For automobile or furniture.

Blue Ribbon Lightning Carbon Remover
Quick and positive in action.

Blue Ribbon Black Enamel
For lamps, hoods, radiators and metal parts

Blue Ribbon Auto Top and Seat Dressing
A waterproof dressing that restores tops and seats.

Blue Ribbon Hand-On Patch
A self-vulcanizing patch for shoes and tubes that never fails.

Blue Ribbon Cream Metal Polish
For any metal. An easy, quick working, satisfactory polish

Blue Ribbon Oil Soap
A pure vegetable oil soap for any purpose. All quality and efficient

This is the time to consider your winter and spring requirements

Jobbers and Dealers: Prices and discounts at request.

International Metal Polish Co.

INDIANAPOLIS, INDIANA.

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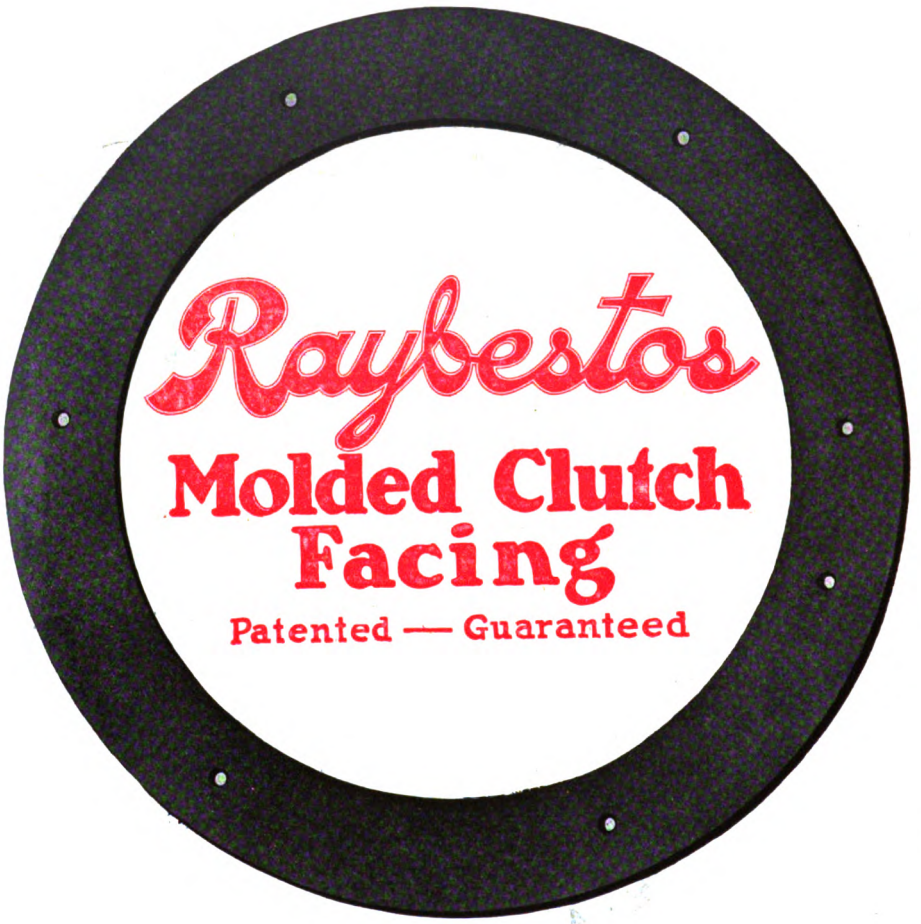

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The Gray & Davis System fits on the Ford from 1909 up to and including the present model.
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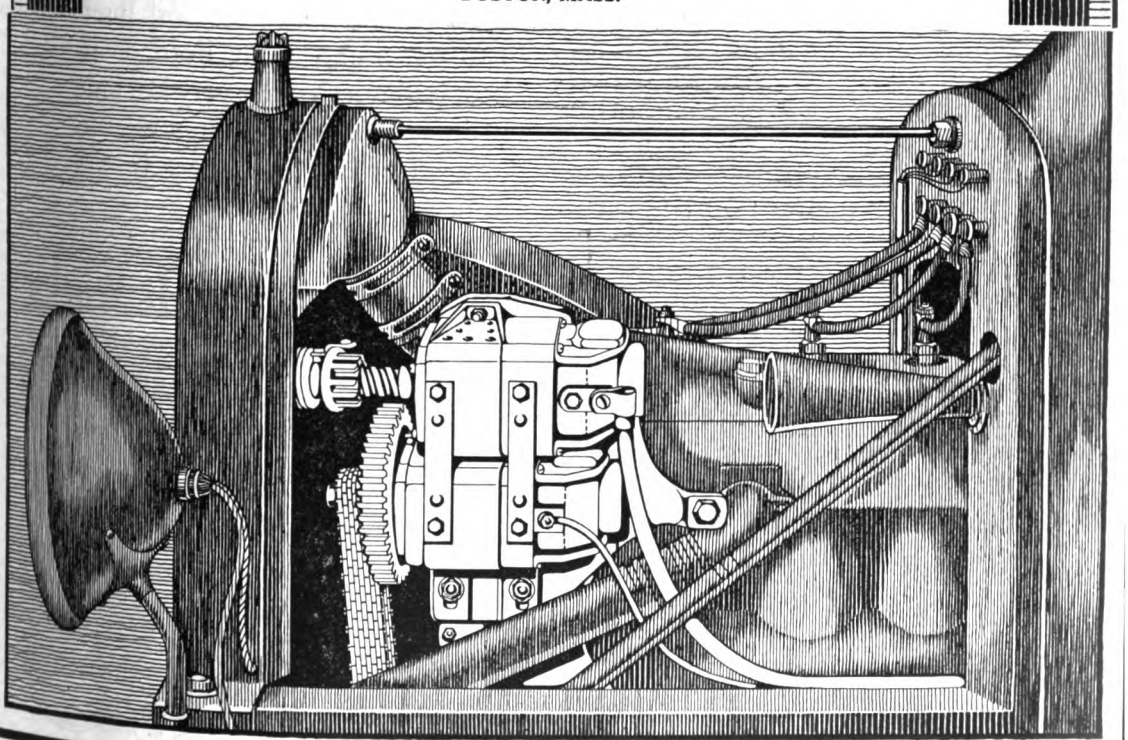

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Your garageman or repairman sells and installs Advance Cork Insert Linings. All wholesale houses handle them.

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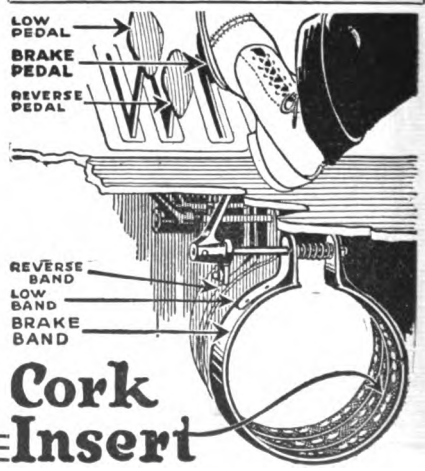

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The ACCESSORY and GARAGE JOURNAL

VOL. IX. PAWTUCKET, R. I., JUNE, 1919 No. 2

Peak of Production In Auto Plants During July

$45,000,000 Is Earned By General Motors In First Six Months of Year

AUTOMOBILE companies in the United States will probably reach the peak of production before the end of July. Nothing better illustrates the demand for automobiles than the case of Cleveland Motor, the new company financed early in the year. With the new factory yet to be completed, the company has on hand deposits for 28,000 cars, or more than it can turn out in the next 18 months. The new car, which will sell in the $1300-$1500 class, will probably be on the market about the middle of July. The output for the first year, from July 1, 1919, to July 1, 1920, it is estimated, will be approximately 15,000 cars. For the calendar year, 1920, however, 25,000 cars are planned.

It is announced that earnings of General Motors for the six months to end June 30 will approximate $45,000,000 before taxes, or at an annual rate of $90,000,000. Earnings in 1918 before taxes were slightly under $35,000,000. In other words, the company has earned $10,000,000 more in six months than was earned in the full year 1918.

Chandler Motor turned out 627 cars one week this month, a new high production record. This is at the rate of 2500 cars a month, or 30,000 per annum. Chandler has in the past been regarded as a 12,000 to 15,000 car proposition, but in 1920 plans call for a production of at least 25,000 cars.

PAIGE-DETROIT TO DOUBLE.

With new manufacturing facilities now being provided, it is expected that the Paige-Detroit plant will double production. The Paige-Detroit Motor Car Co. has elected Frederick L. Jewett first vice president. The following promotions are announced by President Harry M. Jewett: W. A. Wheeler, vice president, manufacturing division; Henry Krohn, vice president, sales, passenger car division; Charles S. Pike, vice president, sales, truck division; Thomas Bradley, vice president, purchasing division; Andrew Bachle, vice president, engineering division; G. C. Mathor, chief engineer; J. V. Quinlan, production manager; George Peterson, general superintendent; C. B. Gaunt, sales manager, passenger car division; Frank E. Caulk, sales manager, truck division.

American Car Makers Plan Big Campaign to Capture Foreign Trade

MOTOR companies of this country are making extensive plans for entering the foreign field. Several of the concerns have created subsidiaries which will engage in the sale of American made machines on the European continent and elsewhere.

European motor manufacturers are preparing to offer stiff competition, but the American car makers are optimistic as to the outcome. The Americans will make a more vigorous sales campaign in Europe than they have ever attempted.

There is great interest just now in the subject of foreign trade financing. It is understood that a committee of bankers has been appointed in New York, and similar committees will probably be formed to represent other Federal reserve districts. It is expected that it will be left to them to take initiative in organization of the proposed large financial corporation and cooperating corporations proposed in connection with the various lines of export business.

At a recent conference in Washington the amendment to the Federal reserve act, which will remove present limitation placed upon national banks in investing in stock in corporations engaged in international or foreign banking, was unanimously recommended.

COLUMBIA TO BUILD.

The Columbia Motors Co., Detroit, is planning to build a modern new plant, having outgrown its present quarters. A site has been purchased adjoining the Fisher Body Corporation, and a plant with 150,000 feet of floor space will be erected. The new plant will enable the company to double production.

Minority Holdings In Ford Company Will Be Sold

New England Trust Company In Negotiations For New York Interests

NEGOTIATIONS for the purchase of the minority holdings of the Ford Motor Co. have been under way for some days and are proceeding favorably. The purchasing party is a prominent New England trust company, which is supposed to be acting for powerful New York interests.

If the trade for the minority stock is successfully concluded it is probable that the Ford majority interests can then be acquired. That would mean the biggest shuffling of cars in the motor industry in years—the passing of the world's greatest automobile unit from the Ford control.

It has been almost a foregone conclusion since C. Harold Wills and John R. Lee, the chief executive personnel, left the Ford company this spring, following the defection of James Couzens a few years past, that all was not harmonious within the Ford official family. From that time there has been "angling" for the Ford company.

Wills and Lee Buy Land.

Messrs. Wills and Lee, together with associates yet to be announced, have purchased or optioned a large tract of property on the St. Clair river between St. Clair and Port Huron, and about 50 miles from Detroit. They plan to manufacture the motor car which Mr. Wills is now designing.

The tract comprises approximately 2000 acres. Mr. Wills, when asked how he and his associates planned to utilize such a large tract, said: "Well, we want to grow—that is about all. We have plans, development of which requires plenty of property."

Messrs. Wills and Lee have also acquired 250 acres of land near Sarnia, Canada, on which to put up one of the largest, if not the largest, automobile plants in the Dominion. Work will be started at once.

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RALPH DE PALMA SMASHES WORLD'S RECORD

Other High Marks Are Also Shattered In Races At Sheepshead

SMASHING the world's record, Ralph De Palma won the 50-mile race in the $35,000 International Sweepstakes at the Sheepshead Bay Motor Speedway June 14. His time was 26 minutes, 23 1/5 seconds, as against the figure held by Louis Chevrolet, of 26 minutes, 57 3/10 seconds. De Palma averaged 114½ miles an hour.

Two other records were broken. Tommy Milton, driving an old Deusenberg Special, won the 10-mile race in five minutes. 20 1/5 seconds, as against the record previously held by De Palma of five minutes, 23 4/5 seconds. Ralph Mulford, in his Frontenac Special, drove at an average speed of about 113 miles an hour in the 30-mile heat, covering the distance in 16 minutes 20 3/5 seconds, shaving 10 3/5 seconds from De Palma's old record.

Not a single mishap marred the day. Thirty-five thousand persons attended. The races were held under the auspices of the Eastern States Motor Racing Association. In all the grilling races hardly half a dozen tires went flat. Three aviators, riding from the infield and flying close over the racers' heads, gave an occasional thrill to the spectators.

De Palma's Friends Worried.

It appeared as though De Palma had been "playing possum" or had found difficulty in getting his Liberty motor and space annihilating Packard tuned to the proper pitch as quickly as usual. In three of the four races he was shown to the finish line by one or more rivals, only to flash forth in the grand climax—the 50-mile heat—with a sustained speed burst that left all other drivers far in his wake and toppled over record after record.

He took the dust of Milton's Duesenberg and Mulford's Frontenac in the first 10-mile race: was led home by the Frontenacs of Mulford and Joseph Boyer, Jr., in the second 10-mile swoop of the course and saw Mulford's Frontenac again finish in front of him when he crossed the line in the 30-mile contest.

In the grandstand De Palma's partisans—no driver in the history of automobile racing has had such a large and enthusiastic following—sat gloomy and disconsolate. They had come to consider their Ralph invincible. His humbling by Milton and Mulford cut to the quick. But just when the friends of the great Italian-American driver slumped back in their seats and disconsolately acknowledged it was not De Palma's day, Ralph came into his own.

With his Packard responding to the urgings of his Liberty motor as a thoroughbred to the lashes of a jockey, Ralph burned his way around the big bowl track in the 50-mile race at a clip that threatened to shake the gearings out of the following machines and shook the nerve and courage of his rival drivers till they were willing to bow before his speed mastery and allow the cream colored Packard to disappear like a phantom in the distance.

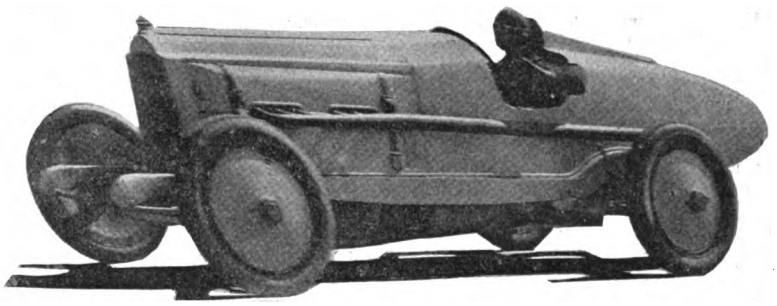
Three Heats and Special Race.

The sweepstakes was divided into three heats and one special race was held. Twelve cars were listed for the start in the first heat of 10 miles, but only eight got away—Dario Resta, in his Resta Special, or "Mystery," as it has been termed; Ralph Mulford, Frontenac; Joe Thomas, Mercer; Ralph De Palma, Packard; Tom Milton, Deusenberg; Denny Hickey, Stickel; J. M. Reynolds, Frontenac, and Ray Howard, Peugeot.

Louis Chevrolet, Frontenac; Dave Lewis, Meteor; Joseph Boyer, Jr., Frontenac, were scratched, and Ira Vail, Hudson, went out at the beginning. It was a flying start and at the first sound De Palma came leading well in front, with Milton, Mulford following close. On the next lap Milton took the lead, with Mulford right in back of him and Resta third. De Palma was in fourth place and Howard fifth. For the rest of the heat they trailed in this order, Milton leading at the last lap by a good margin.

The Thirty-Mile Heat.

The second heat was for 30 miles. The cars lined up: De Palma, Howard, Mulford and Lewis in his Meteor in the first line and Resta, Thomas, Hickey and Chevrolet in a Frontenac in back.



Ralph De Palma in His Winning Packard Car.

At the start Mulford forged ahead and led De Palma by three lengths. Lewis coming next, and then Resta, Howard, Hickey, Thomas and Chevrolet in that order. Chevrolet fell out on the second lap; Resta, with his "mystery," went out on the third, and Howard dropped on the seventh. Mulford, De Palma and Lewis consistently drilled along in this order to the eighth lap, when, with Howard out, they continued to the end, with Thomas and Hickey in fourth and fifth places respectively.

Blazing Ice Water Caused Fright.

On the fifth lap Mulford drove hard ahead of De Palma, leading in at the finish more than half a mile ahead of the Packard. Lewis pushed De Palma hard for second place, but Thomas and Hickey were well behind.

Suddenly just as the heat had been finished the cry of "Fire!" rose in the grandstand. Women began to scream, but not hysterically. The ice water stand on a top tier caught fire. Without giving the crowd below much warning the firemen played a hose on the fire, sending a stream squirting down on to the men and women below. There was a wild scampering, but in a few moments it was all over and six cars were lined up for a special race of 10 miles. They were driven by Mulford, Boyer, De Palma, Lewis, Thomas and Milton, winner of the first heat. After jockeying for half a lap Mulford took the lead well ahead of Boyer and De Palma. On the second lap Milton's Deusenberg went bad and fell out. The five cars, with Mulford in the lead, Boyer, De Palma, Lewis and Thomas following, roared around for the five laps, with Mulford winning from Boyer by about two lengths. Boyer was 200 yards ahead of De Palma, who was pushed hard for third place by Lewis.

Nine Cars in Last Heat.

Then came the 50-mile heat. Nine cars were lined up—De Palma, Vail, Thomas, Milton and Lewis in the first row, and Resta, Boyer, Hickey and Mulford in the back line. Chevrolet, Reynolds and Howard did not start.

Mulford led on the first lap, with De Palma, Boyer, Lewis, Thomas, Vail, Milton and Hickey following in that order. Resta had trouble again and went out on the first lap. Mulford led through the sixth lap, with De Palma, Boyer and Lewis see-sawing for second position.

In the seventh lap De Palma came out on the back stretch like a streak, his cream colored car jumping ahead of Mulford's dark maroon Frontenac, which he led into the 10th lap, when Boyer's greenish-blue Frontenac took Mulford's place, Mulford just leading the fourth car, Lewis' Meteor.

Vail's dark blue Hudson had given up the ghost in the third lap, Milton's old Deusenberg in the fifth, leaving only six cars from the fifth lap.

In the 12th and 13th De Palma put on a burst of speed that put him possibly 400 yards ahead of the next car, Boyer's. Mulford dropped back to fourth place and in the 17th lap went out of the race on a flat tire.

The 18th lap was run with De Palma far in the lead, then Boyer, Lewis, Thomas and Hickey in that order. They continued in that order until on the 25th and last lap, when Boyer shot his car ahead of Lewis for second place. De Palma was a mile ahead by this time and

(Continued on Page 64.)

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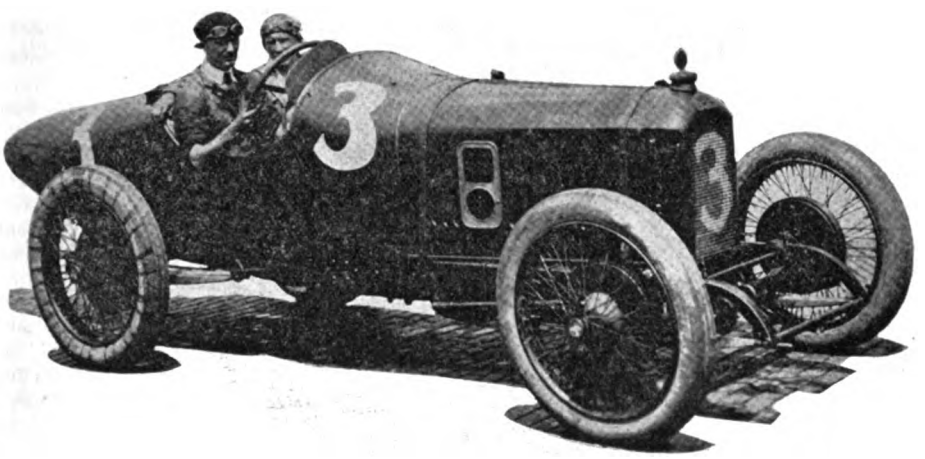
RICKENBACHER DEFENDS AUTOMOBILE RACING

By E. V. RICKENBACHER.

At Indianapolis Wilcox Is Winner—Three Meet Death

IT IS with a good deal of regret that I note the adverse sentiment current in some sections against automobile racing, as the result of the three fatalities that happened during the Indianapolis 500-mile Liberty Sweepstakes race at Indianapolis, at which I officiated as referee. The death of any man is a sad thing, with many pathetic consequences in its wake, and if it served no other purpose than to make a Roman holiday, as has been charged with reference to automobile racing, it would indeed be inexcusable.

Now it so happens that prior to entering the U. S. air service I was identified with automobile racing for a good many years and consequently am more familiar than is the average individual with the useful, and I may say right now, indispensable role played by the sport in the development of automotive design, engineering and metallurgical discovery, as applied both to the automobile and the airplane. Stop and consider that a contest such as an Indianapolis 500-mile race tests every part of a motor car's mechanism more severely than two years of ordinary usage, and you will get an idea of how racing has speeded up engineering progress.



Howard Wilcox, Winner at Indianapolis.

Defective Wheels.

In the last Liberty Sweepstakes race every accident but one was due to defective wheels, wheels that apparently were sound, but under the crucial strain of sustained high speed revealed themselves in their true light. The same wheels would have given good service under ordinary touring conditions for one or two years, perhaps, and then suddenly crashed, to the wiping out possibly of an entire family, as has often happened in touring accidents.

The discoveries of the last Indianapolis race will enable wheel manufacturers to improve their product so that occurrences such as those which produced fatalities during the contest will be impossible on the open road. Who shall say then, in view of this fact, that the Liberty Sweepstakes race did not serve a useful purpose?

Any one who drives an automobile has often reflected upon what would happen if his steering apparatus would break, leaving him helpless at the wheel of an uncontrollable car, and great has been the wonder that this delicate contrivance rarely gives any trouble. As a matter of fact the perfection of steering mechanism is one of the chief contributions of automobile racing to the safety of motoring. Designs that were thought good engineering practise were quickly shown to be most dangerous when subjected to the test of extreme speed and consequently discarded before they had opportunity to work mischief in the field of every day use.

The same thing applies to all other parts of an automobile with respect to safety. Frames, axles, wheel spindles, bearings, tires, the proper design and materials for these were arrived at much more quickly through racing and with much less loss of life than would have been possible had automotive progress not had the assistance of racing.

Also don't forget that racing calls into play the keenest engineering minds in a constant struggle to produce more horse power, more energy, with less weight—an endless reaching out into new fields for the purpose of increasing efficiency and economy in gasoline consumption. To increase engine efficiency new types of valve action have been invented, different cylinder arrangements have been tried, all kinds of manifolds built, every piece gone over with a view to possible improvement, while the endeavor to reduce weight has proved a stimulus to the metallurgical arts, resulting in the invention of steels of unheard of lightness, combined with surpassing strength.

Effect on Engineering.

The new, light weight car of the future, combining comfort and roominess with low operating cost, both as regards gasoline and tires, will owe its existence more to racing than any other factor.

And looking back for a moment to the recent days of war, what do you suppose would have been the position of allied aircraft manufacturers but for the experience of racing? Every engine that went into an allied airplane, from the English Sunbeam through the Hispano-Suiza and Fiat to the American Liberty, incorporated principles developed in the field of automobile racing, and which, without racing, could not have been developed in time to be of service. True, we are not supposed to have wars any more, but as long as the possibility is present, it will not do to ignore automobile racing as a factor in determining the safety of the nation.

Summing up the case of automobile racing, I would say that it is indispensable to modern progress, at least as far as events like the Indianapolis races and the French Grand Prix contests are concerned, where the new ideas and theories of the most prominent builders of both the new and old continents are tested in actual competition.

INDIANAPOLIS RESULTS:

First—Wilcox, time 5:44:21:75; average 87.12.

Second—Hearne, time 5:46:15:05; average, 86.64.

Third—Goux, time 5:50:49:90; average 85.51.

Fourth—Albert Guyot, time 5:53:33:50; average, 84.85.

Fifth—Tom Alley, time 6:06:04:35; average 81.26.

Sixth—De Palma, time 6:10:10:92; average 81.04.

Seventh—L. Chevrolet, time 6:11:46:33.

Eighth—Ira Vail, time 6:14:38:62.

Ninth—G. Chevrolet, time 6:15:14:88.

Tenth—Rene Thomas, time 6:25:27:19.

Cars driven by winners were: Wilcox, Peugeot; Hearne, Durant Special; Goux, Peugeot; Guyot, Ballot; Alley, Bender; De Palma, Packard; L. Chevrolet, Frontenac; Vail, Hudson Special; G. Chevrolet, Frontenac; Thomas, Ballot.

INDIANAPOLIS RACE.

Howard Wilcox of Indianapolis was the winner of the seventh International Sweepstakes at the Motor Speedway, Indianapolis, May 31, his time for the 500 miles being 5:44:21:75. Two drivers and a mechanician were killed and two others were injured.

The dead:

THURMAN, ARTHUR, of Newark, N. J., driver of the Thurman Special.

LECOCQ, LOUIS, of Los Angeles, Cal., driver of the Roamer Special.

BANDINI, R., of Los Angeles, mechanician for Lecocq.

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Automotive Equipment Association Will Reorganize

COMPLETE reorganization of the Automotive Equipment Association was decided upon at the Spring convention of the association at Hot Springs, Va. This action was taken on advice of counsel, who pointed out that there should be a thorough revision of the old program of procedure in order to avoid future risk of the association becoming involved in litigation, such as it successfully passed through in the Sherman anti-trust law cases.

Enthusiasm and optimism reigned, and every indication is that the organization will emerge a more potent one than ever before. The great interest manifested in the convention was testified to by the presence of nearly 600 members, many of whom were accompanied by their wives. Social features, with golf, tennis and dancing made the affair decidedly enjoyable.

The committee formerly known as the Defense Committee was instructed to arrange for the reorganization. This committee will make its report at the next meeting, in November, and in the meantime the association, under authority of a resolution adopted at the convention, will proceed along the same line as in the past.

It was voted to rescind the constitution, by-laws and all resolutions adopted under the old regime. While vigorous opposition to the Sherman law as it now stands was voiced, it was the unanimous opinion that it was the duty of the association and individual members to live up not only to the letter, but also to the spirit of the law as long as it is in force.

Interest was shown in plans for the jobbers' show, to be held in the Medinah Temple in Chicago, Nov. 3 to 8, in connection with the next convention. The exhibits will be open only to manufacturers who are members.

Reports disclosed that receipts from December to May amounted to $36,470, with disbursements of $20,310, leaving a balance of cash and funds on deposit and in trust amounting to $16,160.

The semi-annual report of the credit and collection agency department showed that from December, 1918, to May, 1919, 1116 claims, aggregating $76,920.88, were filed, and that collections were made on 466 claims, aggregating $30,907.62. Of disputed claims, aggregating $9263.10, $5051.58 was collected.

The Martin-Evans Co., E. L. Taylor & Co. and the Terre Haute Auto Co., Inc., were admitted to the Jobbers' Section, and the following were admitted to the Manufacturers' Section: American Chain Co., Anderson Electric Specialties Co., Ashland Products Co., B. & W. Manufacturing Co., Black & Decker Manufacturing Co., Coe-Stapeley Manufacturing Co., Dole Valve Co., Edgar C. Guthard Co., K. D. Lamp Co., Monroe Equipment Co. and Sinclair Refining Co.

A. E. A. Overhauls the Old Vehicle.

Following a discussion as to policy with respect to prices the Jobbers' Section adopted a resolution calling upon the commissioner to gather statistics as to the members' cost of doing business.

At the meeting of the Manufacturers' Section there was a discussion of the labor question, and a committee was appointed to investigate the present situation.

President Phil H. Lyon, San Francisco, in his opening address, urged close co-operation between members of the association. Commissioner William M. Webster declared that the future good of the association depended upon the attraction to its ranks of membership of the right kind. He said he hoped that tire and battery manufacturers would soon see their way clear to absorb the war tax, instead of having the burden of it rest on the trade.

M. L. Heminway, general manager of the Motor and Accessory Manufacturers' Association, and Harry F. Atwood, an expert on membership corporations, such as the A. E. A., delivered addresses. Mr. Atwood bitterly assailed Bolshevism.

The attendance at the convention set a new record. Delegates from all parts of the United States and Canada attended. The action of the Board of Directors in appointing an advisory board to confer with the commissioner on important matters that arise from time to time was ratified. Selection of permanent counsel was left to the directors.

A feature was an address by W. J. Martland, secretary of of the California Dealers' Association, who vividly pointed out the great profit and advantages of co-operation between the manufacturer, the jobber and the dealer. Capt. W. K. Evans sounded warning against the activities of the I. W. W. and outlined briefly a method of prevention.

A resolution urging the encouragement of military training was adopted.

The show committee, it was announced, will meet soon to perfect preliminary arrangements and issue the necessary blanks for space subscriptions.

ALLIANCE BETWEEN AUTOMOBILE ASSOCIATIONS URGED.

Following the Spring convention of the Automotive Equipment Association, a movement was begun to bring about co-operation between the leading associations connected with the automobile industry. An alliance between the National Automobile Chamber of Commerce, the Motor and Accessory Manufacturers' Association, the National Automobile Dealers' Association and the A. E. A. was suggested. Other organizations, such as the Rubber Association of America, may be urged to consider the desirability of arranging some program that will bring about relationship.

LONG WEAR RUBBER CO. TAKES OVER QUALITY TIRE.

The Long Wear Rubber Co., Elyria, O., has taken over the entire production and sales of the Quality Tire and Rubber Co., Anderson, Ind., maker of "Quality" cord and fabric tires. This adds a daily capacity of 2000 casings and 2000 tubes to the Long Wear production, which is now several hundred per day in Elyria and will soon be increased through a substantial addition to the Elyria plant.

Both factories will be under the personal supervision of Frank W. O'Brien, general manager, with headquarters in Elyria.

Gasoline Producers Join with Auto Makers

The recent formation of the American Petroleum Institute in New York City furnished opportunity for the first definite attempt at cooperation between the manufacturers of automobiles and the producers of gasoline. Discussions between representatives of that organization and the National Automobile Chamber of Commerce, led to a meeting at the Manhattan Hotel, New York, at which there were present, representing the gasoline interests, T. A. O'Donnell, president of the American Petroleum Institute; R. L. Welch, secretary; C. C. Smith, assistant secretary; H. L. Doherty of the City Service Co., Dr. W. M. Burton, president of the Standard Oil Co. of Indiana; W. H. Isen, vice president of the Sinclair Oil Co.; W. C. Teagle, president of the Standard Oil Co. of New Jersey, and M. A. Robinson of the Riverside Oil Co.

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Auto Salesmen Working on Commission Basis May Prove Too Costly to Dealer

Sales Manager, Favoring Straight Salary, Argues They Are Very Apt to Become Drifters and Failures—Unfair to Pay Young Salesman Same as Veteran Who is Big Asset to Firm

SALES managers disagree as to whether the automobile salesman should be paid a straight salary or be made to work on commission. The head of the sales department of a truck company in Boston favors the straight salary basis. He says:

"You hire a man to whom you are to pay commission. Now we shall assume that you take a young man, inexperienced, and you start him in with the same commission as you pay an older man—one who has been long in your employ. The young fellow starts out with a great deal of energy and hustles. He sees a good many persons and may be lucky enough to sell several machines. But the chances are that he will exhaust his resources in a short time. At the end of three or four or five months things slump for him. He doesn't make as much headway as he did before.

"He becomes desperate for business and knows he has got to get it if he is to earn any money. He goes out and hustles as hard as he can, but things no longer come his way. He gets discouraged and soon he decides to tie up with some other dealer.

New Men Cost Money.

"Going to a new place, he again starts off with his old pace. Having a little more experience than before, he is successful for a time, but another slump comes. Then he changes off to another dealer. He keeps going from one place to another. He manages to sell enough cars to eke out a living, but he cannot be called successful.

"Now this man draws just as much commission for each sale he makes as the successful salesman who sticks with one firm. He gets just as much as the good man who has worked for the firm for years, who has built up a good clientile and who is a good business worker and a good business getter.

"Every time a firm makes a change from one salesman to another it costs money. The new man must be broken in, he must become familiar with the routine, he must understand the machine and the policy of the company. He must know the 'dead ones,' the ones you would not do business with, and he must keep getting 'live' prospects.

Becomes Drifter.

"If he keeps hustling his expenses for demonstrations will be considerable. He quits after he has a slump and goes to another concern. He becomes a drifter, continually going from one firm to another. Working on commission he is doing more or less work by spurts. His success is only spasmodic. At the end of five years he has probably been with seven or eight concerns, each of which he has put under more or less expense. He hasn't been a steady producer and hasn't been what you could call a success.

"All the time he has been working he has been getting the same commission as the older, better grade man would get

—the same commission for a car of given value. Now that isn't fair to the man who is a plugger and who has developed his business, worked hard and is a dependable, a desirable asset, really one of the fundamentals of the business.

"Now if you will take the same man and put him on a salary and say to him, 'Here, we know that you are not going to be of very much value to us for a considerable period of time, and it is going to cost us money to educate you to do business our way. We will give you a salary and as your productiveness increases your earning capacity will keep pace with your productiveness.'

Firm Back of Him.

"We expect that man will have slumps, and we expect him to have times when he will sell more than others. We know, however, that he cannot produce a given number of sales every week, every month, every year. But we do expect that as his knowledge increases and his experience develops he is going to be a very much better and more satisfactory salesman, and each succeeding year his salary will increase, his worth to the concern will be greater and he will be paid proportionately.

"Instead of drifting from one concern to another, and being more or less of a failure, he has the knowledge that his concern is behind him, guiding him, advising him and is giving him every opportunity he would have in any other kind of business, either commercial or industrial. He realizes that his qualities are understood, that he has got a concern behind him that has faith in him and will benefit him so far as it is practical to do so by any reasonable investment that might increase his productiveness, such as sending him to automobile factories, giving him special facilities, increasing his expense allowance, etc. Remaining with this concern he would become substantially developed.

Faith in Concern.

"Now it wouldn't be fair to that man, after he has worked for that concern for several years, to put another man alongside of him, a man without experience, and pay this new man the same amount

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of commission as he gets. It would be paying an inexperienced man the same as a highly experienced man.

"It has been the experience of automobile concerns that any concern that can continue the sale of one make of car is usually the most successful. The buyers of cars will be more likely to do business with people they know and can depend upon, rather than deal with people they have no knowledge of. One instance is a man I know who has bought three cars of the same make in three years and has not bought any one car from the same man because of changes.

"A man is more satisfied, is a better customer and he has more faith in a concern if he is able to do business with one man.

Gambler's Chance.

"The salesman who is drifting from one firm to another cannot develop a steady business. The proposition with the commission man is, from one angle, that the dealer is taking a gambler's chance with almost anyone who comes along. If the man doesn't produce the dealer will get some one else. If the man the dealer backs in that way, or takes on with that policy, fails to make a success with the firm, he goes around knocking the car and the concern, instead of blaming himself, and he hasn't any other reason to account for his failure than the general business conditions under which he worked.

"The salesman developed on a salary basis may perhaps make slower progress, but yet what he does develop he develops substantially, and when he builds up a business it is something from which he can get good returns for the time and the money which the concern has invested in him as a salesman.

"The average salesman, unless he produces, realizes that his stay with any concern is short. If he has that realization, it isn't a question of business development with him, but immediate results, no matter with what cost to the dealer.

Good Salesmanship.

"The dealer may feel that if the commission man fails he hasn't cost him anything, as he has not been paying him a salary. On the other hand, if he would consider the productiveness efficiency of the commission and the salaried man, he will conclude that the one who has developed substantially is the one he wants to associate with him in an organization, because eventually he will have a productiveness that must necessarily be far greater than would be practical or possible with the other man.

"When you consider that there are times when vehicles can be sold by a catalogue, salesmanship isn't wanted then, isn't necessary then, but the business as a rule depends on salesmanship —good salesmanship, good organization.

"The sales manager has got to have confidence in his men. He has got to know them; they have got to know him. The men that work together as a family are altogether different than those working at cross purposes. For instance, a man on commission wouldn't come to a sales manager and say, 'Mr. Jones, I can't sell this man; I got along so far with him, and I know he is interested; why can't Jack go out and see if he can close him, or let Bill see what he can do?'

Unity and Team Work.

"A man who would say this to the sales manager is one who is interested in making a sale for his firm, not simply for himself. With such men there is unity and team work. But a commission man realizes that he would get nothing for such information, and he would rather sacrifice a sale than let some one else get it, although by passing in the tip he would benefit the concern which is employing him.

"When it comes to selling trucks there are a great many propositions connected with truck salesmanship that must be dealt with by men who are experienced. A truck salesman is not selling only a truck, but he is selling transportation. He is not qualified to take a man's proposition, consider it and recommend what in his best judgment would be the best units for the man to buy and the best means of operating them, if he is being paid on a commission basis.

Reliance on Salesmen.

"Now the man who has been drifting from one concern to another doesn't care to develop business with a man he knows he cannot get for from six months to a year. He has got to do business right off the bat.

"The man buying trucks does not want to be misled. He wants advice and accepts it coming from a salesman as well based. That being so, he takes the suggestions of the commission man possibly as readily as he would those of the salaried man, simply because he has no means of differentiating between the two men and their policies, and he would expect the concern the salesman represented to stand back of him in whatever he might say. If the statements are misleading the salesman's concern might sacrifice business that would be large in the aggregate, as a man stung once doesn't propose to be stung again if he can avoid it.

"A good salesman should be paid good money. There is no doubt he is worth it. But the man who goes to a dealer as a cub salesman can't expect that he should be paid at the same rate or on the same basis as men who have had years' experience, and he can't expect to equal those men's salaries until he has had like experience.

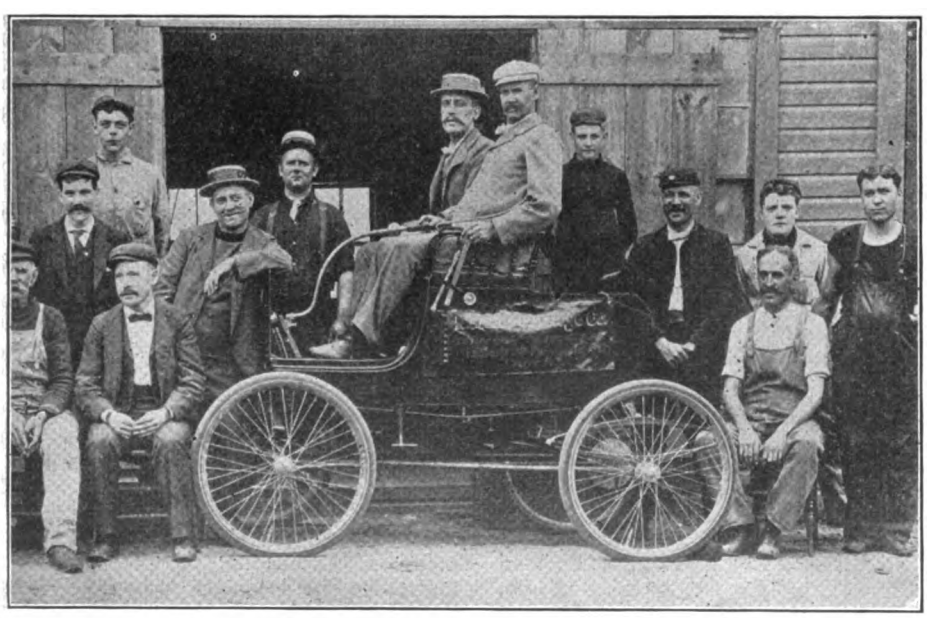
Productive Sales Force.

"If you have an organization made up of salaried and commission men, you have an organization that is in itself disrupting. If made up of salaried men, unified in their selling effort, and willing to share whatever they do for the benefit of the concern, you have got a strong productive sales force that you can stand on and that will increase the business every year.

"Another phase to be considered is that men connected with the sale of vehicles on time have more or less information relative to the reputation and responsibility of the prospect, and also when vehicles are taken in exchange, their information is supposed to be that on which the concern judges whether or not to make the deal. If their object is simply to make sales for the time being they will economize on the truth where it means a commission."

This sales manager suggested that dealers paying salesmen on the commission basis figure what their sales are actually costing them.

When the "Horseless Carriage" Was Popular



The Accompanying Illustration Is of a Photograph Taken 19 Years Ago, in Front of Rhode Island's First "Horseless Carriage" Factory in Providence and Operated by Hughes & Atkin. Now Known as the Wm. Hughes Co., the Oldest Exclusive Reo Car Dealers in New England, Having Taken on Reo Line Some 13 or 14 Years Ago. The "Horseless Carriage" as Shown Here Is One of the 18 Built by Mr. Hughes in 1899 and 1900, the First in New England, for Which He Made Nearly All Parts by Hand. As Late as 13 Months Ago One of These Cars Was Seen Operating on the Highways of Rhode Island.

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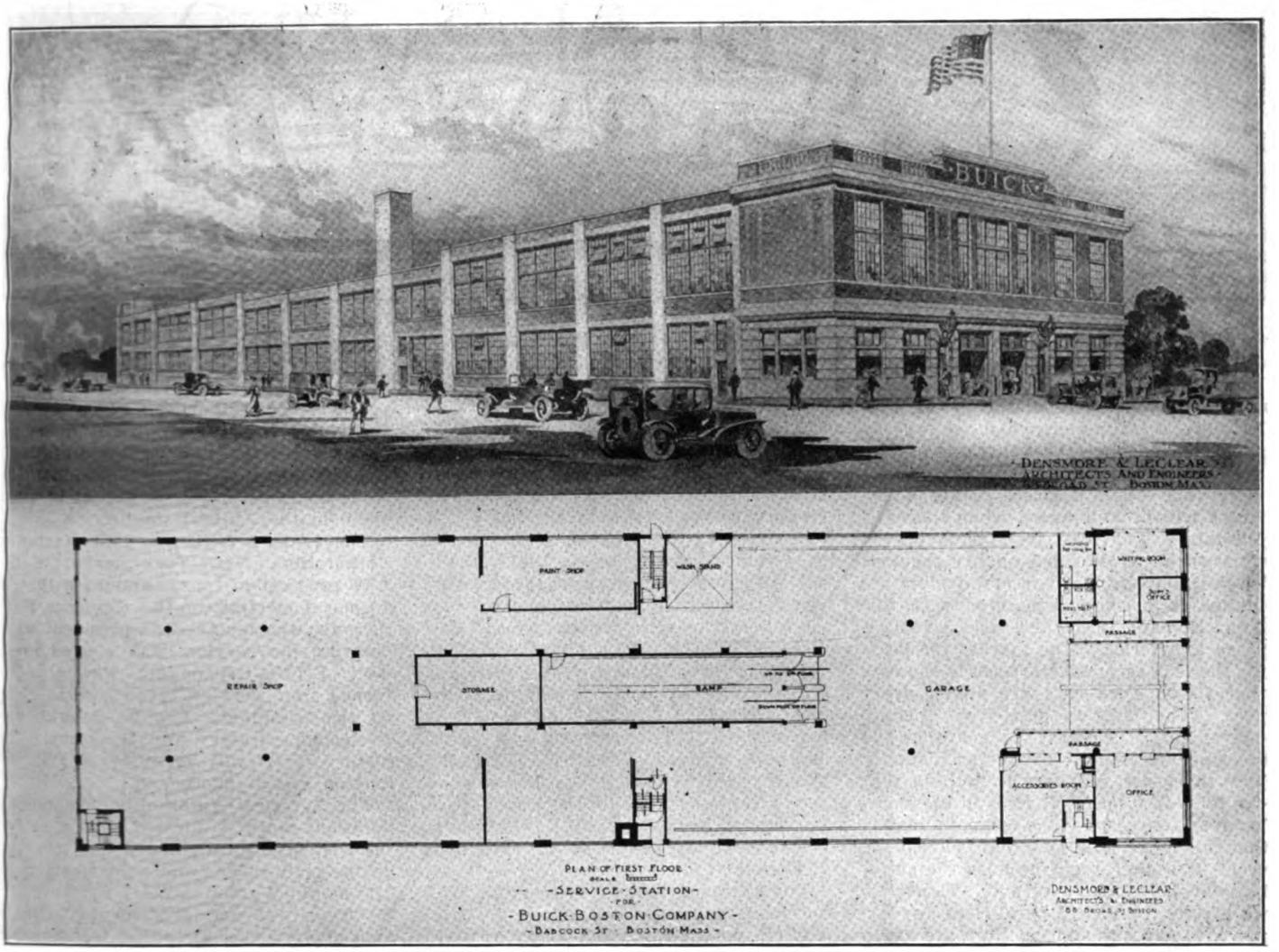
New Service Station for Boston Buick Company



Elevation and First Floor Plan of New Boston Buick Service Station.

Work has been started on a $200,000 service station for the Boston Buick Co., to be located on Babcock street, just off Commonwealth avenue, near Braves' Field. It is said that the structure will be the largest in the United States devoted exclusively to passenger service. The building will have 70,000 square feet of floor space, all of which will be used for service purposes, as the sales department and storage will remain in the present locations. It will have an 86-foot frontage on Babcock street and a depth of 300 feet on a proposed new street.

The Boston Buick Co. owns nine acres of land at the site of the new station and the plans for the building contemplate enlargement when that shall become necessary, without change in the original building.

There will be two stories. On the main floor will be a large testing department, machine shop and wash stand and paint shop. The main repair shop will be on the second floor. There will be no elevators, as the cars will ascend and descend by means of ramps, placed in the center of the building.

Directly to the right of the entrance driveway will be the manager's office and adjoining it a large waiting room for customers, with women's and men's dressing rooms opening from it. In the opposite corner of the front is to be the station office and an accessories room, with supplies of tires, oils, greases, Buick parts and specialties. All public rooms will have terrazo flooring, marble trim and plate glass windows.

Adjoining the receiving floor there is to be a large parking space within the building, where the cars are to be placed after they have been properly tagged with an indication of the trouble that is suspected. Then an export tester will be called and, if the work is merely an adjustment or other small task, the car will go to the testing room in the rear of the first floor, which alone will have 12,000 feet. Every car must be cleaned before being returned to the owner.

The main repair shop, with its stock room, will occupy the whole second floor, an area of 25,000 feet. All around are to be large windows. Beneath the windows are to be located the most modern type of benches and the machinery will be the best adapted for work on Buick cars. Running-in of motors, for instance, will be done on large steel racks, which will hold the entire automobile, doing away with pits and allowing the men to get beneath the cars without any difficulty. The burned gas and smoke will be taken away by a series of flexible tubes connected with blowers.

There will not be a single post or pillar in the repair shop, as steel trusses will carry the roof. The stock room will be in the front of the building, connected by dumb waiter and stairway, with the accessory room and offices below. The stock room will have a mezzanine floor. The superintendent's office in the repair shop will be on a raised platform in the center of the floor, and practically every bit of the floor space will be within his view. He will have telephonic communication direct with each department foreman.

An information clerk at the telephone switchboard will have chartered in front of him constantly the position of every car in the station. The basement will be occupied in part as a body department, and there all such heavy operations as frame, axle and body work will be done. There will be shower baths and other special facilities for the employees.

The building is to be erected by the Evatt Construction Co., Boston. Densmore & LeClear, Boston, are the architects.

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The Masters Manufacturing Co., Jamaica Plain, Mass., has perfected a lock for Fords, an oxifier for conducting moist air from the radiator to the carburetor, a boatmeter which shows the speed of the boat through the water, a gasoline gauge for the dash, a tachometer and other devices. Other accessories will be announced when thorough laboratory and road tests have proved them to be of the high quality required by the company. Jobbers and dealers are invited to become acquainted with this New England firm and ask for literature and terms. The market for locks for Fords is tremendous, records showing that 30,000 Ford cars are stolen every year. The Masters steal-proof lock is convenient, it clamps the gears in the steering post, but it cannot accidentally lock the gears, as there is nothing that can fall. The lock bolt rises in the space between the gears. The company claims that this is the only lock that is accident-proof. It is theft-proof because the steering wheel cannot be turned. The front wheels can be locked parallel at any angle with the car and, as they are rigid, the car cannot be driven or towed. Another important feature is that the key cannot be removed until the car is locked. The lock itself is a Yale multiple-tumbler, cylinder lock, permitting countless variations in keys. This type does not permit making a master key. The Masters lock sells for $6.50. The Masters oxifier is neat, mechanically correct, and when installed forms an integral part of the power plant. It is not a collection of cumbersome parts. The company announces that dealers can assure their customers that with the oxifier they will get perfect combustion without any operating expense, as the oxifier has no moving part except the dash control. The company claims that it gives more miles per gallon of gas and prevents the formation of carbon, also making the motor more flexible and more powerful. and usually reduces repair bills. The Master oxifier is made in three models. Model A, for Fords, sells for $8.50; model B, for Buick, Dodge, Overland and other cars of this class, sells for $10.50, and model C, for high-priced cars, such as Packard, Pierce-Arrow, Winton, etc., sells for $15. Full directions for installing accompany each oxifier. Anyone can install it as easily as replacing a spark plug, the only mechanical work being required is the drilling of one small hole. The Masters boatmeter shows at a glance the speed through the water. Model B is for speeds up to 16 miles, and sells for $12. Model G, for speeds up to 24 miles, is priced at $15, and model C, for speeds up to 37 miles, at $20. The price includes everything necessary for installation. The Masters tachometer gives the number of revolutions per minute of any engine. It eliminates all guessing of engine speed. This indicator is built on the centrifugal principle. When used for marine work the centrifugal tachometer does not affect the compass, no matter how close it may be. This tachometer indicates the speed in either direction, and is made in four models, graduated to indicate 500, 1000, 2000 or 3000 revolutions per minute. The price complete with six feet of flexible shaft is $25. The Masters marine speed recorder is more extensively used on boats larger than the motor boat type. It is especially valuable for companies operating a fleet of boats.

The Fulton Motor Truck Co. has moved its sales and executive offices, including the office of the advertising manager, from the factory at Farmingdale to the Ford administration building, Broadway and 54th street, New York, where an entire floor has been taken. In addition to having the administrative offices there, the company will display the Fulton truck line.

The Dort Motor Car Co., Flint, will open a factory branch in the Ehret building, 58th street and Broadway, New York, with F. L. Sanford in charge.

The Kalamazoo Motors Corporation, Kalamazoo, Mich., has awarded contracts for additions that will double the capacity of its plant and permit of the assembling of from 125 to 150 trucks a month.

The Acme Motor Truck Co., Cadillac, Mich., has increased in list prices $100 each the model C 3½-ton and model E five-ton trucks, effective July 1. The 3½-ton truck of improved design is now in production. This truck is equipped with a pressed steel heat-treated frame instead of a channel section.

The Standard Oil Co. has let a contract for the construction of the largest gasoline distributing station in Ohio, on Spring Grove avenue, Cincinnati, at a cost of $400,000. A garage will be included in the station.

The American Bosch Magneto Corporation has closed the largest order for high-tension magnetos ever booked in the trade, the contract calling for 200,000 magnetos, aggregating in value $2,500,000.

The Ahlberg Bearing Co., Chicago, entered in the Indianapolis race the "Bender Special," which finished fifth. It was equipped entirely with Ahlberg remade bearings and new special bearings made in the Ahlberg factory.

The Adams-Williams Manufacturing Corporation, New York, maker of the A-W convertible tops, announces that at a special meeting of the directors F. C. Schwab, who resigned as president when entering the service, was elected president, S. H. Crittenden, who also returned from service recently, was elected vice president. Leo W. Schwab was re-elected secretary and treasurer. The factory space will be enlarged and production greatly increased.

The Syracuse Automobile Supply Corporation, recently formed, has absorbed the Syracuse Auto Supply Co., Inc., and has its main offices and sales quarters at 311 South Warren street, Syracuse, N. Y. Twenty-seven prominent business men of Syracuse, including leading manufacturers, bankers and others, joined with Lee W. Bennett in forming the new company. Steps have been taken to broaden the scope of the automobile accessory business in both the jobbing and retail departments. Salesmen will be put into the central New York territory and branches will be established. The new firm is incorporated for $60,000, with $50,000 in preferred seven per cent. cumulative and $10,000 in common stock. Mr. Bennett is president and general manager. C. C. Bradley, Jr., is vice president, and C. Hamilton Sanford is treasurer. The officers and H. W. Smith, H. G. Strong and S. Regar are directors. The company starts in business as of June 1.

The Orrell Manufacturing Co., 67 Hampden street, Boston, is prepared to make immediate delivery on all screw machine products for Ford, Dodge, Overland and Hudson cars; flexible shaft drives, swivel joints and fiber pinions. All of its products are sold under guarantee. Shipment is made on day of receipt of order.

The United Motors Service, Inc., Detroit, recently established a branch at Indianapolis to take care of the trade in that territory. This company gives service on starting, lighting and ignition system equipment manufactured by the Remy Electric Co. and the Dayton Laboratories Co., and also on Klaxon warning signals.

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The Westinghouse Electric and Manufacturing Co. announces that L. B. Fijux has been appointed the Detroit district representative of its Automobile Equipment Department, to take the place of W. A. Haines, who died last February. Mr. Fijur is well known to automobile manufacturers, having been assistant manager of the Detroit office of the Willard Storage Battery for six years and manager of the Detroit office of the Bijur Motor Appliance Co. for five years. His office is in the Kresge building, Detroit, and he will be assisted by T. G. Haugh, formerly of East Pittsburgh.

The Bremer Manufacturing Co., Chicago, has permanently entered the Ford radiator replacement field during the last year and has developed a replacement radiator in both fin-tube (regular Ford type) and the honeycomb type. Sales Manager Ian E. Maltby reports that the war period left the company with no bad effects and that the Ford replacement department of the business will soon equal the company's special truck and tractor radiator business. The company has for many years been a heavy producer in the truck and tractor field.

The Lauraine Magneto Co., Inc., maker of the Lauraine magneto and the Lauraine generator, is building a factory at Ely avenue and 13th street, Long Island City, N. Y., on a plot of 100x150 feet, to take care of its increased production. The present factory is at Menominee, Mich. Equipment will be moved to Long Island City as soon as the new factory is completed, probably within a few weeks. The company is now producing the MS4 type magneto in aluminum with bronze inserts throughout.

The Borden Co., Warren O., manufacturer of Beaver Easy Working Die Stocks and Square-End Pipe Cutters, has bought an Oldsmobile roadster for its representative, George D. Clewell, who covers the New England states, Cleveland and Detroit. Mr. Clewell expects to work his entire territory with the car and will keep in closer contact with the small towns and also be in a position to render more thorough co-operation with jobbers. Charles A. Greene, Chicago representative for the company, has opened a down town office at room 501 549 West Washington boulevard, Chicago.

The Howard Auto Headlight Deflector Co., Detroit, announces that the Howard headlight deflector is the latest invention to eliminate the blinding glare from automobile headlights of approaching cars, with equal protection to drivers of road vehicles and pedestrians. The company is arranging for production of from 1,000,000 to 1,500,000 sets a year. Exclusive selling rights will be inaugurated for all territory and export trade. With quantity production the deflector will be marketed at an exceedingly low price

The Ahlberg Bearing Co., Chicago, has opened two new factory branches. One is at 511 Westminster street, Providence, R. I., in charge of Harold F. Woodworth, who, prior to his entry in the military service was in the Boston office of the company. The other office is in the City Bank building, 18th and Grand streets, Kansas City, Mo., in charge of Edward A. Hefferman, who has recently returned from the naval aviation service. Mr. Hefferman acted as mechanician for several well known race drivers.

L. B. FIJUX.
New Detroit Representative for Westinghouse.

The Briscoe Devices Co. announces that it is the successor to the Jackson Carburetor Co. The carburetor heretofore known as the "Dave Buick Carburetor" will be continued with important manufacturing refinements, and will be known as the "Scoe Carburetor." The company is under the presidency and active management of Frank Briscoe, who has been known to the motor car trade since its beginning in connection with several well known enterprises, both in motor car and accessory fields. A. W. McCalmont, formerly with the Jackson Automobile Co. and the Briscoe Motor Co., and recently returned from overseas, where he was an engineering officer in the air service, will be sales engineer. The new plant now under construction will embody all known facilities for the best possible product and service. Carburetors for application to Ford, Briscoe, Maxwell and Dort cars are now available for delivery and other models will be added as fast as possible.

The New Era Spring and Specialty Co., through Smalley Daniels, announces that in spite of the two fires at its plant within the last month production has not been interfered with materially. In the first fire one of the workman was so badly burned that he afterward died; in the second a considerable amount of damage was done in the spring department. Such a large demand is being made for "Better" springs, bumpers and tire carriers that the factory production capacity is overtaxed and the workmen have scarcely room to work. In view of this congested condition at the plant it is considered remarkable that no more persons were hurt.

The Jordan Motor Car Co. announces that work has been started on several new plant units at its factory in Cleveland, O. The additions will include a new assembly plant, an office building, a power plant, a japanning plant and a motor test building. The Jordan expansion is in line with the general optimistic attitude of the motor car industry.

The Service Motor Truck Co., Wabash, Ind., announces that the first deliveries of repair parts for Service trucks were made when two airplanes operated by the company made a flight to Akron, O. Repair parts were ordered by wire by the Firestone Tire and Rubber Co. for the Service trucks it operates. The wire was 12 minutes in transit, and 18 minutes after it was received by the Service company the first plane was on its way, and the part ordered was delivered in Akron two hours and 45 minutes later. The distance covered was approximately 250 miles. Stops were made at Defiance, O., and Chicago Junction, O.

Lane Brothers Co., Poughkeepsie, N. Y., is distributing to its dealers a selling help on H-C jacks that seems to be effective. Most persons have an innate desire to handle things and wiggle whatever is movable and this device satisfies that desire, incidentally acquainting the person with the handle control, which obviates the necessity of getting under the car. The self-demonstration is convincing and has resulted in many extra sales. The device is furnished gratis to all dealers handling H-C jacks.

The Armleder Motor Sales Co., 3223 Lorain avenue, Cleveland, O., has been incorporated by J. F. Gleichauf, president; John W. Reitz, vice president and manager, and Justin Gleichauf, secretary and treasurer. The company will distribute Armleder motor trucks in Cleveland and vicinity. T. E. Moore, factory representative of the O. Armleder Co., Cincinnati, maker of Armleder trucks, closed the deal, securing quarters for the sales company, selling it four trucks for immediate delivery for samples and also repair parts amounting to $2500, and assisted in closing order for two other trucks for quick delivery, giving the company a good start.

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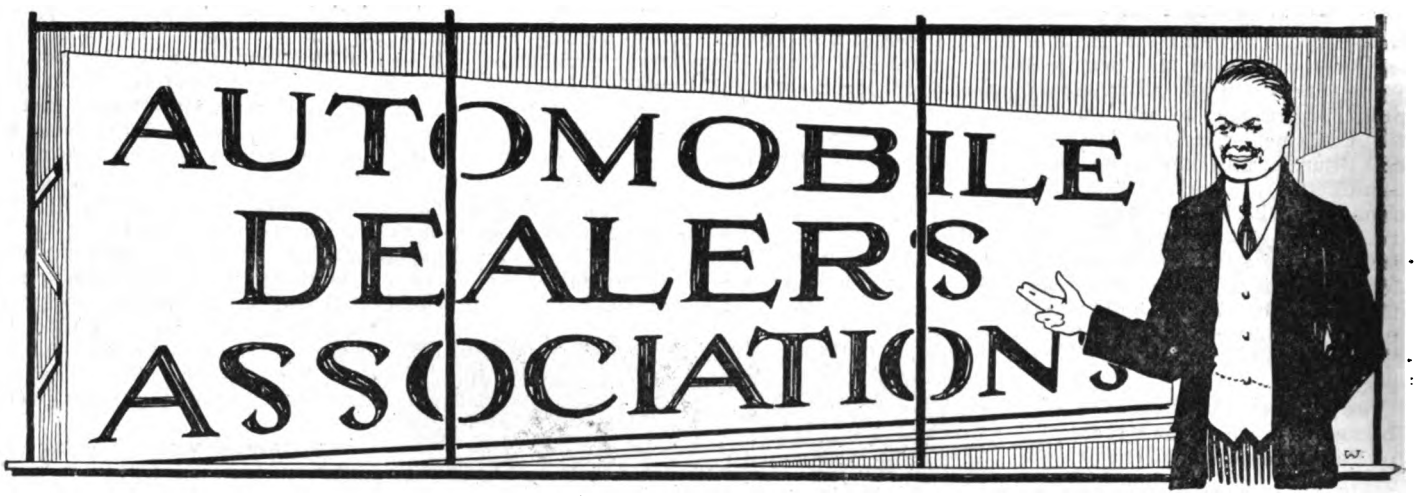

ORGANIZE IN GEORGIA.

Automobile dealers of Georgia have organized the Georgia State Automobile Dealers' Association, with a large membership. Harry G. Moock, business manager of the National Automobile Dealers' Association, was the principal speaker at the organization meeting. "There has never been a time in the history of the automobile dealer business in the United States," he said, "that so many serious problems have confronted the industry. Not even in the days when the Federal War Trade Board threatened the extermination of the business by an intended classification as a 'non-essential' has the situation been so acute. There certainly has never been a time in the history of the Georgia dealers when the condition was more menacing and the immediate future holds but one promise of betterment. That promise is unity of thought, purpose and action." He referred especially to the action of revenue agents in confiscating cars stolen by automobile thieves and used for the illicit transportation of liquor.

N. A. D. A. COMMERCIAL BRANCH.

A department especially devoted to the interests of commercial vehicles has been opened by the National Automobile Dealers' Association and will handle problems that arise solely in the truck sales trade. H. N. Cartinhour of the Cartinhour-Bowman Co., Indianapolis, distributor of Federal trucks, is commissioner of the Commercial Vehicle Division. The object of the division will be to help devise ways for the dealers to sell trucks and trailers.

BOSTON DEALERS.

The Boston Automobile Dealers' Association recently took 1700 little boys and girls in automobiles on an outing to Nantasket Beach. There were 370 cars and trucks, the dealers furnishing most of them. The outing was under the direction of Chester I. Campbell, secretary of the association. Dinner and many other features were provided for the children. Every summer the Hub dealers take the little ones out for a day's outing.

WARNS DEALERS NOT TO MISREPRESENT WAR TAX.

That automobile dealers must for their own protection know what their liability for war tax is, first in order to properly account to the government, and second to avoid criminal prosecution for improper accounting and for misrepresentation of the war tax, is brought out in a letter to the National Automobile Dealers' Association from George H. Moore, St. Louis, collector of the First District of Missouri.

He sends a letter complaining against the misrepresentation of the tax and a notice that he will proceed against dealers in his district who are misrepresenting the tax to their customers. He also encloses an Associated Press dispatch telling of the arrest of a Maryland confectioner for misrepresenting the tax. The Revenue Department proposes to make a test case of the Maryland arrest.

Dealers are warned by the N. A. D. A. that the action that Collector Moore announces he will take also will be followed by collectors throughout the United States.

INDIANA SHOW.

The Indianapolis automobile and accessory show will be held at the Indiana State Fair, Sept. 1-6. It will be conducted by the Indianapolis Automobile Trade Association, 338 North Delaware street, with John B. Orman manager. The new automobile exhibition building is now in course of construction and will be completed about the middle of August. It is expected to prove the largest and finest automobile show building of any fair association in the United States.

CINCINNATI SHOW.

The ninth annual automobile show of the Cincinnati Automobile Dealers' Association will be held in the Music Hall, Sept. 13-20, inclusive, with H. K. Shockley manager.

MESSAGE TO DEALERS.

The National Automobile Dealers' Association sends this message to dealers: "Now is the time to work for the repeal of the five per cent. tax on automobiles, accessories, tires and parts and for the elimination of the three per cent. tax on trucks.

"The President has paved the way. In his message to the 66th Congress, which convened May 19, he advocated the repeal of the excise levies. Congress itself is in a favorable attitude.

"What are you as dealers doing to help bring this about? Are you using your proper influence and are you looking to the tire men, accessory men, parts men and the like for assistance?

"Here is the plan of action you must pursue if these taxes are to be repealed:

Plan of Action.

"You must get your local associations together. You must send resolutions, letters and telegrams to Washington to your senators and to your representatives, asking for the repeal of these taxes.

"You must send these resolutions as an association.

"Each member of the association should send an individual protest to his senator and his congressman.

"Each association should call upon every line of business allied with the motor car industry to send a similar protest.

"Each man in the association should ask every other business man he knows to make a similar protest. Interest the car owners. Have them send protests, too.

"Flood Washington with telegrams and letters, resolutions and petitions.

"If you are not interested in this matter, who is?

"If you are not going to look after your own interests in your own business, who is?

"The prosperity of the motor car industry depends upon prompt action. Get busy. Get busy now."

The New York Automobile Dealers' Association held its first reception in the new club rooms, at 1845 Broadway. Music and dancing, with a buffet luncheon, were the features.

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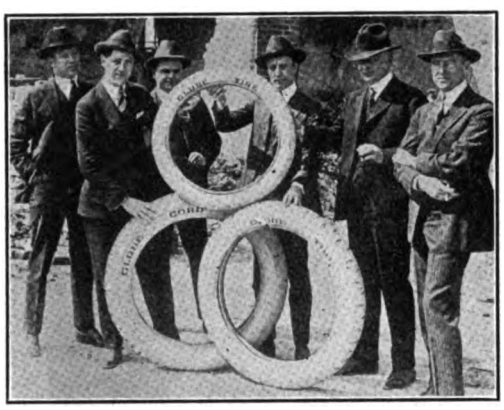
TIRE INDUSTRY AND TRADE

The Globe Rubber Tire Manufacturing Co. has appointed Hawley, King & Co., California distributor for Oakland automobiles, as distributor for Globe tires in California, Arizona and Nevada. Hawley, King & Co. has been established in Los Angeles for 32 years and is one of the oldest motor car dealers in the city. It is the first exclusive automobile distributor in southern California to enter the equipment field. Reeve Gartzmann, general manager, heads the tire department, with H. A. Anderson as sales manager. Dealers will be installed in every city and town in the territory. The Globe company has been producing pneumatic tires for eight years and is now turning out 1500 daily. J. B. Linard, said to be the youngest man in the country in a similar capacity, is president. Dr. H. W. Kugler, formerly chief chemist for the Firestone company, is general factory manager. H. L. McGregory, formerly efficiency expert for Firestone, is assistant factory manager, and R. E. Glass is auditor. One of the distinctions claimed for the Globe tire is that it is single cured.

The Tropical Tire and Rubber Co., 51 Leonard street, New York, has developed a splendid business in Tropical tires. The company announces that while Tropical



Globe Tire Sales Organization of Hawley, King & Co., Distributor for California, Nevada and Arizona. At Extreme Right Is Reeve Gartsmann, General Manager; Next to Him Is A. T. Smith, Globe Factory Representative in the West.

tires are guaranteed for 5000 miles they go far in excess of this guarantee. The company guarantees the best of materials and expert workmanship. "The Last Word in Quality Tires" is the firm's trade slogan. Tropical tires range in prices from $14.45 to $92.55 for the plain tread, $17.45 to $100.80 for the non-skid tread. The red tubes are priced from $3.55 to $11.60. The directors of the Tropical Rubber Co. on June 4 declared out of the surplus net earnings a semi-annual dividend of four per cent. on the outstanding capital stock, payable July 1 to stockholders of record at the close of business June 10.

The Pressman Tire and Rubber Co., a $3,000,000 concern, has purchased property at 250-252 North Broad stret, Philadelphia, a deal involving close to $500,000, for its headquarters. The property is at present under lease to the Chalmers and Maxwell Motor companies, the present lease having until Dec. 31 to run. The tire company, however, will take possession prior to that time, as the two automobile companies have announced their intention of opening new quarters. The Pressman company announces that it is one of the largest exclusive jobbers and distributors of tires and tubes in the world, controlling a chain of stores in all leading cities throughout the United States. It states that arrangements have been made for the establishment of distributing branches in all the principal countries of South America. Until the company can take possession of the new quarters the business will be conducted from the present quarters at 300-302 North Broad street.

The Braender Rubber and Tire Co., Rutherford, N. J., in announcing revision of prices, states: "During the revision of prices we have taken into consideration the position of the consumer when purchasing a first class piece of merchandise, the dealer who handles same and the jobber who in turn sells to the dealer. To both the jobber and the dealer we have arranged a far more satisfactory proposition than heretofore and to the consumer we are offering a high grade piece of merchandise the same as in the past at a slightly higher list with a longer mileage guarantee or basis of adjustment. We feel that a higher mileage adjustment basis will be more attractive when purchasing Braender tires."

The Savold Tire Co. originally contemplated operating its own plants in New York City and selling county rights in other parts of the state, but a plan has been devised whereby the company will operate its own tire reconstruction plants in principal centers throughout the state, thus giving the company a much larger earning power than if it sold the territory for cash plus a royalty.

The Polson Rubber Co., Cleveland, manufacturer of tire accessories, is preparing to build a large modern factory to take care of its increasing business.

The Fisk Rubber Co.'s offering of $15,000,000 seven per cent. first preferred stock has been sold through the Estabrook & Co. syndicate.

The B. F. Goodrich Rubber Co. has notified the New York Stock Exchange of the proposed increase in capital stock from $84,600,000 to $109,600,000 by the issuance of $25,000,000 preferred stock.

The B. F. Goodrich Rubber Co. announces that it has raised the mileage guarantee on its fabric tires to 6000 miles and to 8000 miles on its Silvertown cord tires.

The Fisk Rubber Co. newspaper, the Fisk Bulletin, pays a fine tribute to William T. Whitlock, who has left the company's plant at Chicopee Falls, Mass., after 15 years' service.

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TRINIDAD CONDITIONS.

Consul Henry D. Baker, Trinidad, British West Indies, reports: "Occasionally American manufacturers show inappreciation of conditions in connection with this market, which, not only interferes with their securing orders, but also militates against American business prestige, generally speaking. Some manufacturers and commercial houses in the United States seem to think that because Trinidad, being just off the coast of Venezuela, and appearing on maps of South America, is a Spanish speaking country, not realizing that it is a British colony, and only a small proportion of the people speak Spanish, English being the language of commerce. Some American firms, however, persist in writing letters in Spanish to merchants here, even though, in some instances, they have been requested to write in English. American business firms should not expect firms here to make too broad guarantees as to the business they can do before consenting to give them agencies. Some times the local firm deems it necessary to demonstrate a particular article, and to introduce it as rapidly as possible, but, nevertheless, does not wish to be tied up with expensive articles, which it might not be able to sell readily."

TRACTORS.

Commercial Attache Alfred P. Dennis, Rome, reports that Italian demand for tractors in the immediate future will be slight, The country was heavily stocked during the war by government purchases. There are 6000 American tractors in Italy, and the Italian government has outstanding contracts with Italian firms for the manufacture of 1500 additional.

A large Canadian firm recently announced that the demand in Canada for farm machinery would be four times as great as last year, when the total number of farm tractors delivered in Canada by his firm was 64.

Jamaica should prove a good field for tractors for agricultural purposes, although the market would be a limited one. The area of land in Jamaica adapted for tractor cultivation is limited to about 500 square miles. The wheel tractor is the type best adapted to this country on account of the ground being thrown in high ridges between the cane rows.

W. D. Blood is president of W. D. Blood & Co., Inc., 44 Whitehall street, New York, one of the newest organizations to take its place among the representative export sales companies. The company is incorporated under the laws of New Jersey and has already made much progress toward establishing a large number of important connections. The principal lines the company will represent in the foreign field will be those of manufacturers of automotive and hardware products. The clients now include the Metz Corporation, Waltham, Mass.; the Corbin Screw Corporation, New Britain, Conn.; the Hawthorne Co., Bridgeport, Conn.; the Witherbee Igniter Co., Springfield, Mass.; the Witherbee Storage Battery Co., Inc., New York, and the L. F. Benton Co., Vergennes, Vt. John C. Gallagher is secretary and treasurer.

W. D. Blood, President of W. D. Blood & Co., Export Representative.

AT LYONS FAIR.

E. Leidich, foreign sales manager of the Columbia Motors Co., manufacturer of the Columbia Six, has received a letter from the company's Paris distributor, giving an enthusiastic account of the reception which was given the Columbia Six at the Lyons Fair. Exhibitors were allowed to take their show cars out of the exhibit and demonstrate them. Old timers will remember that at the first shows held at Madison Square Garden, New York, the exhibition cars were being continually taken out for street demonstration. The Paris distributor says he used two drivers and demonstrated the Columbia 18 hours a day during the fair. He not only made many sales, but placed dealers in the departments of Rhone, Alpes Maritimes and Gironde.

Foreign Trade Opportunities

(Reserved addresses may be obtained from the Bureau of Foreign and Domestic Commerce, Washington, D. C., or from District and Co-Operative Offices.)

29,524—An agency is desired by a man from Australia who is now in this country for the sale of metals, hardware, motor accessories, steel shafting, steel pulleys and pressed steel grease cups. Reference.

29,517—A firm in the Philippines having a branch office in this country desires to represent manufacturers for the sale of electrical appliances, small machinery, automobiles, tires, shoes and paper. References.

29,522—An agency is desired by a firm in Mexico for the sale of a high priced automobile and accessories. The firm has show rooms and facilities for demonstration.

29,504—The agency for high grade and medium priced automobiles, motor trucks and accessories is desired by an importing firm in Mexico.

29,495—The representation of American manufacturers of automobile or horse drawn fire engine is desired by a man in Egypt. He wishes to receive an engine on consignment for demonstration purposes under necessary guarantee. No references.

29,448—Tractors and other agricultural machines are required by a company in France. Terms, cash. Correspondence should be in French. Reference.

29,453—Hydraulic machinery, electrolytic copper bars, resistance wire, covered wire and cables, motors and general electrical material and machinery for developing electric power are required by a firm in Spain. Quotations should be given f. o. b. New York. Terms, payment in New York. Correspondence may be in English. References.

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29,449—The agency for American publishers' supply houses and automobiles is desired by representative in Spain, who has had extensive experience in the publishing business. Correspondence should be in Spanish. References.

29,452—Electrical supplies of all kinds, transmission belting, axles, machine tools, electrical cables, etc., are desired by a firm in Norway. Quotations should be given f. o. b. American port of shipment. Terms, cash against documents. Reference.

29,454—An official of the government of Siberia wishes to purchase for the ministry of supplies, machinery, electrical supplies and implements, measuring devices, tools and accessories, machinery supplies, etc., a complete list of which together with further information may be had on application to the bureau or its district offices.

29,473—A Norwegian ship owner, who is at present in this country and will shortly return to Norway, desires to get in touch with manufacturers of automobiles, motorcycles, accessories, rubber goods, with a view to representing their interests in Scandinavian countries. References.

29,481—A man from Australia who is in this country desires to secure an agency from manufacturers for the sale in Australia and New Zealand of automobile accessories or hardware specialties. Reference.

29,475—The purchase and agency for the sale of automobiles, motorcycles, motors, tractors, trucks, tires and motor boats and supplies are desired by a company in Norway. Quotations should be given f. o. b. New York. Terms, cash against documents at destination. References.

29,443—Agencies are desired by a firm in Brazil for the sale of rubber tires, rubber goods, machine tools, plows and agricultural machinery. Correspondence may be in English. Reference.

29,440—An agency for the sale of trucks of a capacity of five to seven tons of heavy construction, adapted to the roads of Southern Italy, and high grade pleasure cars is desired by a man in that country. Correspondence should be in Italian or French.

29,403—The purchase and agency for the sale of automobiles and supplies, iron and steel, metals, heavy hardware, machinery, electrical supplies, light, heat and power service, rubber goods, insulating materials and steamboat supplies and kindred lines are desired by a firm in Norway. Quotations should be given f. o. b. New York. Terms, cash against documents at destination. References.

29,422—The agency for the sale of agricultural implements and low priced automobiles is desired by a firm in Italy. References.

29,423—The representation of firms dealing in automobiles and motorcycles is desired by a man in Uruguay. References.

29,429—Agencies are desired by the head of a firm in New Zealand who is now in this country for the sale of motor cars, automobile accessories, including tires; electric trucks, one-half to seven tons; gasoline trucks, electrical machinery and supplies, including motors, generators, batteries, wires and cables, agricultural tractors, machine tools, vulcanized fiber products, artificial leather, graphite products, steel products, building materials, fans and blowers and pipes. Reference.

29,435—A man in Switzerland wishes to purchase automobiles, bicycles and pneumatic tires. Correspondence may be in English. Reference.

29,436—The purchase of old trucks and automobiles is desired by a merchant in Italy. He also desires to secure an agency from manufacturers for the sale of leather substitutes, internal combustion motors for small boats, material and supplies for electric tram lines and railways, wood and woodworking machinery and all articles allied with the above. Terms, cash. Reference.

29,456—A firm in Italy desires to secure agencies for the sale of automobiles, chassis, wheels, tires, etc., accessories and supplies. References.

29,556—A trading firm in Esthonia desires to receive quotations on agricultural machinery and implements, electrical supplies, automobiles, steel and iron and oils. Catalogues and samples are requested. Reference.

29,567—The purchase and agency are desired by a man in Italy of dynamos, motors, transformers and all electrical equipment and accessories. Payment, cash. Correspondence may be in English. Reference.

29,577—An agency is desired by a man in Italy for the sale of metallurgical products, machinery, locomotives, motorcycles, tires and steel. Correspondence should be in Italian. Credit to be established in this country.

American Cars in British Colonies

A FRANK comment on the different manufacturing problems or methods confronting and utilized by the British and American motor car makers, which may be interesting to those engaged in developing the export field for American cars, appears in a recent issue of The Field, apropos of a letter which it publishes from a South African motorist. The letter is:

"Very large numbers of American cars are being sold, and will, I think, continue to be sold, in this country. We do not think that the British manufacturer has yet realized what he is up against. Americans have studied this market carefully; they have been sending out representatives for many years to find out exactly what is required, and are building their cars accordingly. It is not only a question of price. As far as one can understand, no manufacturer in Great Britain has yet realized that the car for this country is a 'high-power, light-weight car,' selling at a reasonable figure. Colonials do not want a car to last indefinitely. They are quite prepared to use it for a couple of years at the most, and then sell it for what they can get, and buy something that is newer and more up to date.

Want Reliable Cars.

"We quite believe that of the American cars sold in this country during the past six or seven years three parts of them are now on the scrap heap, while British cars sold during the same period are still on the road; this, however, does not appeal to the average colonial, whether of British birth or otherwise. With our rough and hilly roads the motorist wants a car that he knows will get him 'there,' and which does not require the changing of gears perhaps 50 times in a space of as many miles. I have seen a good deal of correspondence which has taken place between agents here and the British manufacturer, but have seen nothing in the latter people's letters to show that they really realize what is wanted in this country."

In defense of the British policy, the motor editor of The Field says that the South African motorist does not realize the dilemma of the British manufacturer. He cites two reasons for the different policies in the two countries. One that the British motorist desired a more substantial and comfortable vehicle, and second, that to enter into direct competition with the American car by producing a large-bolted, moderate-powered, light-weight design would be to submit to the handicap of higher productive costs.

U. S. Car More Suitable.

"It so happens," he explains, "that for the needs of many colonial motorists the American car is more suitable, as this correspondent points out, but it is not true that special models for South Africa are manufactured anywhere. The British manufacturer, in the past at least, had either to sell his standard chassis in the colonies or bring out a special design more on American lines. He elected to sell his standard product, for the ample reason that it would not pay him to produce a special light chassis for the colonial market because, being demanded in smaller quantities than even his standard model, it would carry a somewhat exaggerated price—in comparison with the American—and the small tariff preference given the British car would not serve to bring prices level.

"The problems of the South African and other markets are well known to the British industry, but unfortunately it is not in a position to do profitably what the colonial motorist desires, and, like many of us at home, the latter has just to put it to himself whether he is justified in running an American car in preference to a British one on the data given in the letter we quote. He decides that according to his lights, and if he elects to use an American well and good, but he ought not to saddle the responsibility for his choice on the British manufacturer."

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Personal News of the Industry in Brief

S. R. Swiss is now advertising manager of the Republic Motor Truck Co., Alma, Mich. For 11 years he directed

S. R. Swiss, Advertising Manager, Republic Motor Truck Co., Alma, Mich.

the sales and advertising of Red Raven Splits.

Benjamin Briscoe and Rodolpe Stahl of Briscoe & Stahl have returned to New York with added honors conferred upon them at the Great Lakes Naval Training Station. Lieutenant-Commander Briscoe, ordered to report at the station, was again sworn into the service and then promoted to the rank of commander as a reward for his service in France in the naval aviation field. He was then again discharged from the service. Mr. Stahl, who was a lieutenant, junior grade, in the naval aviation service, was promoted to the rank of lieutenant, senior grade. Lieutenant Stahl designed a motor which created wide attention in Europe.

John M. Robbins is vice president of the Fulton Truck Co. of Nebraska, formed recently to distribute the Fulton truck in Nebraska. For 15 years he has devoted his entire attention to the passenger car.

Ralph F. Schneider is head of the Ralph F. Schneider Auto Sales Co., which has acquired the distribution for Detroit and surrounding territory for the Bethlehem trucks.

A. B. Wagner, manager of the Nordyke & Marmon Indianapolis branch, was the proud possessor of one of the most unique window displays in Indianapolis during the week of the 500-mile race. He had obtained from the Nordyke & Marmon factory the original Wasp that won the first 500-mile race in 1911.

Walter E. Flanders has retired from the Maxwell Motor Co., Inc. W. Ledyard Mitchell, president of the company, succeeds him in the management of the company's affairs.

Lieut. F. W. Ramey, who was observation officer in the U. S. Artillery in France, has been placed in charge of the sales at the Cotta Transmission Co., Rockford, Ill.

J. H. Whiting, who brought the Buick Motor Car Co. to Flint, Mich., 16 years ago, died recently in New York.

M. V. Smith is now general superintendent of the Supreme Motors Corporation, Warren, O.

Edward A. Heffernan has assumed charge of the recently opened office of the Ahlberg Bearing Co. in Kansas City, Mo.

Frank R. Boyd has resigned as assistant treasurer of the Oakland Motor Car Co., Pontiac, to devote his time to personal affairs.

Julian S. Friede, who served with the Royal Flying Corps, is now on the engineering staff of the Haynes Automobile Co., Kokomo, Ind.

J. D. Cotton is president of a new corporation that will take care of the F. W. D. truck production in Canada as a branch of the Four Wheel Drive Auto Co., Clintonville, Wis.

J. B. Clarkson, a New Zealand operator in motor cars, accessories and motor apparatus, is on his annual visit to this country. He visited England, which country, he says, will not have its automobile organization on full production for at least two years.

H. M. Gagne has opened a wholesale branch in Seattle to distribute Kelly-Springfield tires in Washington, Oregon and Idaho.

Ralph O'Reilly, for two years with the sales department of the Sparks-Withington, Jackson, Mich., is now sales manager.

W. F. Rockwell is president and manager of the Wisconsin Parts Co., Oshkosh, Wis., a new corporation, which has purchased the assets of the E. B. Hayes

W. F. Rockwell, President and Manager, Wisconsin Parts Co., Oshkosh, Wis.

Machinery Corporation, Oshkosh. The corporation will manufacture Wisconsin axles on a much more extensive scale.

Edward McNamara is now district sales manager of New York state and the New England states for the Atter-

Edward McNamara, New England District Sales Manager, Atterbury Motor Car Co.

bury Motor Car Co., Buffalo, N. Y., builder of Atterbury trucks.

Frank Hood has been appointed manager of the Willys-Overland Pacific Co. He has been manager of the Willys-Overland Fresno branch since it was established.

Glenn A. Tisdale, president of the Franklin Motor Car Co., New York, distributor of the Franklin car, has been elected president of the Rotary Club of New York. He will attend the annual convention of the Rotary clubs of the country at Salt Lake City the week of June 16.

Robert Marcus has been put in charge of the battery service station equipment department of the H. B. Shontz Co., New York, metropolitan distributor for products of the American Bureau of Engineering.

Earl B. Wilson has been appointed director of sales at the Buick factory at Flint. He was formerly manager of the Philadelphia branch of the Buick Motor Co.

H. A. Goddard has been appointed director of sales and advertising of the Miller Corporation, with general offices at 115 Broadway, New York.

W. S. Stevenson, general sales manager of the Bethlehem Motors Corporation, has resigned, owing to ill health. Roy S. Davey is his successor.

Archie Elder, former Buick sales agent, is president of the Hudson County Oakland Motor Car Co., 766 Bergen avenue, Jersey City, a new corporation. Lewis Schantz is vice president and Edward Murphy is secretary and treasurer. Schantz and Murphy have sold Dodge cars for years.

C. R. Collins has resigned as advertising manager of the Ajax Rubber Co., Inc., and of the Racine Rubber Co.

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A. H. Doolittle, who was sales manager of the Zenith Carburetor Co., Detroit, has become general manager of

A. H. Doolittle, Now General Manager of the Claudel Carburetor in America, with Office in New York City.

the Claudel carburetor in America, with offices in the Aeolian building, New York.

Walter H. Shimpf, efficiency engineer, has become associated with the Paige-Detroit Motor Car Co. Mr. Shimpf will make Philadelphia his headquarters.

George A. Breeze, well known consulting engineer of Detroit, who has been with the Holley Carburetor Co. for some time, has tendered his resignation.

Capt. William Sparks is back as vice president of the Sparks-Withington Co., Jackson, Mich.

Dr. Toshikata Yamase will represent Transcontinental Merchants, Inc., so as to bring greater co-operation between prospective buyers of American goods in Japan and China and manufacturing exporters in America. He will open offices at Tokio, Oska, Kobi, Shanghai and Tien-Tsien.

C. Thomas has succeeded W. C. Christman as manager of the Miami branch of the Indiana Truck Co. For several years he was identified with the General Motors lines.

George B. Chapman has become Boston branch manager for the Garford Motor Truck Co. He was for the past three years with the Federal Motor Truck Co.

K. A. McDonald is now manager of the Conroy Motor Co., Worcester, Mass. He was formerly associated with the Ford Motor Co., Cambridge.

Robert B. Babbitt is now with the Newsum Auto Tire Vulcanizing Co., distributor for the United States Tire Co., as manager of the city sales department.

A. B. Manley has become supervisor of sales for the Monvis Auto Sales Co., Cleveland, O.

Ty Cobb will retire from baseball at the end of this season to enter the automobile business.

Walter A. Scott has formed the Scott Motor Truck Co., Brooklyn, N. Y., to distribute Rainier trucks in Brooklyn and Long Island. He was formerly secretary and sales manager for the Stewart New York City organization and prior to that time held a similar position with the Republic Motor Truck Co. for five years.

Stanley P. McMinn and Harold F. Blanchard have formed the McMinn Tire Co., Inc., at Bridgeport, Conn., to represent the Gates Half-Sole Tire. Mr. McMinn is president and Mr. Blanchard vice president.

M. B. Hoagland, for 17 years with the American Steel and Wire Co., has been appointed director of sales of the Signal Motor Truck Co., Detroit.

John M. Robbins, who was vice president and manager of the Fulton Truck Co. of Nebraska, has become manager of the Prince Auto Co.

W. F. Wilcox, Jr., is with the Southern States Equipment Co., Birmingham, Ala., in charge of the Stewart truck department.

W. D. Thompson has joined the sales force of the O. Armleder Co. as western representative, with headquarters in Denver. Jack Parker is also associated with the Armleder Co. C. B. Harvey will have charge of the middle west with headquarters in Chicago. Charles F. Ward will cover Massachusetts and Connecticut for the company.

C. E. MacTavish has been transferred to the head office at Oshawa, Ont., by the Chevrolet Motor Co. He was formerly manager of the branch at Regina, Sask.

E. H. Beacham, assistant to A. C. Barley, president of the Barley Motor Car Co., has resigned to go to the Waldon W. Shaw Co., operating the Shaw Taxicab Co. and the Yellow Taxicab Co. He has been general sales manager during the past six months.

Capt. Wakeman Hackett, recently discharged from the service, after returning from France, has become a factory rep-

Capt. Wakeman Hackett, District Sales Manager, Oshkosh Motor Truck Co.

resentative covering the middle west section for the Oshkosh Truck Manufacturing Co., Oshkosh, Wis.

George V. Lyons is domestic sales manager of the John Simmons Co., 110 Center street, New York, which has formed

George V. Lyons, Domestic Sales Manager, the John Simmons Co., Jumbo Truck Distributor.

an alliance with the Nelson Motor Truck Co., Sagamore, Mich., whereby the Simmons concern becomes the sales agent for Jumbo trucks in New England, New York, Northern New Jersey and Eastern Pennsylvania and for all export business.

O. Brunauer has resigned as director of sales and engineering for the United States Ball Bearing Co., Chicago. He was formerly with the Detroit office of the Gurney Ball Bearing Co.

Albert E. Perry, for seven years with the Columbus, O., Packard organization, has resigned as general distribution manager of the Packard-Columbus Co. He has bought the Perry Auto Top Co., which he will incorporate, giving its employees an opportunity to become stockholders. No change will be made in the name, but the scope of activities will be increased.

Henry T. Graham presided at the semi-annual meeting of the Delaware Automobile Association. Ernest S. Taite, Frank W. Pierson and Dr. Joseph W. Bastian were appointed a committee to plan for a membership campaign, which will continue until Aug. 1. The association has 700 members, and efforts will be made by personal solicitation to increase the membership to 2000. As automobile registrations in the state number 14,000, the committee is confident that the campaign will be successful. Mr. Taite, who recently returned from an automobile trip to Washington, D. C., described the Capital Trail signs in Maryland, and the association decided to ascertain the cost of such signs for the Lincoln Highway in Delaware. Dr. William Springer said that Wilmington will have but one good entrance, the Boulevard, when the work of improving the New Castle county roads is finished. The association condemned the use of its emblem on the automobiles of non-members.

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MAMMOTH PARKING GARAGE FOR BOSTON

Structure, Having Ramps, Will Cost $1,250,000 And Will Be Finest in Country—Finely Located in Theater and Hotel District

WHAT is expected to prove the finest parking garage in the country will be erected by the Eliot Street Garage Co. on Eliot street, Boston. It will be a five-story fireproof garage, which with the land will represent an investment of $1,250,000. The building will cover more than five-eighths of an acre of ground and will have more than four acres of floor space. Six hundred cars will be accommodated at one time.

A feature will be a double spiral ramp, one within the other, by which cars will be able to ascend or descend on their own power. Clinton J. Warren is the architect and the George W. Harvey Co. the contractor.

Located in the heart of the theatrical and hotel district and within a few moment's walk of the shopping and financial centers, the garage will serve the various interests, which in rotation require parking space during the day for business men, in the afternoon for shoppers and in the evening for theater goers.

As an added convenience to theater goers it is intended by means of a tunnel to connect the garage with the passageway running through the Little building, which joins the Majestic and Plymouth theaters. In this way theater goers will be able to check their cars and proceed to the theater without going outdoors.

Advantages of Ramp.

The use of the ramp instead of elevators will have a two-fold advantage. It will enable any number of cars to stream in or out of the building on their own power, thus avoiding delays and congestion. During certain periods of the day, especially before and after theater, the movement of several hundred cars in or out, almost at one time, will be necessary. With eight or even 10 elevators long delays would be unavoidable.

Then an important reduction in the cost of maintenance is made possible by use of the ramps. The installation of elevators would add considerably to the annual cost of the building. It is estimated that the cost of operating and repairing these elevators would be in the vicinity of $40,000 a year.

Keeping Cars Moving.

Another interesting feature of the proposed construction is in the use of concrete guides in the spacing of cars. These guides will be shaped like huge flat irons raised 4½ inches over the floor level, four feet wide and 10 feet long. Over this guide the car backs into place. A small bumper will be provided for blocking the rear wheels. In this way a car can back into place only when it is correctly placed.

A scientific plan has also been devised for facilitating the moving of cars in and out of the garage. Near the entrance will be an attache of the garage, who will have in front of him a flashlight device, which will show which berths are vacant and which are occupied. On basis of a vacant space he will hand to the chauffeurs as they pass by a check showing the floor and berth number. On each floor other attaches will guide chauffeurs to their berths, help check robes, etc. Congestion near the entrance will thus be avoided.

Good Location.

The location is easily reached from nearly all of the main arteries of motor traffic entering Boston. It is near Commonwealth avenue, Beacon street, Boylston street and Columbus avenue, and also Pleasant street, which, it is expected, will eventually be the main route of motor travel to the south of the city.

It was not until an intensive study had been made of the probable future growth of the city that the Eliot street site was decided upon. The promoters found that the tendency for expansion was toward the Park square section, which, it is predicted, will shortly become the business center of Boston, as it is along the natural route for growth.

The garage will have an outward appearance not unlike that of a big hotel. The ground space is to be about 27,000 feet, with a 195-foot frontage and a depth of 145 feet.

There will be check rooms and gasoline, oil and air service on each floor, preventing congestion on the ground floor. Once a car starts from a floor there will be no steps on the way out of the garage.

Slight Grade for Ramp.

The ramp will have the slight grade of only one in 14 feet. It will require no more energy to reach the fourth floor than it does to turn around three times in a wide street and will take but a few seconds to go from one floor to the other.

On the ground floor, to the right of the main entrance, will be located the offices, comfortable waiting rooms for women and men and a store for accessories.

The banking firm of Baker, Ayling & Young is representing the financial interests. Architect Warren designed the building, including the ramps, which are patented. The structure will be owned and operated by the Eliot Street Garage Co., which has signed agreements through W. J. McDonald of the John Hancock building and Henderson & Ross of 148 State street, for the purchase of land and buildings which serve as the site for the garage.

The work of construction will begin this month and it will necessitate the tearing out of a large number of existing structures on Eliot street and Boylston place.

Finest Parking Garage.

From the standpoint of size, cost and innovations, it is claimed, no garage in Boston, and only a single structure in New York, will even begin to approach the projected building and it will undoubtedly be the finest parking garage in the country.

Plans by Architect Warren call for a steel and reinforced concrete building, which will rest on a foundation of concrete sunk 40 feet below grade. The architect has succeeded in making the building highly ornamental. Over the double entrance on Eliot street for automobiles will be a marquise. The building will be thoroughly fireproof throughout, with metal doors and window frames.

Special precautions have been taken to reduce the fire hazard. A system of fire sprinklers will be provided. In addition the building will be divided by fire walls into three sections equipped with fire doors communicating with the ramp. In case of fire the portion of the building involved will be cut off so that the ramp will be available for egress from the rest of the building.

Use of Floors.

The basement of the building will be used entirely for car storage. On the first floor will be the office and waiting rooms, women's resting room, men's smoking room, lavatories and the accessories store. The second floor will be for auto storage only. Part of the third floor will be given over to chauffeurs' rooms, toilets, shower baths and dressing rooms. The gasoline distributors on each floor will be under a pressure system.

A circular court, 30 feet in diameter, will be in the center of the building, inside the ramp. Illumination will be furnished by a skylight dome on top.

GOODYEAR WILL PROVIDE CARAVAN FOR BOY SCOUTS.

The Goodyear Tire and Rubber Co. will divert from its Akron-Boston express line five trucks to carry 50 Boy Scouts with their officers from Akron, O., June 26, on a 3000-mile trip through nine states. The route will include Niagara Falls, Syracuse, Utica, Albany, Lake George, Lake Champlain, White Mountains, Portland, Me.; Boston, Providence, New Haven, West Point, Ithaca, Lake Chautauqua and Youngstown. A moving picture scenario has been written for the boys.

Three trucks will carry the party, a fourth the baggage and camping outfits and the fifth the field kitchen and the "eats." The boys will camp beside lakes, scale mountains and sleep in the shadows of old forts. The pneumatic tired trucks, with double deck, providing upper and lower sleeping berths, insure comfort.

Two shifts of drivers will permit travel at night. The expedition will demonstrate the ease with which troops can be transported from inland points to the coast.

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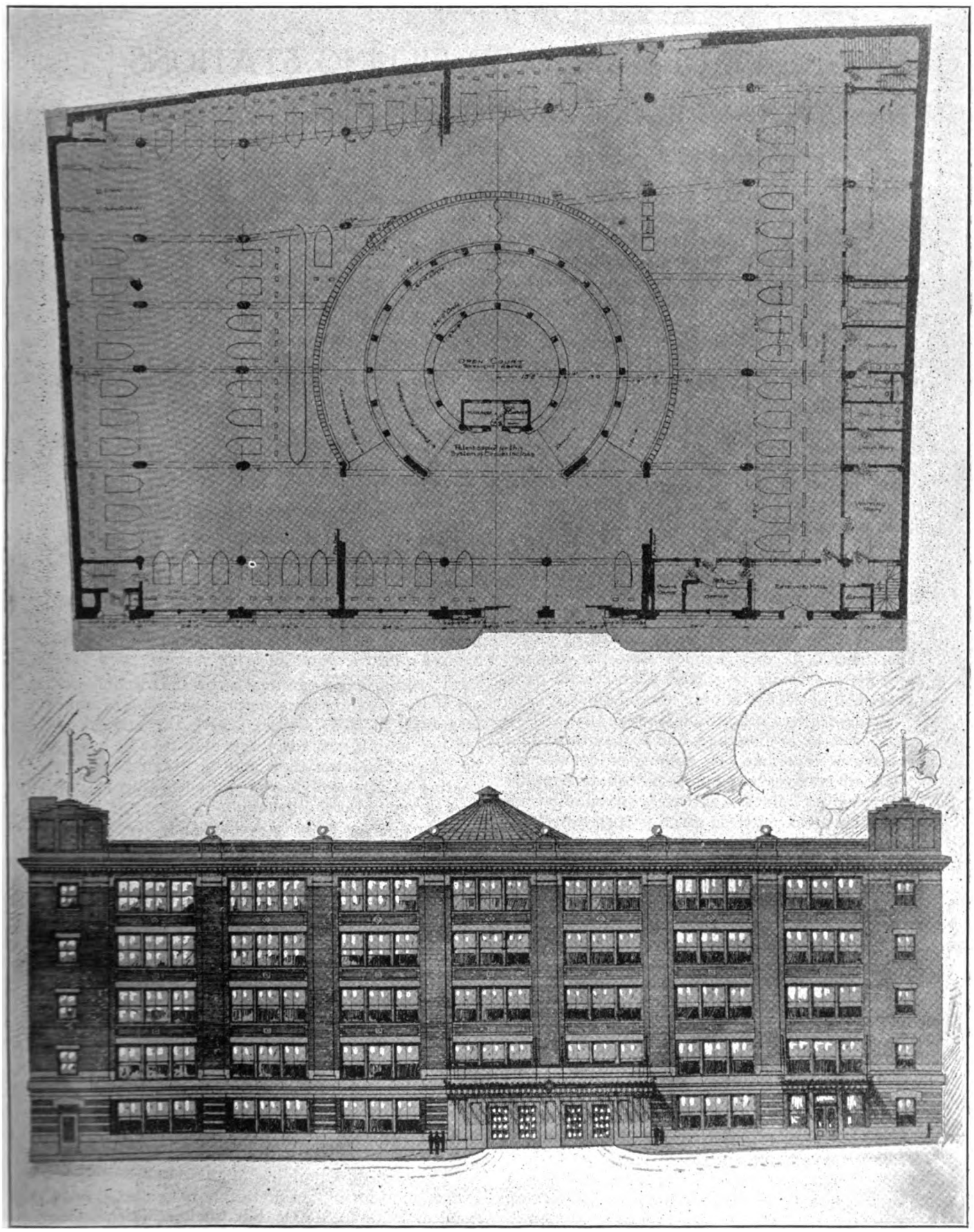

Floor Plan and View of Proposed Garage on Eliot Street, Boston, Which Is Expected to Prove the Finest Parking Structure in This Country. Circular Ramps Will Entirely Replace Elevators. The Building Will Cost $1,250,000.

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PLATE XLI.

GREAT DEMAND FOR FILLING STATIONS

Accompanying Design Shows Superstructure of Brick Trimmed with Concrete Stone or Terra Cotta—Effect is Attractive.

FILLING stations have sprung up along lanes of traffic throughout the country, and there is a constant demand for new ones. At these one should be able to obtain oils, greases, gasoline and sundries of a nature that may be needed in emergencies, such as tubes, patches, cement, etc.

As the filling stations depend to a large extent on transient trade, it is advisable to make them as attractive as possible. As individual tastes in this respect may go into extremes, endeavor has been made in the accompanying design to simply illustrate a type.

Many persons think that a mere building with a "gas" pump at the curb makes a filling station complete, but the fact is that the real heart of a filling station is buried beneath the ground.

Units of Station.

In connection with a station, large storage tanks are required for the gasoline and usually there is need for several of them. The prospective dealer is advised to secure tanks of ample capacities, as it may happen that the demand from his customers is greater than the oil companies will be able to supply him on quick orders.

In this respect suggestion is made that a 1000-gallon tank be the average, and that nothing of a capacity of less than 500 gallons be considered.

As all stations must keep adequate supplies of lubricating oils and greases on hand at all times, this stock must be given proper consideration. In the building shown herewith provision has been made for oil storage in vertical tanks, placed in separate compartments as shown, the pumps being located directly over them, as will be seen from a glance at the plan.

Grease, lubricants, etc., may be kept stored below, with some for current use on the shelves of the store or salesroom.

Construction Details.

The foundation would be of concrete, with the main or outside wall at least 12 inches thick, while the interior or dividing wall would be eight inches in thickness. A study of the section at the right will explain fully just what the nature of the construction would be, and of its components.

The mixture for the mass concrete will be found satisfactory, if a 1-3-5 is used, which is a first class quality for foundation work. A footing has been placed underneath the walls to insure equal distribution of all loads and to prevent sinking or sagging caused by excessive weights upon concentrated areas of soil, the bearing pressure of which cannot resist the loads placed thereupon. The foundation has been allowed to extend above grade, forming the base course to receive the superstructure.

The superstructure is of brick, trimmed wih concrete stone or terra cotta, these trimmings comprising cornice and coping, or, if one so desires, the entire building may be constructed of any one of these materials, with an attractive effect being attained.

If brick is used a rough textured one is suggested, with large white joint ¾-inch thick, rough struck or raked out, either of these giving pleasing effects.

Reinforced Concrete Floor.

The floor is of reinforced concrete as shown, using a wire mesh for reinforcing, or small twist bars, the latter being placed six inches on centers, the short span, with rods running at right angles, spaced at about 16 inches on centers. Concrete for all slab work of this nature should be of a 1-2-4 mixture, good and rich.

The roof may be framed up as shown, on rafters if the building laws permit that type of construction in the district where the station is located, and, if not, a concrete slab may be erected. In either case they may be treated with a coating of tar, applying gravel according to the best tar and gravel finishes.

The interior finish may be of plaster, or the walls finished in white, unplastered. The warmth derived from plaster during the cold, damp weather, will well repay for its installation.

Cost of Building.

Heating may be obtained from a small heater placed in the basement, a hot air furnace being ample to take care of the same. A toilet and a wash stand are also situated in the basement, access being gained from the upper floor by a flight of stairs as shown.

All plumbing and piping may be of standard make, insuring satisfaction at all times. Lighting by electricity, with the outlets placed to owner's advantage, these being governed by the equipment of the station.

The cost of a building of this type and size, exclusive of fittings, would come in the neighborhood of $1500 to $1800. For further information address the Architectural Department of this publication.

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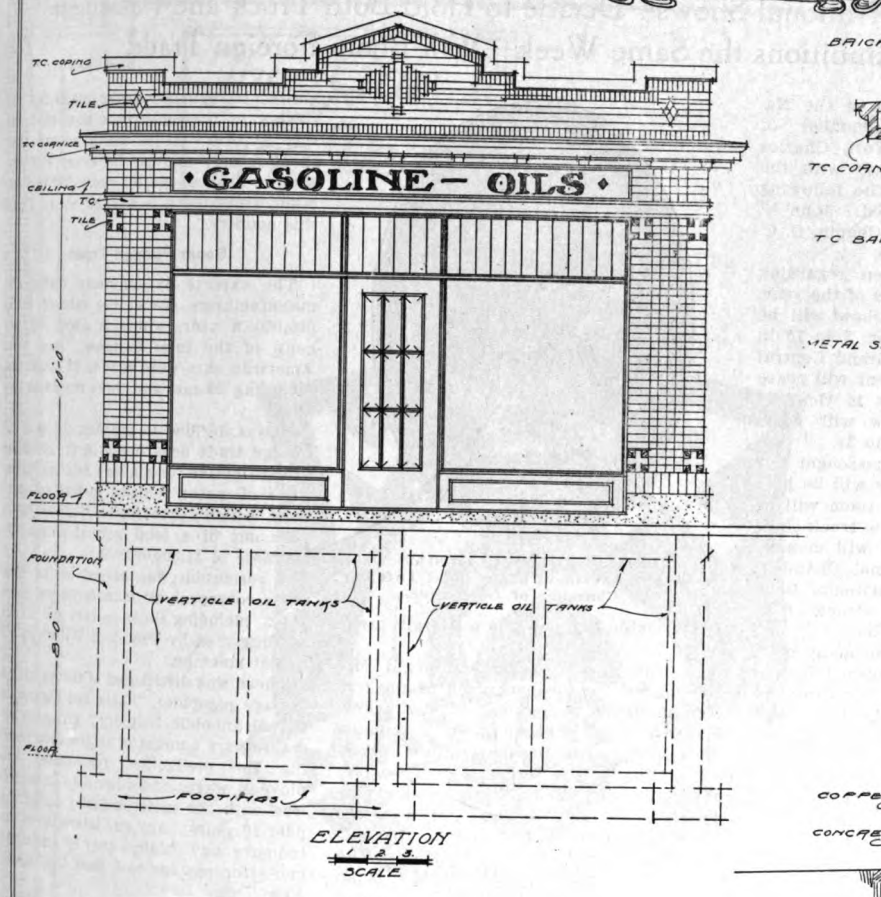
PLATE XLI



ELEVATION
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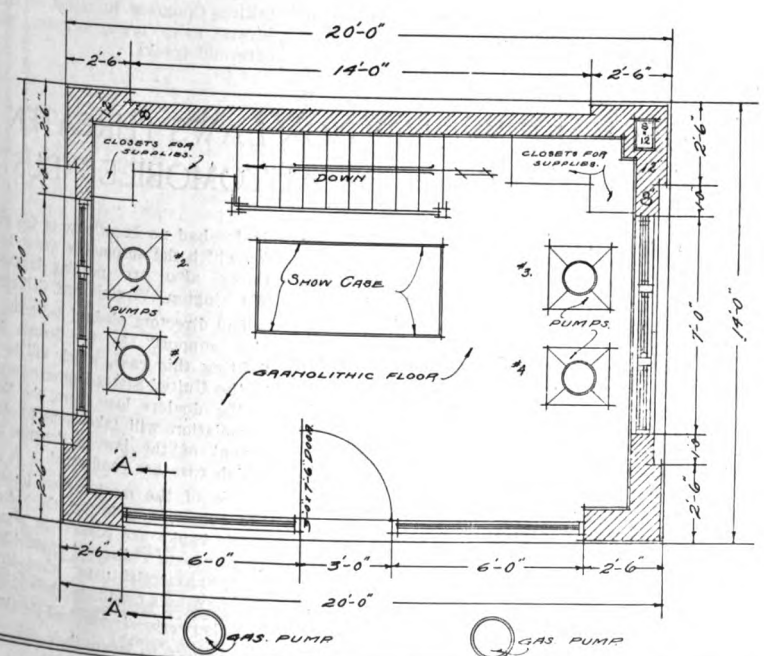

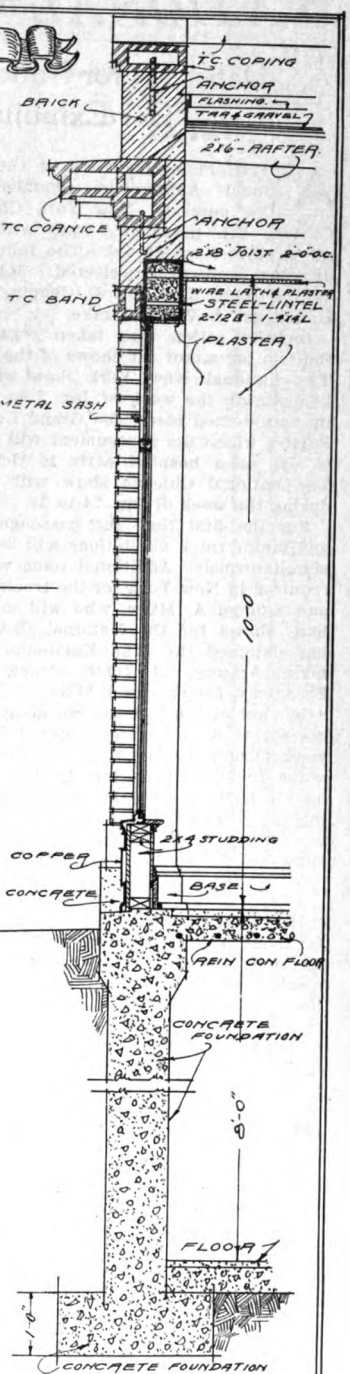

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NATIONAL CHAMBER IN ANNUAL SESSION

Dates Set for National Shows—Decide to Hold Both Truck and Passenger Car Exhibitions the Same Week—Will Boom Foreign Trade.

AT THE annual meeting of the National Automobile Chamber of Commerce in New York Charles Clifton, the president, was, with the other officers, re-elected. The following directors were also re-elected: John N. Willys, H. H. Rice, Roy D. Chapin, C. C. Hanch and J. Walter Drake.

Definite action was taken regarding the two big motor car shows of the year. The national New York show will be held during the week of Jan. 3 to 10 in its accustomed place, the Grand Central Palace, which the government will cease to use as a hospital early in October. The national Chicago show will come during the week of Jan. 24 to 31.

For the first time the passenger car and motor truck exhibitions will be held simultaneously. Additional room will be required in New York for the truck show and Samuel A. Miles, who will manage both shows for the National Chamber, has obtained the 22nd Engineers Regiment Armory, at 168th street, near Broadway, for the truck show.

In view of the fact that so many manufacturers were heavily engaged in war work during the last year, the directors voted to allot space for the big shows on the basis of cars or trucks sold during the year ended June 30, 1917, instead of on June 30 of the year preceding the shows, as has hitherto been the custom.

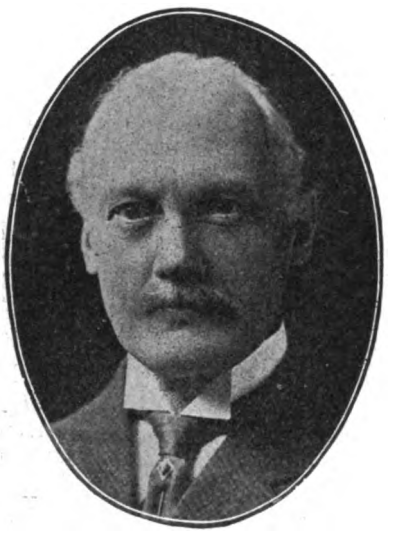
New Models Coming.

Indications, as expressed by the manufacturing representatives in New York for the meeting, were that the forthcoming shows will be the largest and best in many ways ever held in this country. There will be a wide variety of new models and several entirely new makes of cars. In the mechanical details, also, will be seen many improvements due more or less directly to the automobile experience gained from the war.

C. C. Hanch, secretary of the National Chamber and who recently returned from a four months' visit to the motor car factories of Europe with the object of studying industrial conditions and prospects for American export trade, presented a report which showed that, while the demand for automobiles is very great, there is difficulty in shipping them from this country owing to government restrictions.

Hanch Tells of Abroad.

England has permitted imports of 50 per cent. of five-twelfths of the number of cars imported by the various makers in 1913, but American imports are still prohibited in France and Italy. These restrictions have been imposed with a view of giving the home industry time to readjust itself, but the foreign importers of American cars, recognizing the need for medium priced machines, have been urging their governments to admit



COL. CHARLES CLIFTON.
Re-Elected President of National Automobile Chamber of Commerce.

a reasonable number at a moderate tariff rate.

"I was greatly surprised," said Mr. Hanch, "to see the expansion of the foreign factories as a result of war needs. Many of them will be able to produce more motor cars than heretofore. I cannot say that they will soon be very strong competitors of the American product, because their factories are not designed nor are their people trained for producing what we call mass production. The demand for motor cars, however, is so great that not alone all the European product can be sold, but many American cars, provided the embargoes are raised to permit their importation.

"The importers of American cars abroad have made strong pleas for the raising of the embargoes now that the war is over. It is worth noting that there is only one car for every 400 persons in France, one for every 225 in England, while there is one for every 18 in this country."

Boom Foreign Trade.

The exports by American motor car manufacturers are at the rate of $125,000,000 a year, which is about 10 per cent. of the total business. Last year American cars were sent to 82 countries, including 20 cars and three trucks to Iceland.

It was decided to broaden the general foreign trade department in the chamber to care better for matters relating to exports of motor vehicles to foreign countries, which approximates $125,000,000 a year out of a total normal automobile business of $1,300,000,000.

A resolution was passed asking Congress to repeal all manufacturers' sales taxes, including those on cars and trucks as suggested by President Wilson in his recent message.

There was distributed at the meeting a 36-page pamphlet, "Facts and Figures of the Automobile Industry," giving an extraordinary amount of information showing the production, registration, employees, wages and other data in connection with the motor industry during the past 20 years. Any one interested in the industry may obtain a copy by sending 10 cents for postage to 7 East 42nd street, New York.

The directors adopted a resolution asking Congress to repeal all manufacturers' sales taxes, including those on cars and trucks.

DECLARE PROHIBITION LAWS THREATEN SAFETY OF AUTOMOBILE INDUSTRY

HOW prohibition laws are threatening the safety of the automobile industry was brought out at the meeting of the directors of the National Automobile Dealers' Association at St. Louis.

The prohibition menace to the dealer has resulted from the fact that in numerous dry states Federal revenue agents have confiscated automobiles carrying liquor. In most of these cases the cars have been sold by the dealers on conditional bills of sale. After the cars have been seized they are either sold or destroyed, the dealer is deprived of his car and in many cases it is impossible to recover the balance due on the purchase.

This procedure has been upheld in the United States Circuit Court of Appeals for Georgia despite the fact that the dealer had no knowledge of the purpose for which the automobile was to be used. Cases also are pending in Colorado, Washington, Virginia and California.

The directors pledged "adequate financial support" to the Georgia dealers fighting this case, which will be taken to the United States Supreme Court and, if the dealers lose there, the National association will take steps to obtain a repeal of the law in Congress under which cars are confiscated.

One of the most serious features of the confiscation is that the Federal reserve banks are considering a proposal to refuse to rediscount automobile dealers' commercial paper when cars are sold on such conditional bills of sale. It has also seriously impaired the ability of car owners to insure their cars.

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6 6

The Car of the Year

METZ

MASTER SIX

A New England Product
Honest through and through

METZ SALES CORPORATION
BOSTON - MASS

GEAR DRIVE

(When Writing to Advertisers, Please Mention the Accessory and Garage Journal.)

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METZ MASTER SIX

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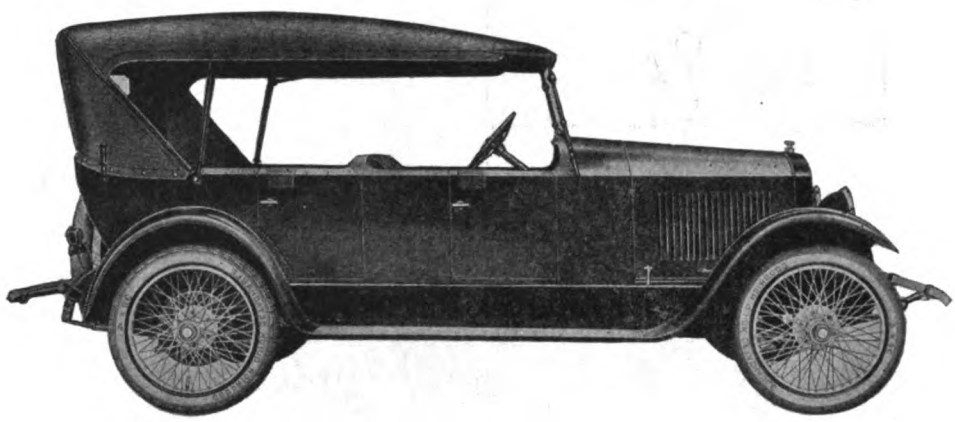

Elegance - Luxury

Measured by any standard the METZ MASTER SIX is a car of distinction, — in design, in finish, in appointments, — a construction that admirably harmonizes.

No machine is more complete—no vehicle could be more carefully thought out and no car was ever perfected with greater regard for the requirements for every purpose.

Every quality has been considered. Every possibilty has been appraised and the entire design has been developed to meet the demands of those who keenly discriminate.

There is elegance in the proportioning of the body, in the graceful, sweeping lines, in its simplicity and dignity.

In every detail is evident the qualities that will make for motoring pleasure—for the driver who exacts flexibility and uniformity of acceleration on level ways and steep hills; who demands ease of control with wheel, pedal and lever; who wants perfect lubrication, small consumption of fuel, large tire mileage, and construction that means well nigh constant service with minimum of maintenance cost.

In the METZ MASTER SIX this means the fullest degree of comfort. That long, slow resiliency of the springs that absorbs all shocks and insures against fatigue; that depth of high grade leather upholstery that conforms to one's body and affords restful support; the ample space in which one can move unhampered and without cramping.

GEAR DRIVE

(When Writing to Advertisers, Please Mention the Accessory and Garage Journal.)

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METZ MASTER SIX

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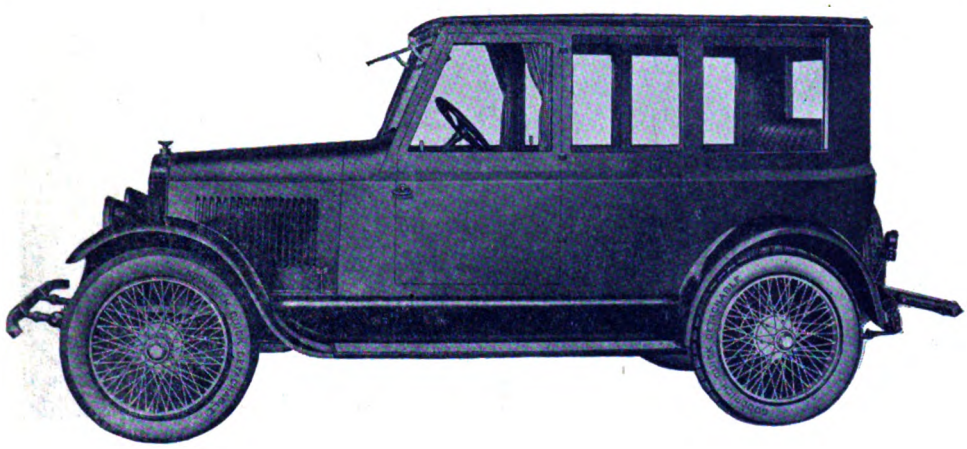

Service - Endurance

The utility and satisfaction realized is in ratio to the design and the construction.

The METZ MASTER SIX is the conception and the creation of the Master—METZ—the choice of units with reference to materials, workmanship, appearance, accessibility and simplicity—the products of the best specialists of the industry, and combining them into a perfectly balanced assembly that will afford every quality that makes for undoubted superiority.

Service in the METZ MASTER SIX means that this car will measure up to every standard by which satisfaction is determined. Whether it be appearance, finish, convenience of appointments, comfort of passengers, ease of control, power, flexibility, safety, tire mileage, economy of maintenance, the car is equal to any machine built, and is unequaled when all of these qualities are considered as applied to a single design.

Endurance is meant to apply to period of utility, to the service life that can be expected. The METZ MASTER SIX is built for years of use. Every construction unit is known the world over for quality. No car was ever designed with greater factors of safety. Only with such units could a car of equal strength and light weight be realized.

There is in the METZ MASTER SIX greater value represented than any other car, because METZ owners enjoy all the superior qualities at far less expense. The best measure is a knowledge of other cars. Make every possible comparison. See them all without regard to price. Then you will learn that on the basis of quality the METZ MASTER SIX has been rightly named the PERFECT CAR.

GEAR DRIVE

(When Writing to Advertisers, Please Mention the Accessory and Garage Journal.)

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METZ MASTER SIX

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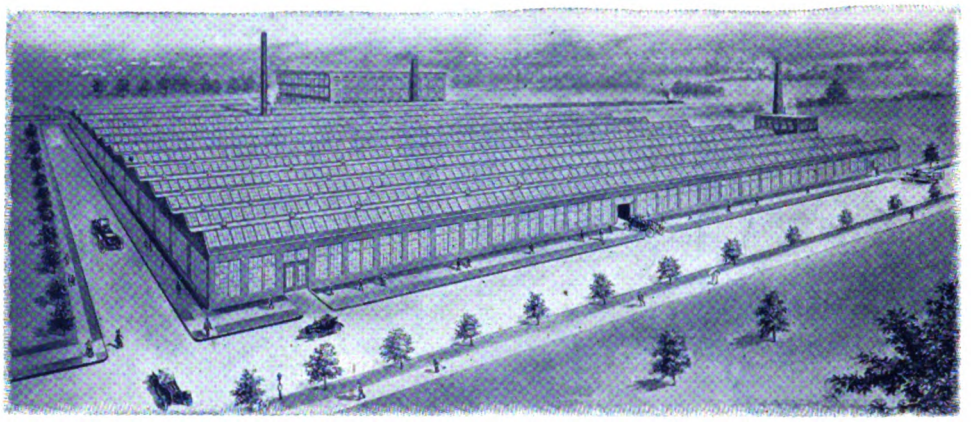
Metz Main Factory, Where the Metz Master Six Is Built



Specifications of Metz Master Six

MOTOR—MASTER SIX, 3⅛x5, L head type six cylinder en bloc—unit power plant, with fully enclosed valves and detachable cylinder head.

FORCE FEED and Splash. Positive pump circulation to all parts of motor. Pressure indicator on instrument board, gauge on crank case.

CARBURETOR—STROMBERG Float Feed automatic type. Double jet, intake air heated, instrument board adjustment.

ELECTRIC EQUIPMENT—WESTINGHOUSE two unit lighting and starting systems.

IGNITION—CONNECTICUT distributor independent of generator.

BATTERY—WILLARD 6 volts, 120 hour ampere.

GASOLINE SYSTEM—15 gallon capacity tank carrier on rear. STEWART vacuum feed to carburetor, gasoline gauge.

STEERING GEAR—Worm and gear type, irreversible 18" special finger MASTER SIX walnut steering wheel, spark and throttle control levers and horn button mounted on top. Left side drive.

CONTROL—Center gear shift lever and emergency brake hand lever.

TRANSMISSION—BROWN-LIPE, selective sliding gears; three speeds forward and reverse; nickel steel gears; special alloy steel shafts. Unit construction aluminum case.

CLUTCH—BORG & BECK single 10" dry disc type, positive—yet disengaged by a gentle push on clutch pedal.

DRIVE—Hotchkiss type; two universal joints and tubular propeller shaft.

LAMPS—Special MASTER SIX electric head and tail lamps with double bulb for dimming, dash and rear compartment lamps.

RADIATOR—Special MASTER SIX, Duplex cooler, copper tubes, cellular type, generous cooling surface, ample water capacity.

COOLING—Water, positive centrifugal pump circulation.

FRAME—Pressed steel channel section very wide in rear, tapering straight to front.

SPRINGS—Special alloy semi-elliptic; front 38" long, 2" wide, rear 54" long, 2" wide, underslung; suspended directly under frame.

AXLE—Front MASTER SIX, TIMKEN, single-piece drop-forging; I-beam section, heat treated TIMKEN bearings.

AXLE—Rear MASTER SIX, TIMKEN, ¾ floating type, pressed steel housing, spiral bevel driving gears, accessible from rear, TIMKEN bearings.

BRAKES—Service, 14½" external contracting on rear wheel; 2" wide with equalizer. Emergency internal expanding.

WHEELS—5 MASTER SIX wire wheels white enamelled—standard equipment for detachable straight side type tires. Artillery type optional.

TIRES—32x4 GOODRICH, plain tread on front, and Non-Skid or Safety tread on rear. Six ply.

EXTRA WHEEL CARRIER—Special design mounted on rear with safety lock.

LICENSE TAG HOLDERS—Front—special arrangement on lamp spacing rod. Rear—integral with lamp.

BUMPERS—Special MASTER SIX design front and rear.

BODY—Five passenger, pure stream line MASTER SIX Colonial design—custom made, sturdy and extremely comfortable, roomy and of pleasing appearance, deep wide cushions, flush type well fitted doors designed to eliminate all rattle.

WINDSHIELD—MASTER SIX two-piece ventilating and rain vision.

FINISH—Highest grade custom coach work throughout. Royal blue with black enamelled guards and trimmings. White enamelled wire wheels, durable carpeted floor in rear, and special gray Linoleum covered floor in front, with running boards to match. Instrument board of dull finished walnut, with steering wheel special design to match and panel of walnut front of rear compartment.

UPHOLSTERING—Straight piped, fitted upholstery. Genuine deep buffed black leather cushions and back.

TOP—One-man, with curtains and top boot, curtains carried in pocket in top, using Dreadnaught water proof topping material.

SPEEDOMETER—STEWART, flush type, mounted on instrument board, driven through special gears at rear of transmission.

WARNING SIGNAL—Electric motor driven, operated from steering wheel.

EQUIPMENT—MASTER SIX one-man top with top cover and quick adjustable interior fastening side curtains; MASTER SIX rain vision, ventilating windshield; speedometer; motor driven horn; headlights with auxiliary bulbs; dash, rear compartment and tail lamps; ammeter; oil pressure indicator on dash; bumpers front and rear; extra wire wheel on rear with special carrier and safety lock; special robe rail; pump; jack; tool kit in special pocket; tire repair outfit; ignition lock.

WHEELBASE—120 inches, tread 56 inches.

WEIGHT—2750 lbs. shipping weight; road weight with full tanks 2850 lbs.

PRICE—Fully equipped, $1695, F. O. B. factory.

METZ SALES CORPORATION

Metz Building Boston Mass

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METZ "MASTER SIX" LATEST NEW ENGLAND BUILT CAR

C. H. Metz, Designer of the New Metz Master Six Series of Car.

Metz Building, 920 Boylston Street, Boston, Location of Executive Office of the Metz Sales Corporation.

R. A. Pickens, Executive of the Metz Sales Corporation, Metz Car Distributor.

SUPERIORITY when measured by comparison with the best products of the industry, and not excepting machines that are considerably higher in price, is claimed by the Metz Sales Corporation, the selling representative for the Metz Co., Waltham, Mass., for Metz Master Six cars.

Though Metz Master Six cars are new in the sense of production, none of the units incorporated in them are experimental or untried. To the contrary, every unit is the product of a specializing concern, that is known of all who own or drive or are interested in automobiles for high quality as measured by automobile values.

Nothing radical is in the design, which was created by C. H. Metz, founder of the Metz Co., who has been identified with the automotive industry for a quarter century, or since its development. Claim is made that the machine in every detail represents the experience of not only the best specialists, but of one who has combined in one design all that is good of all other designs and obviated every factor that mature knowledge had shown might be criticised or would detract from the extremely high standard of engineering that had been sought.

The intention is to devote the entire Metz plant, which covers eight acres, and in which 2600 men were employed in war work, to car building. This statement is made to establish that the plans of the Metz company are to operate on a very large scale.

The Metz Master Six chassis is built to a design that has been standardized and which will be continued without change, although the purpose is to further refine it when this is practically possible. The main units include a Rutenber six-cylinder engine, a Borg & Beck dry disc clutch, Brown-Lipe transmission gearset, Timken full floating rear axle, Timken front axle, Perfection springs, a specially built radiator, Stromberg carburetor, Westinghouse two-unit lighting and starting system, Connecticut distributor, with all auxiliaries of equal quality.

Units Built by Specialists.

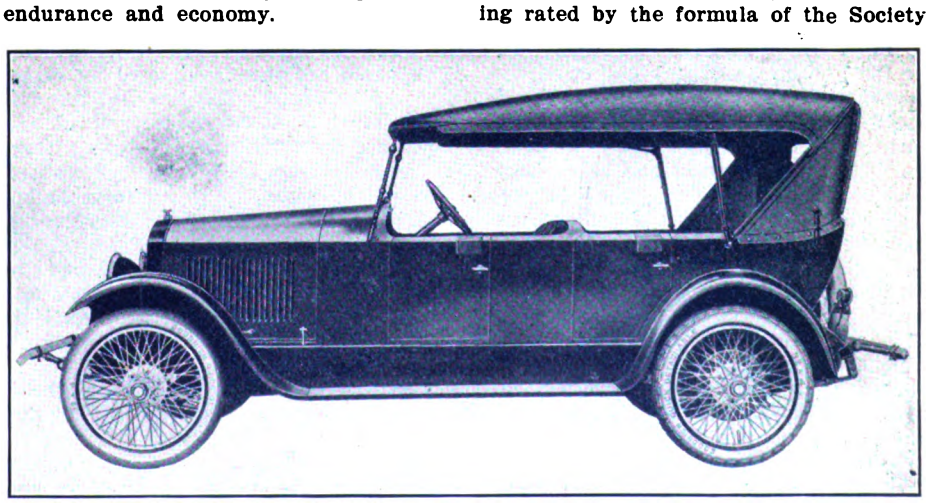
One will note that all of the units specified are the products of concerns that are known to the American automotive industry as having quality. These cannot be regarded as experimental. To the contrary they have been developed and perfected by engineering organizations from laboratory and service experience covering long periods and with the object of obtaining the highest degrees of endurance and economy.

Claim is made that by the exercise of extreme care and comprehensive knowledge of automobile construction a chassis assembly has been perfected that when carefully analyzed will be found well balanced with reference to proportions, to strength, to factors of safety, and so far as engineering science can be applied is equalized in the sense of obtaining structural endurance.

Rutenber Six-Cylinder Engine.

The Rutenber engine in the unit power plant of the Metz Master Six is the most recently perfected production of the Rutenber Motor Co., Marion, Ind., and was designed especially for passenger car construction. It is a six-cylinder, water cooled, four-cycle, vertical, L head type, with the valves located at the right side.

The cylinders have bore of 3⅛ inches and stroke of five inches, the unit being rated by the formula of the Society



Metz Master Six Chassis with Five-Passenger Touring Car Body and Complete Standard Equipment.

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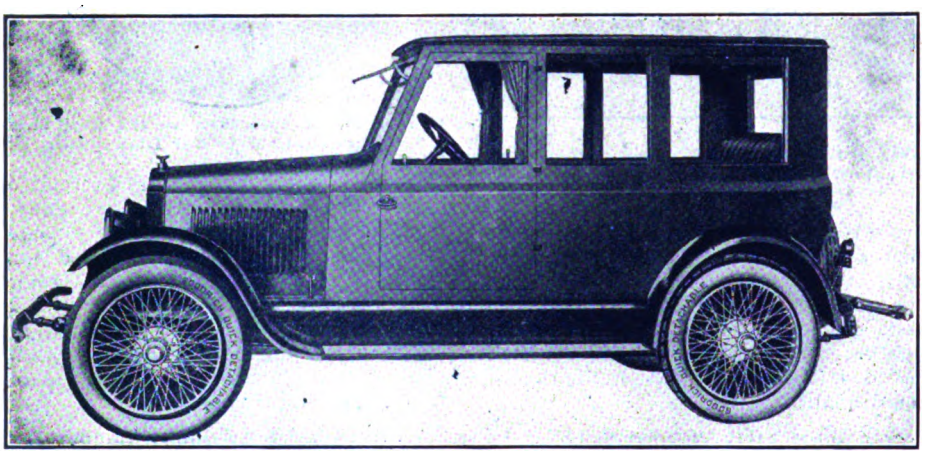
of Automotive Engineers at 23.48 horsepower, but the claim is that it will develop in excess of 40 horsepower at maximum engine speed. With the large stroke to bore ratio there is every reason to justify the expectation of practically double the power determined by the specified formula.

The construction of the cylinders is to advanced practise, the casting being en bloc with the water jacket and the upper section of the crankcase integral, and with a detached head. The cylinder block and the head are cast from a high quality of gray iron. The water jacket is large and is so designed that it may be perfectly cleared, this insuring freedom of water circulation.

The walls of the jacket and the cylinders are uniform throughout, this making for thorough cooling and efficient lubrication, both of which contribute to engine efficiency. The head section is designed to have large water chambers over the cylinders and the bores for the spark plugs are in the centers of the combustion heads and are completely surrounded by water. This location of the spark plugs is to obtain the largest degree of ignition effectiveness, the sparks being in the centers of the gas filling the chambers, and there is an unusually effective cooling of the spark plugs.



Metz Master Six Chassis with a Sedan Body Seating Five Passengers and Complete Standard Equipment.

Cylinders with Detachable Head.

The water jacket offsets from the cylinders on the left side of the block. Under the valve pockets and jacket on the right side are two ends and a central web that form the seats for the large cover plates that enclose the valve mechanism. There are forward and rear extensions of the crankcase section, the former housing the timing gearset and the latter forming the upper part of the bell housing of the flywheel. The rear support arms are cast integral with the bell housing.

The upper section has three internal webs, these being vertical transversely and carry the three main bearings. The lower section of the crankcase is an aluminum alloy casting that serves as the oil reservoir and the base of the crank chamber, with forward and rear extensions. The forward extension with a cover plate completes the timing gear housing and the rear extension the flywheel bell. The bell housing has a small inspection plate at the crown for convenience in timing the valves, and at the left side of the housing is an offset for the installation of the starting motor.

The water outlet manifold is at the forward end of the head and the water intake of the engine block is at the right side directly back of the fourth cylinder. The engine head is retained by a series of studs. This is readily removable for grinding the valves or cleaning the cylinders, by simply disconnecting the hose connection of the water outlet and taking the terminals of the wiring. The fiber tube carrying the wiring is carried on brackets that are retained by two of the studs securing the head. The lower section of the crankcase is bolted to the cylinder block and this may be taken off and the main and connecting rod bearings may be inspected or adjusted. By removing the head and the lower section practically all necessary work may be done without removing the engine from the chassis. The timing gearset is also very accessible from the front of the engine.

Machine Work Carefully Done.

The machine work on the engine block and head is very carefully done. After boring the cylinder units are aged to insure against machining stresses and distortion and they are subjected to hydraulic water pressure tests to detect defects. The bores are then completed by reaming and grinding. The faces of the cylinder block and the cylinder head are machined carefully to obtain exact fitting.

The pistons are cast from close grained iron of the same grade as the cylinder block and are designed as light as is possible consistent with strength. They are turned, annealed and finished by grinding. The insides of the barrels are bored to insure the units are equal in weight, this making for close engine balance.

Each piston is channeled for three rings, which are carefully fitted, and the wristpins are steel tube, carefully ground and case hardened, which are secured in the piston bosses by set screws and cotter pins. Much care is given to obtain equal weight of all reciprocating parts.

The crankshaft is a three-journal construction, drop forged from special steel, that is heat treated and ground to dimensions. The diameter is large and the bearings are lengths that insure against shaft whipping or other vibrational stresses. The camshaft is a special alloy steel, drop forged, with the cams integral, with three large journals. The cams are specially ground to obtain exact contour and high valve efficiency. The shaft is so constructed that it may be withdrawn from the engine block by removing the cover of the timing gearset case. All shafts are accurately balanced and are remarkably free from vibration. The timing gears are large diameter and have wide faces, and they are cut helically to operate noiselessly. By the use of special equipment the gear centers are accurately maintained.

Valves Are Interchangeable.

The valves are interchangeable and have cast iron heads electrically welded to carbon steel stems. The valves are installed in long, renewable guides and are operated by oil tempered springs. The valve tappets are a mushroom type that are hardened and ground and are seated in large guides that can be replaced if worn. The tappets are fitted with adjusting screws and lock nuts.

The main, crankpin and camshaft bearings are the highest grade babbitt metal, the first two specified being fitted with shims for adjustment. The small ends of the connecting rods, which oscillate on the wristpins, are bushed with bronze.

The engine is cooled by a circulation of water that is forced by a centrifugal pump of large capacity, that is driven by an outside shaft from the timing gearset, through the cylinder jacket and a duplex type special radiator, the core being formed of copper tubes. It is a cellular construction that has a very generous radiating surface. The radiator is installed on the frame so as to be thoroughly protected from chassis distortion and vibratory stresses. Radiation is promoted by a large fan mounted on annular ball bearings on an adjustable bracket on the forward end of the cylinder block, that is driven by a flat belt from a pulley on a forward extension of the water pump shaft.

Positive Lubricating System.

The engine is lubricated by a combination force feed and splash system. The oil is drawn from a screened well in the reservoir in the base of the crankcase by a pump driven from the rear end of the camshaft, and forced through tube to the crankshaft and camshaft bearings and the timing gearset. The excess oil flows to the base of the crank chamber, whence it is distributed by splash to the cylinder and piston walls, the wristpins, the cams and valve tappets. The flow of oil from the pump is through a pressure indicator installed on the instrument board and the level of the lubricant in the reservoir is shown by a gauge on the engine case.

The fuel is supplied through a Stromberg carburetor having a side flange that is secured direct to the intake passage

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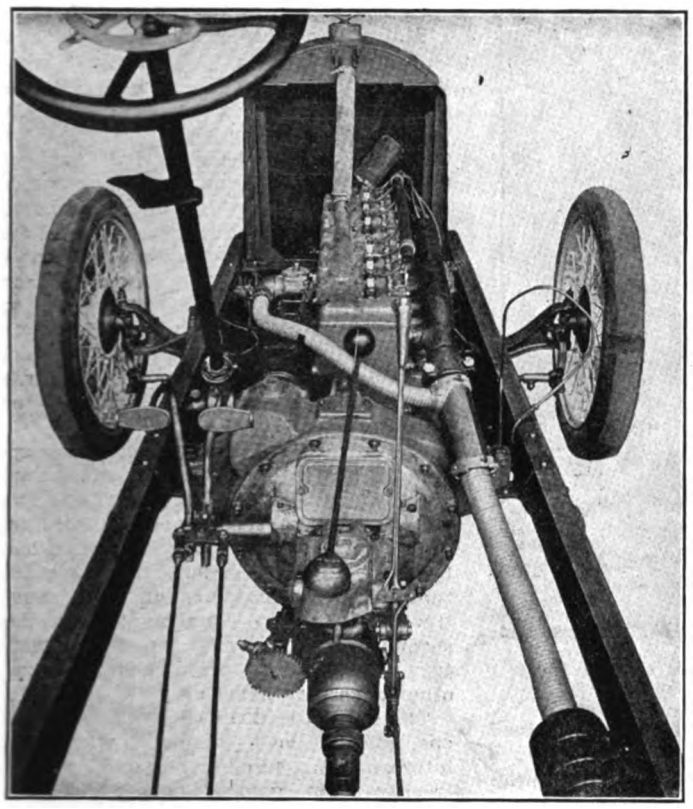


The Forward End of a Metz Master Six Chassis Showing the Six-Cylinder Unit Power Plant and the Duplex Radiator.

on the left side of the engine, from a 15-gallon tank suspended by straps from a tubular tie rod at the extreme rear end of the frame and a frame cross member, by a Stewart vacuum system. The carburetor is heated by a stove on the exhaust manifold connected by a flexible metal hose. The intake passage is cored through the engine block between the third and fourth cylinders and this insures that the gas admitted is heated and is a thoroughly combustible mixture.

The source of the ignition current is a Willard storage battery, six volts, 120 ampere hours capacity, which is charged by the generator of the Westinghouse two-unit starting and lighting system. This current is directed to the cylinders by a Connecticut distributor and there is a uniformly effective spark generated at all times in each cylinder, so that there is positive engine efficiency.

The Power Transmission System.

The clutch is a Borg & Beck 10-inch dry disc type that is self-adjusting and requires practically no lubrication, and is completely enclosed in the housing. It is claimed to be extremely easy to engage and to be positive in action. This is combined with a Brown-Lipe transmission gearset, a sliding gear selective type having three forward speed ratios and reverse. The shafts and gears are very large and have unusual endurance. The shafts are a special alloy steel and the gears are nickel steel, and the shafts are carried on annular ball bearings. The gearset is enclosed in an aluminum case. The gear shifting lever is mounted in an offset bracket at the rear of the case and this is a ball and socket type.

The power is transmitted from the engine to the rear axle by a long, tubular shaft with a universal joint at either end, the joints being fully housed and packed with grease. The rear axle is a Timken three-quarters floating construction, and is driven by a helical bevel pinion and master gear. The axle housing is pressed steel and there is a large rear cover pate on the central section at the rear. By removing this plate the differential gearset is easily accessible. The differential gearset and the pinion shaft are assembled on the forward plate of the central section of the axle housing. The wheels are driven by shafts that are seated in the bores of the differential gears, the outer ends of which are bolted to the hubs. The housing is webbed to obtain strength. The driving shafts may be taken out without removing the wheels and adjustments may be made to all the bearings, which are the Timken roller type.

The Other Chassis Units.

The front axle is a Timken, a drop forged steel I section with heavy steering knuckles and it is equipped with Timken roller bearings.

The frame is a pressed steel channel section that tapers from the rear to the front, and the side members are cambered at the rear to afford spring clearance. There are four cross members, one at the front end on which the forward trunnion of the engine is mounted, one just ahead of the forward hangers of the rear springs, one near the rear ends of the side members, and a heavy tube tie at the ends of the rear spring horns. In addition the frame is reinforced by the support arms of the engine. The frame is flexible and will weave without damaging stresses to conform to the road conditions.

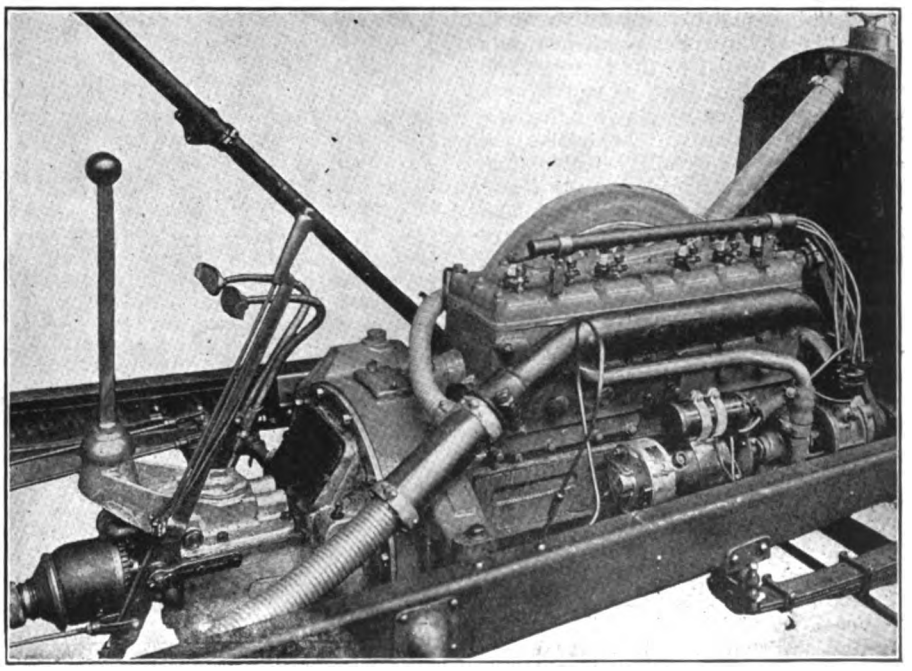
The springs are a semi-elliptical type, the forward set being 38 inches long and two inches wide and the rear set is 54 inches long and two inches wide, the rear set being underslung from the axle. The springs are directly under the frame and there is maximum slow resiliency when the car is moving. The suspension is the Hotchkiss system, the rear springs taking the driving and braking stresses and the torque.

The steering gear is a Warner worm and gear irreversible construction that is mounted at the left side, it being a fore and aft type with a heavy bracket mounted on the frame side member. The gear is adjustable for wear and it is fully enclosed and packed with grease. The linkage is very substantial.

Conventional Means of Control.

The control is by the usual foot pedals for the clutch and the service brake, with hand levers controlling the ignition and throttle and a button for operating the horn on the 18-inch steering wheel, and hand levers for shifting the gears and the emergency brake in the center of the foot board. The service brake has external contracting shoes, lined with anti-friction fabric, operating on, and the emergency brake has internal expanding shoes operating within drums 14½ inches diameter and two inches wide on the rear wheels. The service brake is equipped with an equalizer and both brakes are easily adjustable.

The wheelbase of the chassis is 120



Right or Valve Side of the Metz Master Six Engine, Showing the Water Pump, Westinghouse Generator and Distributor.

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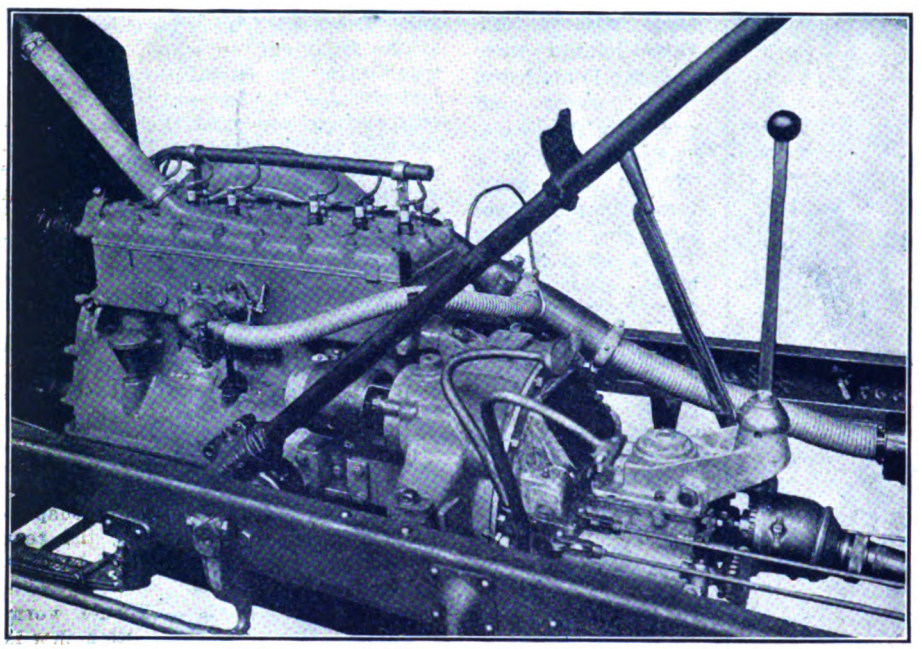


Left or Intake Side of the Metz Master Six Engine with the Carburetor and Westinghouse Starting Motor and Control Members Shown.

inches and the tread is 56 inches. The standard equipment is wire wheels, with a spare wheel, with rims designed for straight side type tires, and wooden artillery type wheels are optional with the purchaser. The wheels are shod with 34 by four-inch Goodrich tires, plain tread on the front and non-skid on the rear.

Five Types of Bodies.

The chassis are fitted with a five-passenger touring body, three-passenger roadster body, four-passenger coupe body, sedan body or a speedster, which is equipped with disc steel wheels, and two extra wheels that are carried on a running board.

The prices for these machines are: Touring car, $1695; three-passenger roadster, $1695; four-passenger coupe, $2495; sedan, $2595, and speedster, $2795.

The bodies for all these types are built by the Metz company and they are claimed to be equal to any custom work. The quality of the coach work can only be learned by a visit to the factory. The company maintains that as much care was taken in the engineering for the bodies as for the chassis. The bodies are constructed from specially selected lumber for the frames, which is milled and fitted to equal the best yacht work. The frames are extremely heavy, many of the members are laminated, and the curved frame members are bent instead of sawn.

Body Work of Highest Grade.

While all of the frame is covered with metal or upholstery great care is taken in the fitting. All joints are strongly braced with steel or bronze brackets and the frames are intended to endure for years under the stresses of chassis distortion without loosening or breaking the finish. The touring car body, for instance, is made in three units, the dash and the cowl and sides, the front seat and the sides, and the rear seat and sides, each of which is installed separately and so fitted that there can be no stress upon any one. The same construction obtains with the roadster and the speedster, which have two units instead of three, and the sedan and coupe are even heavier and have more substantial frames. The instrument boards and the backs of the front seats of the touring cars are dull finished walnut effectively paneled.

The bodies are all built to streamline effect and are finished in royal blue as a standard color, with black enameled fenders and trimmings. The wheels are white enamel. The upholstery is straight piped fitted leather seat and back cushions for the open bodies and the closed bodies are upholstered with fabric or leather as may be ordered, the standard being fabric. The front footboard and the running boards are covered with linoleum and the floor of the rear compartment is carpeted.

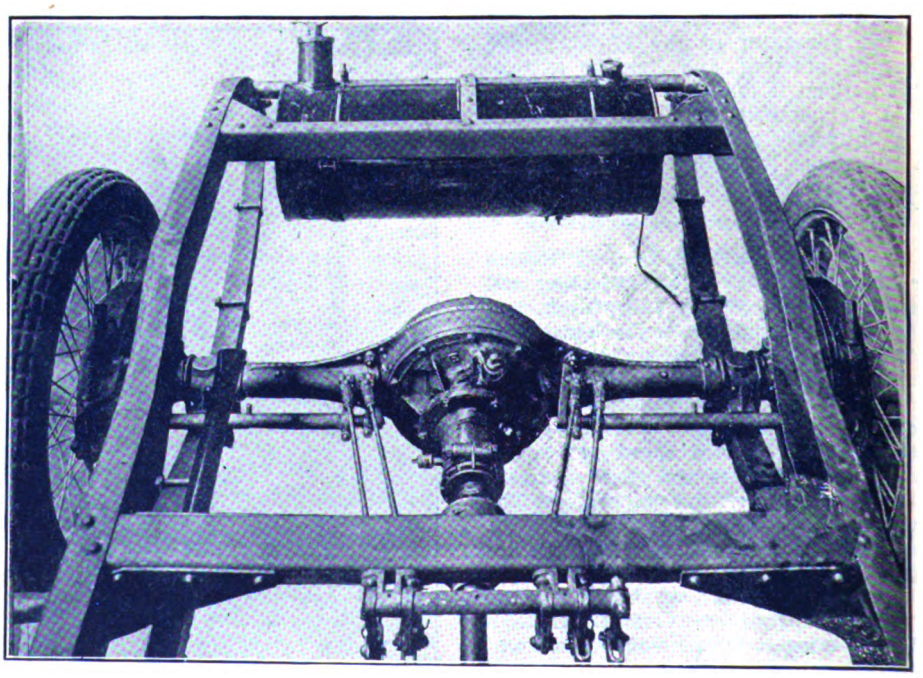
Equipment Is Very Complete.

The touring car is equipped with a one-man top with curtains and top boot, the curtains being carried in a pocket in the top, and the material is Dreadnaught top fabric. The equipment includes for the touring model, besides what has been specified, a rain vision ventilating windshield, speedometer, motor driven horn, headlights with auxiliary lamps, dash, rear compartment and tail lamps, ammeter, oil pressure indicator, front and rear bumpers, extra wire wheel mounted at the rear with special carrier and safety lock, special robe rail, pump, jack, tool kit in a special pocket, tire repair outfit, ignition lock and special brackets for license plates.

The sales of the Metz Master Six cars will be by the Metz Sales Corporation, an organization formed to distribute the machines, which has leased the building at 920 Boylston street, Boston, which has been named the Metz building. The sales room is on the first floor and the executive offices of the company are on the second floor. The remainder of the structure will be given over to storage and other necessary purposes.

The sales are directed by R. A. Pickens, who has been connected with Metz interests for a number of years, who is treasurer and general manager of the corporation. He has developed a very aggressive organization in the East and his intention is to increase this until the corporation is represented in practically every commercial center of the country. In addition attention has been given to export and very satisfactory connections have been made in a number of foreign countries.

The Metz company at the factory is now well advanced in production, there is every reason to expect that within a short time the output will equal the demand, although now the number of cars produced is by no means sufficient to keep pace with the orders, and the sales organization is constantly increasing.



Rear End of the Metz Master Six Chassis, Showing the Brake Linkage, the Underslung Springs and the Secure Mounting of the Gasoline Tank.

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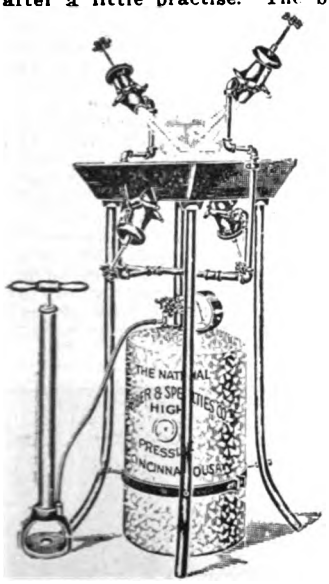
ACCESSORIES, EQUIPMENT AND TOOLS FOR THE GARAGE AND REPAIR SHOP

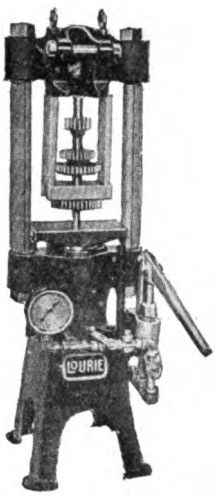
Brazing Forge. Many jobs are brought to repair shops that are too small for economical working if the shop is equipped only with a blacksmith's forge, that may readily be handled by this brazing forge described. Shops not equipped with forges can utilize a brazing forge for all small repairs that require welding. The National Rubber Co.'s Brazier No. 2 may be used anywhere in the shop, burns gasoline for fuel (74 test gasoline, if possible to obtain it), but will do satisfactory work with other grades of gasoline the maker claims. By following the simple instructions sent with the brazing outfit any repairer should be able to do good work after a little practise. The brazier



is self-contained, occupies little space, may be placed anywhere handy to the work and is complete as follows: Pressure tank and gauge with the necessary fittings and connections, burners, valves, etc., air pump and stand. When in operation the tank carries a pressure for long jobs of 40 to 50 pounds and 30 pounds for small jobs. By using the special brazing compounds other metals beside iron and bronze may be welded.

Manufactured by the National Rubber and Specialties Co., 4433-4439 Chickering Ave., Winton Place, Cincinnati, O. Prices and literature on application.

Lourie Hand Hydraulic Arbor Press. The Lourie Hand Hydraulic Arbor Press is of smaller capacity than the power sizes made by this company and is manufactured for the garage and repair shop trade that desires a hand tool for forcing gears and pulleys from shafts or forcing them into place on shafts or for broaching keyways in gears. The machines do the work quickly without battering the ends of shafts or breaking gears. They can be used for testing the strength of materials, broaching any kind of a hole, pressing bushings and pins to place, re-



moving ball races from auto and truck shafts, straightening shafts or bars and other similar uses. In operation the motion is reversed from the ordinary screw machines for this purpose, being up instead of down, as in screw or rack type. Each press has a base cylinder ram pump, with valves, cross head, strain bars and springs to return the ram quickly to the cylinder. The extras include gauge V blocks for spacing, swinging arms for V blocks and additional pump. The capacities are 20, 30, 40, 50 and 60 tons.

To operate press, fill the tank with any light running oil, close the valve and pump oil into the cylinder, which operation raises the ram very powerfully. To release the pressure, open the valve and the springs will cause the ram to return within the cylinder very rapidly.

Manufactured by the Lourie Mfg. Co., Springfield, Ill. Prices on application.

Wagner Auto Cleaner. The Wagner Auto Cleaner is a handy tool for motorists, as with it the car owner can keep the engine free from dirt and oil with slight labor. It is easily attached to an air hose either from a storage tank or from a spare tire. The second hose marked kerosene is placed in a pail of kerosene. Turning on the air pressure draws the kerosene from the pail, forcing it out of the nozzle at a strong pressure, and by

directing the nozzle against the side of the engine the oil and dirt will be quickly removed. Six pounds of air pressure is required and one quart of kerosene will clean any size engine the manufacturer claims. As a constant flow is required for the successful operation of the cleaner a foot pump is not recommended.

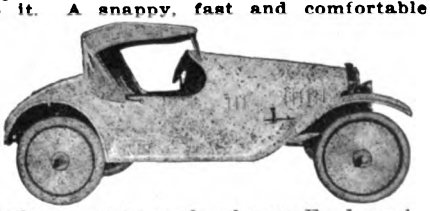
Manufactured by Wagner Specialty Co., 1902 Broadway, New York City. Sold by Asch & Co., 16-24 W. 61st St., New York City. Price, $2.

Spee-Dee Cleanser. The claims of the manufacturer for the efficiency of Spee-Dee Cleanser are based on two qualities that should commend it to automobilists. The one of these is that it may be used either with or without water, and the other is that it will serve equally well for cleansing the machine or the person. The compound is sold in cans that can be carried in the car and in which it may be protected from dust accumulations. It is butter like and creamy, contains no abrasive and it is especially efficacious, for it can be used on highly finished surfaces without damage, and it will remove oil,

grease or dirt in any form from the car or from the body. As no water is necessary to effectually clean one's hands it is very useful for car owners. Rubbing a small piece of the compound into the hands and wiping them with a dry cloth is said to be as effective as water.

Manufactured by the States Chemical Co., Chicago, Ill. Price, 25 cents a can.

Paco Special Ford Racing Bodies. Paco bodies for Ford cars have a distinctive design that will appeal to those who desire a body that is radically different from the regular Ford equipment and are inclined to the sport or racy type. A Ford car with solid wheels and a body of this type will have class and distinction added to it. A snappy, fast and comfortable



roadster can be made of your Ford car by putting on a Paco body. Modeled after the greatest speed cars, with long sloping hood, streamline cowl, low seats and a receding rear end, Paco bodies offer the least wind resistance. They are designed on scientific engineering lines for speed and comfort.

The 1919 Paco bodies include a new sport top and windshield, Paco exhaust, disc wheels and other features.

Manufactured by Paco Manufacturing Co., Peoria, Ill.

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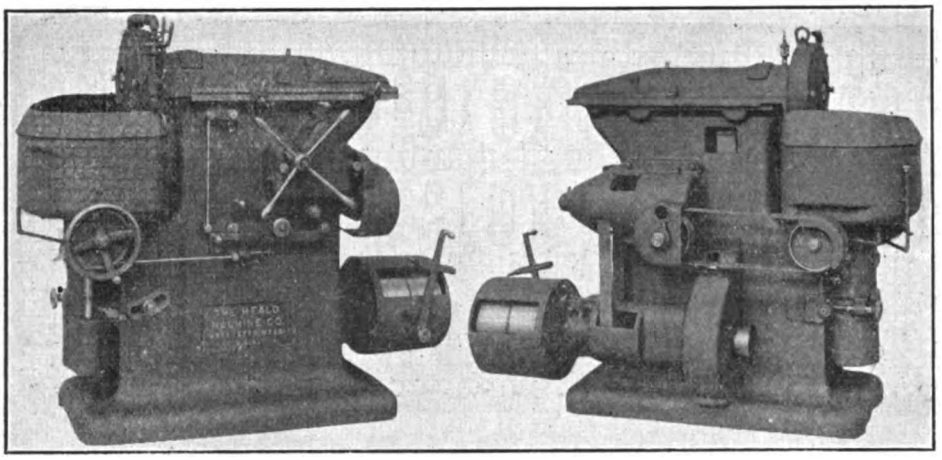


Front and Rear Views of Heald Rotary Surface Grinding Machine.

Heald Rotary Surface Grinding Machines. The Heald Machine Co., Worcester, Mass., has just brought out two new rotary surface grinding machines. They have been designed for some time and have passed through the company's experimental and service departments ready to be made up in lots for the trade. So far only two machines of each have been built up, but by the first of August the company will be able to supply any orders that may come in.

One is equipped with an eight-inch chuck and is known as No. 20 Rotary Surface Grinding Machine. The other, with a 12-inch chuck, is known as the Heald No. 22 Rotary Surface Grinder. These machines have been built up very similar to each other; in fact parts of one have been used in a good many cases on the other. They have been built with the idea of getting a more economical machine in price than the company's large size grinders, but with the same production and finish.

The eight-inch machine which the company previously built was of like construction, but while it did excellent work, is not rigid enough for a great many customers. On the other hand, the No. 225 12-inch and the No. 260 16-inch machines in many cases are too expensive and equipped with too many refinements for the commercial trade.

In the new machines the company has taken the features of both of its small and large machines, simplified them and has now two very fine rotary surface grinders to offer the trade.

The eight-inch or No. 20 and 12-inch or No. 22 rotary surface grinding machines have been designed for manufacturing purposes and at the same time will give an extremely fine finish. They have been built massive, yet simple, having all the necessary mechanical refinements required to readily get various speeds and adjustments.

The wheel slide is a massive casting, having a flat and "V" way, which assures alignment at all times. The bearing surfaces are large and carefully protected from grit and dirt. Experience has proven that a downward pull of the spindle belt adds greatly to the rigidity and has been incorporated into the design of these machines.

The wheel guard is made separate from the wheel slide. It is not put on, however, in the usual manner, as it has the back face finished off to fit a finished surface on the wheel slide, making the two parts practically one. The advantage of this design is that if a customer should for any reason desire to use a larger wheel he will be able to do so.

The wheel spindle is large in diameter and made of chrome nickel steel. It is mounted in a straight, plain, adjustable bearing at the grinding wheel end. Adjustments for this bearing can be readily made through a hole in the top of the wheel slide provided for that purpose. This is the only adjustment required, as the rear end of the spindle is mounted on ball bearings. A large sight feed oiler for the front bearing insures an ample supply of oil at all times.

The main drive bracket receives the power from the main line by tight and loose pulleys and transmits it directly by belt to the main speed box, wheel spindle and pump. The guard for the tight and loose pulleys is adjustable so that the openings can be lined up for the belt. The shifter lever is arranged with a spring plunger which locks it in place in the off or on position.

The main speed box, which is situated on the rear of the machines, furnishes power to the wheel slide by a three-step cone and three speeds to the chuck through a bank of gears. The speeds of wheel slide and chuck are independent of each other, allowing for a large latitude in regard to speeds and feeds. The speeds to the chuck are controlled by a pull rod on the front of the machine.

All control levers and adjustments are within easy reach of the operator.

The chuck spindle is driven by spiral gears, one of which is mounted directly on the spindle. This spindle is mounted in a sleeve which has vertical adjustments. The upper portion of the spindle rests in a taper bearing, while the lower end is equipped with ball bearing. With this design adjustment is never necessary, as the wear is automatically taken up. The chuck bracket is adjustable to allow for grinding of concave and convex surfaces to angles up to 10 degrees.

The feed to chuck is made by a hand wheel and vertical screw through a nut on the spindle sleeve. The machines are also equipped with automatic vertical adjustment to the chuck which will feed from .0005 to .003 at each end of the wheel traverse.

The water equipment including pump, tank, water guard and connections are regularly furnished with every machine. The tank is of unusual capacity, giving a most liberal volume of water, while a swivel joint in the distributing nozzle enables the operator to direct the flow at any desired point.

A Heald magnetic chuck, style eight-inch for No. 20 and style 12-inch for No. 22 are regular equipment. Three-jaw chucks or face plates with special fixtures may be substituted if desired or the work requires it.

Motor drive machines can be furnished if necessary, the motor being placed where it is most convenient, on the floor, wall or ceiling and belting directly to the main drive pulley. A few minor changes to the main speed bracket is all that is required when a machine is to be motor driven.

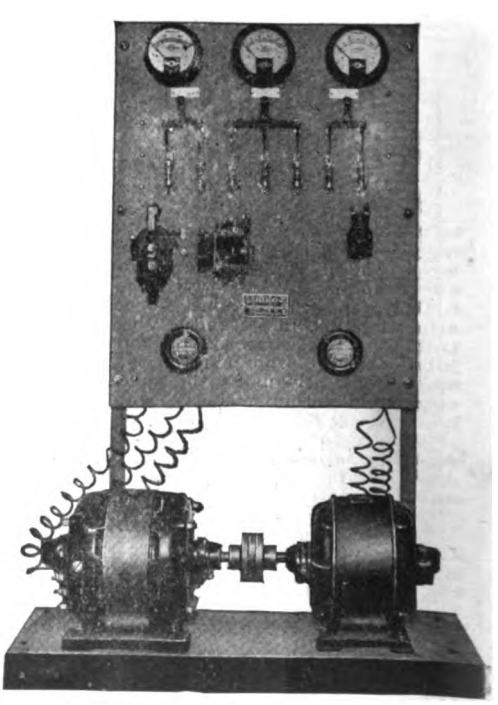
The specifications follow: No. 22, 12-inch: Face diameter, 13¾ inches; size of grinding wheel, 12 inches diameter, 1¼ inch face, five-inch hole; greatest distance, top of chuck to center of wheel, 10 inches; greatest distance between face of 12-inch diameter wheel and top of magnetic chuck, four inches; smallest diameter grinding wheel which may be used, 7½ inches; vertical adjustment of chuck, five inches; largest swing inside of water pan, 16 inches; floor space required, belt drive, 48 by 70 inches.

On the No. 20 the specifications are: Diameter magnetic holding surface, standard chuck, eight inches; face diameter, 9¼ inches; size of grinding wheel, 10 inches diameter, one-inch face, 3½-inch hole; greatest distance, top of chuck to center of wheel, 8½ inches; greatest distance between face of 10-inch diameter wheel and top of magnetic chuck, 3½ inches; smallest diameter grinding wheel which may be used, 6½ inches; vertical adjustment of chuck, five inches; largest swing inside of water pan, 13 inches; floor space required, belt drive, 48x60 inches.

Manufactured by the Heald Machine Co., Worcester, Mass. Prices quoted on request.

Andre Motor Generator Set. The Andre Motor Generator outfits are manufactured in three sizes—for the private owner charging one battery, the garage repairer who charges one or more batteries a day, and the No. 32, shown in the cut for charging batteries on a larger scale.

In charging batteries not all can be charged at the same rate. For instance, one battery may be in good condition and can be charged at a higher rate than another. By having more than one circuit the batteries may be put on charge according to their condition. That is, the charging may be at any voltage or amperage within the capacity of the set. In the case of the No. 32 set a low charging rate of three amperes can be reached on one circuit, while a high rate of 12 amperes can be obtained from the second circuit. When there are only two or three batteries to charge at one time they can be placed on one circuit. This means a saving of current, for, while the motor still runs at the same number of revolutions a minute, consumption of current is reduced through the reduction of the motor load. Short circuiting of the batteries when the current fails is protected in the Andre motor generator sets by means of an automatic cutout.



Manufactured by Julius Andre & Sons Co., Milwaukee, Wis. Prices on application.

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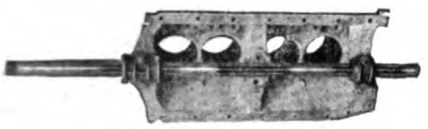
The Lewis Combination Reamer. The Lewis combination reamer is a tool of unusual value to the garage and service station repairer, for with it bearing scraping by hand may be obviated.

Fitting new bearings to an engine by hand is slow and a laborious job. The Lewis coribination reamer does the greater and hardest part of the work, insuring a more even fit without the chance of high spots so common in hand scraping. In operation the upper section of the base is held securely on the bench or engine

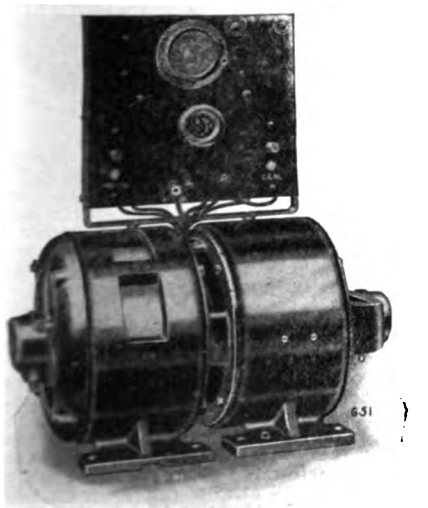


stand and the reamer held in place by the three main bearings. The reaming is done one bearing at a time, and drawing down on the cap of the next slightly, and so on till the three bearings are reamed equally. The bearings are considered finished when the caps make a contact with the block or rod. When the main bearings are finished, slip the reamer forward into position for the connecting rods, and repeat the operation as with the main bearings.

It is claimed by the manufacturer that a perfect fit of all bearings on a Ford engine can be made in one and one-half hours by the use of this reamer, while the hand method takes about eight hours. Special reamers for all makes of automobiles will be made to order. All tools are guaranteed by the manufacturer against defects in material and workmanship. Broken and defective tools must be returned to the factory for inspection.

Manufactured by the Lewis Tool Co., 915 Washington Ave., South, Minneapolis, Minn. Price of set for Ford engine, $25 net; regular set for other cars, $35 net. Handle for reamer, $2.

Robbins & Meyers Charging Set. The Robbins & Meyers charging sets consist of motor driven generators operating on direct current at 115 and 230 volts, or alternating current at 110 and 220 volts, alternating current circuits of 60, 50, 40, 30 and 25 cycles. Three sizes are made, 80, 150 and 250 watts. The 80 watt size is suitable for private garage service, but may be used in public garages where the service is light and not more than one battery has to be charged at a time. The 150 and 250 watt sizes are for public ga-



rage service where many batteries are to be charged.

All sets are regularly furnished with a steel switchboard mounted on the frame, and carries a rheostat connected to the generator field winding for regulating the charging rate, an ammeter in the generator circuit, a push button switch in both the motor and generator circuits and a fuse block with fuses in the motor circuit.

The 80 watt, eight-volt outfits will charge one three-cell, six-volt battery at a time, starting at a 10-ampere rate. The 150 watt, 15-volt outfits will charge at the same time, either one six-volt battery or one 12-volt battery, or two six-volt batteries in series, starting at a 10-ampere rate. The 150 watt 30-volt outfit and the 250 watt 30-volt outfit will charge at the same time, either one 12-volt battery or four six-volt batteries in series, two 12-volt batteries in series, or one 12-volt and two six-volt batteries in series, or one 24-volt battery, the 150 watt set starting at a five ampere rate and the 250 watt set starting at a 10 ampere rate.

The manufacturer claims that the sets are made of the finest materials and that they will operate continuously at full generator ratings with the motor connected to circuits of normal voltage and frequency with a temperature rise which will not exceed 45 degrees centigrade. They will operate without damage on voltages 10 per cent. higher or lower than rated voltages.

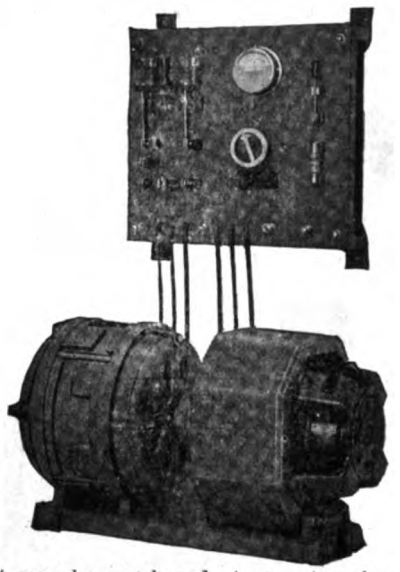
Manufactured by the Robbins & Meyers Co., Springfield, O. Prices on application.

Spoktite. Spoktite is a liquid that may be used for tightening the spokes in the wood wheels of automobiles. Spoktite is put up in cans with screw tops and may be carried in the car. When a loose or squeaking spoke is noted a small application of Spoktite will prevent the trouble the manufacturer claims. As a counter display for accessory dealers and

garage men the cans are packed in a neat cardboard box containing one dozen; the cans and box are neatly lithographed and lettered, telling what is claimed for Spoktite. The manufacturer claims that a can of Spoktite costing $1.50 used in time may possibly save a bill of $10 to have a wheel rebuilt.

Manufactured by the Woodtite Laboratories, Modesto, Cal. Price, $1.50 per can retail.

St. Louis Motor Generator. A simple charging equipment for service and battery repair stations is the 9-G type motor generator set manufactured by the St. Louis Electrical Works. This set generates 38 volts at 30 amperes and has capacity for from one to 20 batteries on charge at a time. It is driven by a 1½ horsepower motor, wired either for alternating or direct current as ordered and either single or double phase. It will charge five batteries in series and should be purchased with four auxiliary rheostats, which will give four different charging lines of five batteries each. By the use of the auxiliary rheostats the charging rate can be varied in any of these different charging circuits as desired so long as the combined charging rates do not exceed 30 amperes, the safe carrying capacity of the set. The main charging panel furnished is equipped with an ammeter, a field rheostat for the generator, starting switch for the motor and all necessary fuses and switches. Auxiliary rheostats are not included in the set,



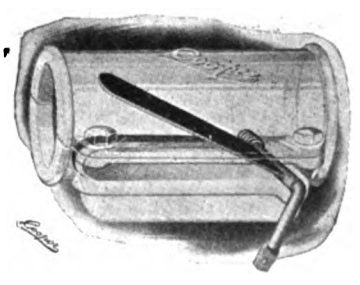
but may be purchased at an extra charge of $7 each.

The type 30-G motor generator set is driven by a five horsepower motor and may be wired for any voltage and for two or three-phase circuits. For single-phase work an extra charge is made on account of the changes in wiring. This outfit has a capacity of 64 batteries in all and has capacity for eight batteries in series or eight separate circuits. Five auxiliary rheostats will give the machine a capacity of from one to 40 batteries. The charging panel furnished with the 30-G set is equipped with voltmeter and ammeter, field rheostat for controlling the generator, battery line switch, protective fuse and necessary binding posts. A starting switch for the motor is furnished.

Manufactured by the St. Louis Electrical Works, 4060 Forest Park Boulevard, St. Louis, Mo. Prices: Single phase, 110, 220 or 440 volts, 60 cycle, 9-G, $224; 30-G, $450. Two and three-phase, 110, 220 or 440 volts, 60 cycle, 9-G, $224; 30-G, $390.

The Cooper Special Muffler Cut Out. The Cooper special muffler cut out and "4" locking pedal is designed for equipping cars that are not fitted with muffler cut outs. The Cooper special can be easily attached with very little work and once installed will no doubt be a permanent accessory on the car.

It may be attached by cutting a small rectangular hole in the bottom of the exhaust pipe, fitting the two halves of the cut out over this hole and tightening the bolts. In operation the flapper of the cut-out fits in a recess in the base. To open it the flapper is lifted, allowing the burned gas to pass out into the air, and when closed the flapper fits into the recessed seat. It is operated by a pin or push button on the floor of the car at the driver's feet and connected to the cut out by a pull cord or wire. The pressure on the pin opens the cut out flapper.



Manufactured by the Cooper Manufacturing Co., Marshalltown, Ia. Prices on application.

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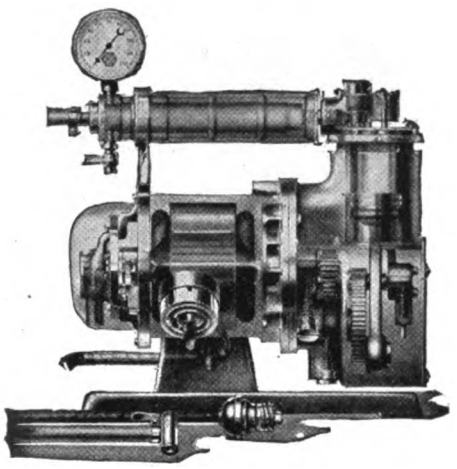
The Lectroflator. The Lectroflater is an air compressor and motor combined on the same base, the motor being direct connected to the compressor.

In construction it is in a separate class from others, having forced draft for cooling the motor and compressor. The air is drawn in through a screen at the commutator side of the motor, passing over the armature and through the air chamber surrounding the cylinder of the compressor, keeping the motor winding and the compressor cylinder oil cool at all times. Lubrication is by an automatic wick feed to all bearings, using grease instead of oil, which always insures a sufficient supply of lubricant and at the same time prevents flooding the cylinders with oil or injecting oily vapor into the air.

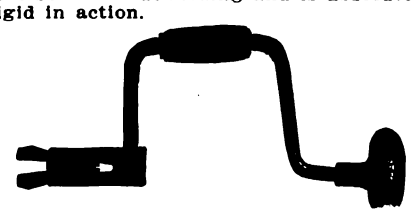


The motor is especially designed, operating from any electric lamp socket, on either direct or alternating current. It is so designed that it will start the compressor against 150 pounds pressure without the use of either hand or automatic unloading device, and will operate the compressor continuously against this pressure, the makers claim. The outfit is complete with large, accurate pressure gauge, electric switch, attachment plug and tire connector, long serviceable rubber hose and heavy duplex electric cord.

Manufactured by the Black & Decker Manufacturing Co., Baltimore, Md. Prices on application.

Utility Wrench. The Utility Universal Rim Wrench is a single tool that the manufacturers claim will fit the nuts of all demountable rims. Is built in one size only. It should be carried in the kit of every motorist and should be in the tool box of every repairer. It is a size that is not cumbersome and when needed will fit, hold and turn any nut.

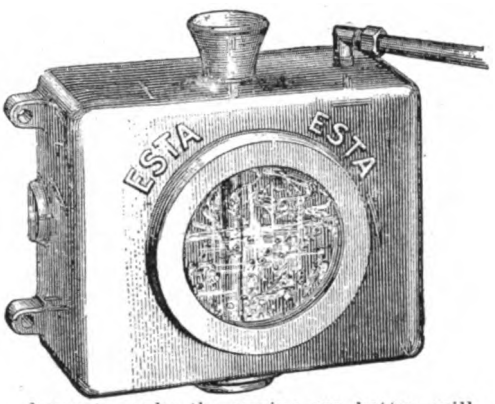
The new Utility Wrench is finished in nickel and black enamel. The jaws are practically unbreakable. It will fit the tool box without folding and is absolutely rigid in action.



For a slight additional cost a Universal Utility Wrench set may be obtained with the Utility Wrench that will take the place of a socket wrench set and may be used with the wrench in the same manner as the socket wrench.

Manufactured by the Hill Pump Valve Co., Chicago, Ill. Price of the Utility Universal Rim Wrench, $1.75. Including the extra set of socket fittings, $4.50.

Esta Water Auxiliator. It is a well known fact that water admitted to the combustion chamber of an automobile engine in small quantities will have a tendency to make the engine run better, will to certain extent eliminate carbon and increase the mileage of the fuel.



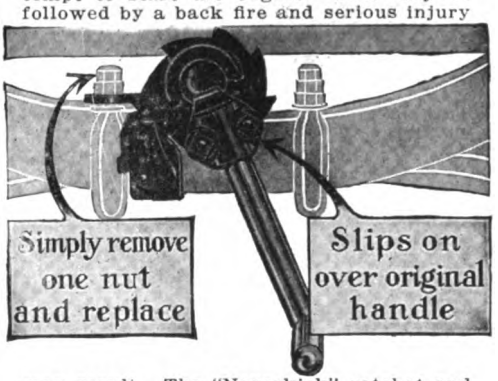
The Esta Water Auxiliator is a device of this kind that employs a somewhat different principle from the other humidifiers in use, from the fact that instead of admitting the water either directly to the cylinders or in the form of steam, the air supplied to the carburetor is passed through a body of water. The air in passing through the water absorbs more or less moisture. This moist air is carried into the intake manifold of the engine, and on into the combustion chamber of the engine by the rush of gas and air from the carburetor.

The maker claims, after very exhaustive tests, that this device will remove carbon from the engine in a short time, will increase the pulling power of the engine and the gasoline mileage of the car.

The device consists of a handsome cast aluminum water tank that is fastened to the front of the dash and connected to the manifold by a short piece of brass or copper tubing.

Manufactured by the Esta Co., 107 Massachusetts Ave., Boston, Mass. Prices on application.

"Neverkick." The "Neverkick" consists of a ratchet and pawl that may be quickly attached to the bottom of a radiator around the starting crankshaft, and is guaranteed by the manufacturers to prevent a broken arm if by chance the engine should back fire. The operator may neglect to retard the spark lever and attempt to start the engine. This may be followed by a back fire and serious injury



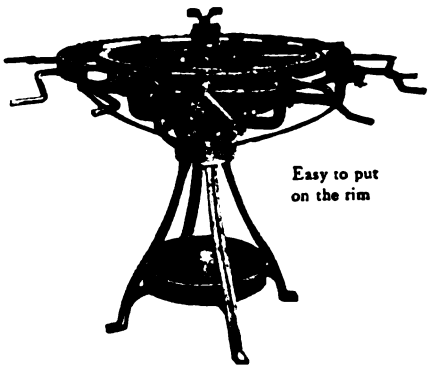
may result. The "Neverkick" ratchet and pawl is manufactured and sold to obviate this condition. It has the recommendation of accident insurance companies and its use will insure against an accident of this nature. May be applied in 10 minutes, as there are no holes to drill, and after once in place will last many years.

Manufactured by the Banner Accessory Manufacturing Co., 2629 La Salle St., St. Louis, Mo. Price, $3.75.

Universal Wheel Compressor. The Universal Wheel Compressor is a tool for the repair shop for use in the rebuilding of wheels or the cutting down of motor truck wheels for the purpose of putting on pneumatic cord truck tires. It is built unusually strong throughout of the best of materials, and the manufacturer claims that by its use many wheels that formerly went to the junk pile may be repaired to the satisfaction of the owners.

The primary object of the compressor is to provide a mechanism which is adjustable for all types of auto and truck wheels, and it is so constructed that repair work may be done speedily and with ease. The wheel can be accurately set to give it the desired dish and each spoke can be pressed individually, the rim being pressed on in a few minutes without the use of ordinary clamps.

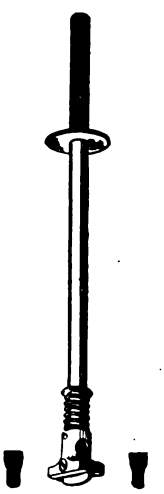
The machine is so constructed that the compressing ring may be turned like a turntable, no power being needed. Wheels of any size can be repaired. Wire and wooden wheels may be trued and new spokes put in. The machine is strong



enough to handle the heavy truck wheels as well as the smaller wheels.

Manufactured by Universal Wheel Compressor Co., Cedar Rapids, Ia. Prices on application.

Hudson Universal Jointed Valve Grinder. The Hudson Universal Valve Grinder is fitted with a universal joint that allows the working end a certain amount of motion in any direction relative to the shank. When the shank is being revolved between the palms of the hands the entire valve area is ground accurately, the manufacturer claims. The valve grinder is especially useful in grinding the valves on



the fourth cylinder of the Ford engine, which is difficult to reach with the ordinary grinder.

The tool is of simple, sturdy construction throughout. The universal joint is formed simply by pinning the tool head to the shank with a pin, which is much smaller than the hole, through the shank. A coiled spring between the head and the shoulder of the shank takes up all looseness and holds the head normally square with the shank.

Manufactured by Hudson Motors Specialties Co., 1932-34 Arch St., Philadelphia, Pa. Price, $1.50.

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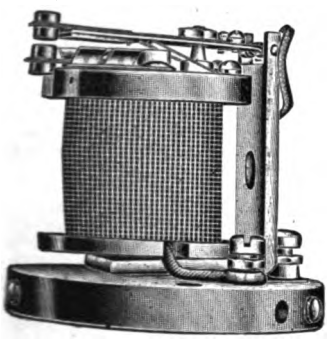
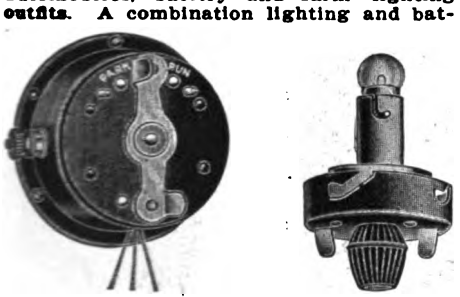
Unilite Lighting Outfit. The Unilite tail light outfit for Ford cars will appeal to Ford owners who wish to wire in a rear light. The manufacturer claims that with this outfit the current can be taken from the magneto when the engine is operating and from a set of dry cells when the car is parked. By means of a Unilite con-

troller and switch and a reverse current cutout this is accomplished automatically when the engine is stopped and reversed when the engine is again started. It is made especially for Ford cars not equipped with a storage battery. The regular outfit consists of one Unilite adapter, with bulb, one Unilite controller and



switch and the necessary wire to make the change, with instructions for installing.

The reverse current cutout No. 2, that automatically connects and disconnects the battery and generator is suitable for automobiles, battery and farm lighting outfits. A combination lighting and bat-



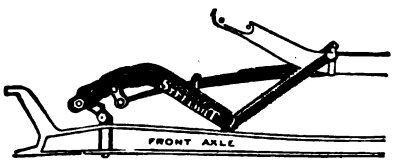
tery ignition switch is also manufactured by this concern, this is of the push key type.

The Unilite outfit sells for $4 complete, the reverse current outfit No. 2, $4.25 to $6, according to the voltage and amperage required, from six-volt 15 amperes to six-volt 20 ampere. Combination lighting and battery switch, $1.35.

Manufactured by the Briggs & Stratton Co., Milwaukee, Wis.

Badger Automobile and Truck Jacks. Badger jacks are made in capacities from ¾ ton and one-ton capacity. Walker screw jacks have lift capacity of from ¾ ton to six tons, and a steel jack of small size is made for small cars. A series of hub jacks is also manufactured. These are sometimes called tire savers and are used by owners to raise the tires from the floor when the cars are stored for any length of time.

The bases of these jacks are large, are



standard ribbed and the steel working parts are made extra strong to withstand the heaviest kind of work. The lift is exceptionally easy. A short stroke of the handle gives a rapid rise and the reverse is positive in action.

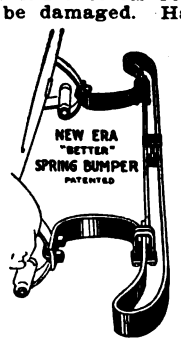
Walker screw jacks are of the same heavy construction, but are operated by screws instead of racks and pawls of the Badger jacks. The manufacturer claims

that these jacks are of unusual strength and that they will lift any weight within their capacities.

Other accessories manufactured by this firm include Auxiliary Radius Rods for Ford cars, Walker Steelbilt Shock Absorbers for Fords, Walker Steer-ezer for Fords, Truss Rods for the rear axles of Fords, running board supports and the Walker Foot Accelerator for Fords.

Manufactured and sold by the Walker Manufacturing Co., Racine, Wis. Catalogue and prices on application.

New Era Front and Rear Spring Bumper. The New Era "Better" Spring Bumper is new in the market and is applicable to 95 per cent. of the cars sold. Because of its construction, being made from flat steel bars held together by clamps at the end and a plate in the center, coming into collision will not damage it, manufacturer claims, and because of its resiliency the car will not be damaged. Hangers may



be obtained for attaching the bumper to the various makes of cars so that no cutting or drilling is necessary, whether or not the car is equipped with a mud pan. It can be attached to the front spring hams of the frame in a few moments with a wrench.

For attaching the bumpers to rear springs of cars special fittings are required because of the many types of springs used. These may be purchased with the bumper by specifying the make of car to which it is to be attached.

Ford, front or rear, black, $9; nickel, $11; other makes of cars, standard black, $10; nickel, $12; made to order, $13-$15.

Manufactured by the New Era Spring and Specialty Co., Grand Rapids, Mich.

Romort, Style "A" Tire Valve Connection. The Romort style "A" connection is an improvement over the usual valve connection in use. It consists of a bronze casting, A, with a screw cap top and bottom. The inside valve mechanism consists of a suitable plunger and spring tension. D is a diaphram that closes the

air passage, shutting off the flow of air from the tank when the valve is disconnected from the tire. E, is the base of the plunger closing the opening in the rubber, still further shutting off the flow of air, as it seats on the rubber washer in the valve housing. F is a knurled nut that allows the replacing of new washers. B is an adjusting nut at the top of the housing, allowing the tension of the spring on the valve to be increased.

It is very necessary that air should be governed, for although it is given free to customers there is a certain element of cost in connection with it, more especially in the operation of the motor and pump, and a good automatic valve properly constructed will do more to keep this cost within reason than any other thing. The manufacturer claims that the Romort automatic valve will result in a very substantial economy.

Manufactured by the Zinke Co., 1323 Michigan Ave., Chicago, Ill. Price regular stem, $3.

Tire-Doh. The Tire-Doh outfit consists of a can of Tire-Doh cement and a can of Tire-Doh, a putty-like substance. To make a tire repair the rubber surface is first cleaned and Tire-Doh cement is applied and allowed to dry for a few moments. The Tire-Doh is then spread over the puncture or tear. When applied according to instructions, Tire-Doh readily drys and becomes a tough integral part of the repaired surface. Two cents' worth of Tire-Doh will repair the average tire tube puncture. Any punctured tube can be repaired with Tire-Doh the manufacturer claims.

Torn out valve stems can be mended with Tire-Doh, as it can be kneaded into the rupture so as to obtain strength that would hardly be obtained with a vulcanizer. Tire-Doh is self-curing, a vulcanizer not being necessary.

Tire-Doh may also be used satisfactorily for repairing casing cuts. By filling these as found the motorist can lengthen his tire mileage considerably, for keeping water and dust from entering the casing will prevent a great deal of deterioration.

Manufactured by the Atlas Auto Supply Co., Chicago, Ill. Prices, large size outfit, $1; Junior outfit, 50c.

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Oxigene. A motor decarbonizer and fuel saver. Oxigene is manufactured by a secret process and is warranted to be absolutely harmless, to contain no ether, picric acid, naphthalene, camphor or other deterious ingredients; is not inflammable or explosive and will increase the mileage of the car from 25 to 50 per cent.; it will remove carbon and prevent its formation and will give more power from the fuel. If this is not proven by actual use dealers are allowed to return the purchase price.

To test Oxigene, fill the tank with gasoline and carry a reserve of five gallons in an extra can. Set the speedometer at zero, start the engine and without idling the engine drive 10 miles by the speedometer. Stop the engine and fill the

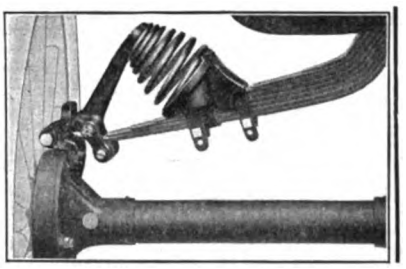
tank from the extra five gallons. Add one ounce of Oxigene to each 10 gallons of gasoline in the tank and treating the extra fuel in the same proportion. Start the engine and let it idle long enough for the treated gasoline to reach the carburetor. Fill the tank with gasoline and without idling the engine drive the car for 10 miles at a speed of 25 miles an hour. The needle valve can be turned down slightly from the point where it runs best on clear gasoline. This should be done before the start of the test of Oxigene. After running the car 10 miles, stop the engine and fill the tank with fuel. Note each time the quantity of gasoline required to fill the tank. From the 10 mile drives and the volume of gasoline used one can determine the difference of power production of Oxigene treated gasoline and untreated gasoline.

As a carbon remover Oxigene is claimed superior to any compound from the fact that being a liquid, combined with gasoline fuel, it prevents depositations on the cylinders, pistons and valves, and will break up existing deposit, fully exhausting them from the engine. After carbon is removed continuing the use of Oxigene will keep the engine free from carbon formations, the maker claims.

Manufactured and sold by the Worth Co., 20 Exchange place, New York City. Prices, five-ounce sealed bottle, enough for 50 gallons of gasoline, $1; quart cans, treating 320 gallons of gasoline, $5.

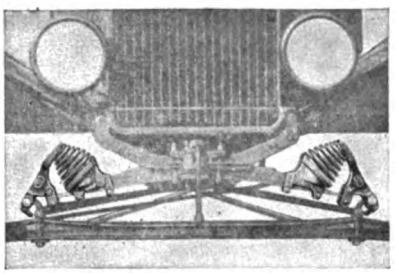
Hassler Shock Absorbers. There has been a new addition to the Hassler line this season, a shock absorber equipment for the Ford one-ton truck, being produced in addition to the regular passenger car outfit. The conical spring is used here, as in the original set of Hasslers, although for the rear of the truck "twins" are used to withstand the greater strain of carrying the load.

The Hassler factory has been enlarged and the production facilities are sufficient to take care of all dealers in good shape. The manufacturer states that there are now 1,000,000 sets of Hassler Shock Absorbers in use. The demand has become

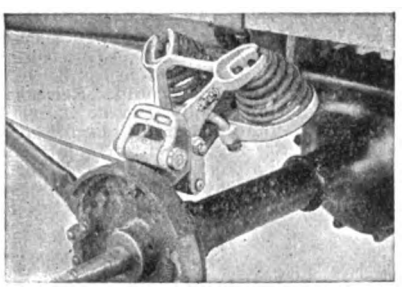


so widespread that the device is being treated now as a national motor car staple, territorial limitations having been abolished. Thousands of dealers heretofore prohibited because of dealer contracts from selling Hasslers are sharing in the big business to be enjoyed in distributing this desirable specialty for Ford cars exclusively.

The Hassler concern states that service records prove that Hasslers will actually save one-third of the ordinary tire and repair expense and reduce the depreciation one-third, these savings being in addition to the comfort and easy riding afforded.



There has been no change whatever in the principle employed in designing the original set of Hasslers. The conical spring not only has proved exceptionally good in eliminating the effect of shocks and vibrations, but it is so durable and rugged that the Hassler equipment is said to outwear the car easily.



Manufactured by Robert H. Hassler, Inc., 607 Naomi St., Indianapolis, Ind. Prices quoted on request.

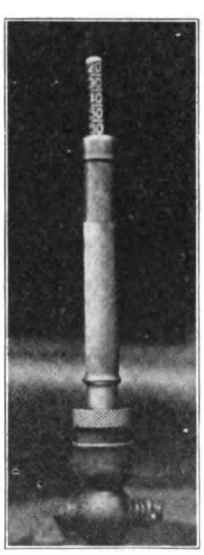
Pasco Wire Wheels for Ford, Chevrolet 490 and Overland Cars. Pasco Wire Wheels, from their light weight, resiliency and all-steel construction, the manufacturer claims, insure from 25 to 50 per cent. greater tire mileage.

A car equipped with a set of Pasco wheels can be driven through all kinds of roads during all weather, with no danger of rusting or breaking the spokes. The construction of Pasco wire wheels is such it is possible to change a tire on the road in less than three minutes. By the use of an adapter hub for Ford cars and special inner hubs for the Chevrolet 490 and the Overland 4, one set of wheels will inter-change on three different makes of cars. Pasco wire wheels have simple two-piece hub caps with lock nuts with right and left threads, which insure safety and obviate all trouble from complicated locking devices. Pasco wire wheels are claimed to be five times stronger than wood wheels of equal size, do not warp or distort and are so built they will easily clear curbs, so that curb cuts are a very remote probability. A complete set includes five wheels, four inner hubs, adapters, hub caps, dust cover for spare wheel and wrench, and for the Chevrolet 490 and the Overland four special inner hubs are furnished. The wheels are furnished in any standard color, such as black, white, red, cream, yellow and green. Pasco wheels may be furnished for other cars upon special order.

Manufactured and sold by the National Wheel Works, Inc., Geneva, Ill. Prices: Fords, Chevrolet 490 and Overland four-cylinder, each, $75 a set; spare wheel carriers, $10.

Peterman Compression Tester Attachment. The Peterman Compressor Attachment is a device that may be screwed into the top of a cylinder to replace the regular petcock. With it it is possible to tell in a few seconds the compression of any cylinders and to locate at once those that are weak. A weak cylinder may be caused by valve fault or gas or air may leak past the pistons or plug.

The Peterman Compression Attachment is adapted for using the Twitchell or the Schrader tire gauges. In using the



Schrader gauge the lock nut at the bottom of the gauge is unscrewed and screwed into the attachment. For Twitchell gauge a special fitting is required.

The compression is tested with the engine stopped, turning the engine by hand and testing one cylinder at a time. The pressure being shown on the gauge.

Manufactured and sold by H. A. R. Peterman, 2721 N. Clark St., Chicago, Ill. Prices on application.

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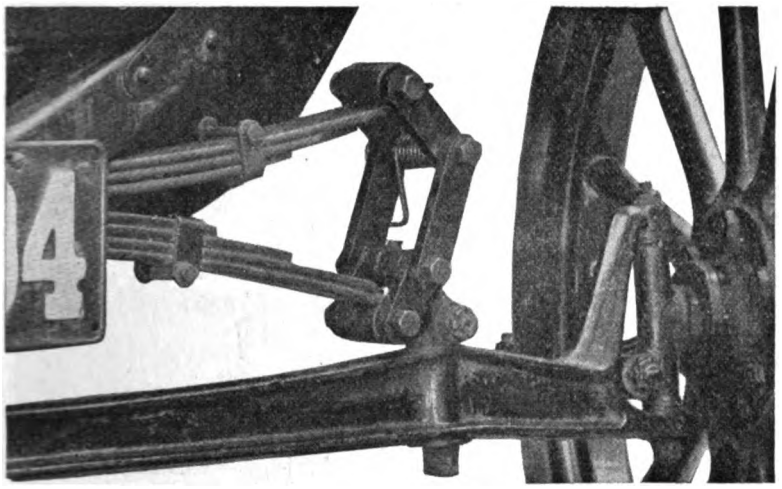


The Beckman Double Action Spring Suspension is a somewhat radical departure from the regular shock absorber employed on Ford cars. The manufacturer claims great efficiency in its use, because of the saving to the car and chassis, the greater mileage made with the tires and the fact that rough roads may be driven over with ease.

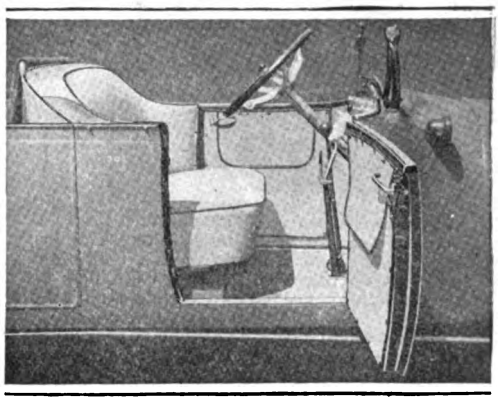
The material used in its construction is alloy spring steel, and the parts are fully guaranteed by the manufacturers against defective material and workmanship.

The spring suspension consists of a three-leaf spring, which is placed over the regular Ford spring after the short leaves have been taken out. The four lower leaves are left on the front Ford spring and five lower leaves are left on the rear spring, the three leaves of the double action spring being bolted to the regular spring by means of the center bolt and fastened to the body by the regular Ford clamps.

The ends of the spring are spaced by suitable toggles and joints to compensate for the throw of the springs and body when serving as an absorber and recoil check. A large coil spring in the upper joint gives the joint a tendency to remain in an upright position, allowing the ends of the springs to be forced apart.

Manufactured by the Beckman Metal Products Co., 400 Superior avenue, Cleveland, O. Retail price $16.50 f. o. b. Cleveland. Write for agents' proposition.

Campbell Detachable Upholstery. Campbell detachable upholstery is made by a



concern manufacturing textile and leather automobile accessories and is a new article that should commend itself to those wishing extra fine upholstery.

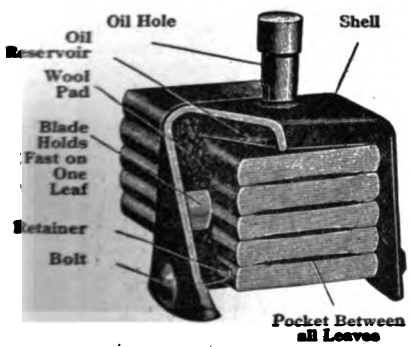
Campbell detachable upholstery has many features that has made it highly satisfactory. The range of materials to choose from is unusually complete, 22 in all, and they are designed by experts from the finest motor fabrics and linens. In taking the measurements for the patterns, expert coach upholsterers are employed, and actual models of the car are used. The manufacturer claims that this does away with all chance of imperfect fit.

There are other features well worth noting, including broad binding of heavy imitation leather and reinforced seams and the stitching on harness machinery with special thread. Another quality that gives Campbell detachable upholstery a sales value are the special fasteners used, known as the Campbell Carr Durable Fastener. They are the same as are used by the United States government on cartridge belts, haversacks and similar equipment. They always stay tight.

Manufactured by the Perkins-Campbell Co., 626 Broadway, Cincinnati, O. Prices on application.

Brown Spring Oiler. The Brown Spring Oiler Co. is making a spring oiler, sold under guarantee, for passenger cars. The oiler may be attached to the spring at a point near the spring clip and in this position will give the best results. The housing or casting holding the oiling material consists of a stamping or casting in which are fastened strips of felt. Oil is supplied through an oil way at the top by means of an oil cup with a spout. The oil, passing down and into the felt, keeps the felt saturated and the oil seeps in be-

BROWN SPRING OILER.



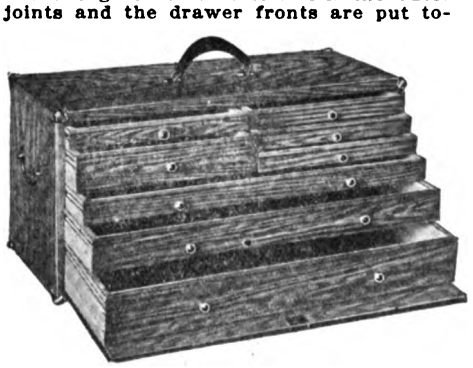
tween the spring leaves. A thin layer of oil covers the surface of the spring leaf by this method and keeps the surface in the best of condition to take care of the wear of the leaves, helping the springs to absorb the road shocks, allowing them to do their work better and giving longer life.

A light oil is preferable, especially during cold weather, as it flows freely and will work between the leaves to better advantage.

The Brown Spring Oiler is a neat appearing metal device that slips right over the spring and is securely bolted on. It is guaranteed to eliminate squeaks in the springs and to keep them in a smooth working condition when oil is applied to them at regular periods, or money will be refunded. Two oilers are required for each half-elliptic spring.

Manufactured by the Brown Spring Oiler Co., 6607 Carnegie avenue, Cleveland, O. Price per set, ¾ elliptic or platform rear springs, 10 oilers, $10; half-elliptic or cantilever, eight oilers, $8; two half-elliptic, like Ford, four oilers, $4. Write for literature.

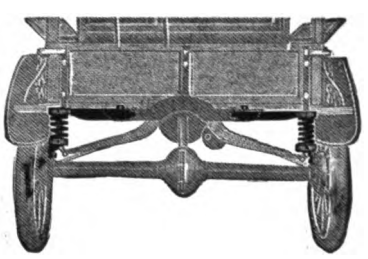
American Tool Chest. The American high grade tool chests may be purchased in a variety of styles and finishes. The outer case is made of selected lumber, mahogany or oak, seasoned and kiln dried, and the drawer sides and bottoms of hard wood. The front covers are of select oak or mahogany, three-ply veneer, and both sides and face match the finish of the case. The drawer slides are hard wood, mortised into the sides of the case, and are glued and nailed. All the outer joints and the drawer fronts are put to-



gether by an interlocking method and then glued. The manufacturer claims that only by racking cases and breaking the wood can the cases come apart. The finish consists of one coat of filler and two coats of high grade varnish for the oak and mahogany chests and the drawers have flannel lined bottoms. The leatherette chests are made of the best quality hard seal grain imitation leather. The case dimensions are outside length 26 inches, width 10¼ inches, height 12¾ inches.

Manufactured by the American Tool Chest Co., 54 to 55 Lisbon avenue, Wauwatosa, Wis. Prices on application.

Alford Auxiliary Spring Attachment for Fords. With Alford auxiliary spring attachments for Ford cars claim is made it is possible to convert a car chassis to a



three-quarter or one-ton truck in 30 minutes. The value claimed for the springs are the increase of tire mileage by 50 per cent. and the chassis riding easier, as the Alford auxiliary springs absorb the road shocks that the tires and rear axle ordinarily endure. The maker claims that the chassis will ride 50 per cent. easier empty or loaded. When the machine is unloaded the body is carried on the Alford springs and when loaded the springs are compressed and it is carried on three springs. All weight is carried on the frame and springs. The springs will prevent the swinging and tipping of the body, so often seen with regular Ford springs. This spring system is mechanically perfect, the manufacturer claims, and it is fully guaranteed. Money will be refunded upon return of the attachment after 30 days trial. Agents wanted.

Manufactured by the Andrew Hoffman Manufacturing Co., Inc., 5034 S. State St., Chicago, Ill. Prices on application.

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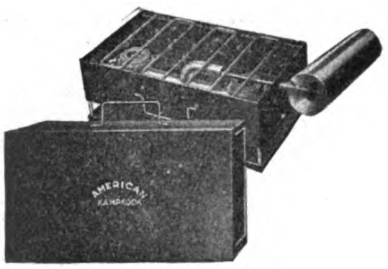


American Folding Kampkook Stove. It is built for automobilists, the campers, hunters and sportsmen and is an efficient and serviceable camp stove that has all the qualities that are desired for camp cooking.

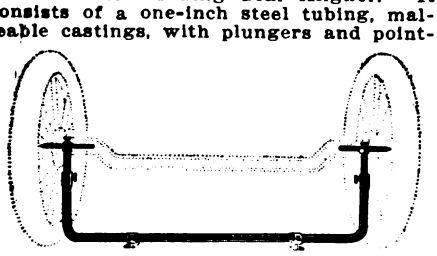
The maker claims that the Kampkook stove can be made ready for use by simply removing the cover and placing the tank in position when it is ready to light. There are no loose parts to lose, nothing to assemble and no alcohol torch is required to light it. The cover serves as a stand or base upon which to set the stove, so that it stands level and firmly wherever placed.

The stove burns ordinary gasoline, which may be purchased anywhere. The tank holds a sufficient quantity to run both burners for two and one-half hours at full capacity. A small hand pump is provided with each stove and a few strokes is all that is necessary to obtain a pressure that will force the gasoline to the burners, where it is gassified. The stove burns with a clear blue flame that can be turned up or down at will. Only the first burner must be generated. This produces gas for the second burner, which may be turned off or on at will.

The Kampoven is an extra for the Kampkook stove and is a very desirable accessory for baking potatoes, biscuits or doing all ordinary baking or broiling. It can be quickly heated to baking temperature and will maintain a uniform heat. It is made entirely of steel and assembled by slip joints. No bolts, screws or clamps are used in its construction. It folds flat and packs into the Kampkook case. The weight is three pounds.

Manufactured and sold by the American Gas Machine Co., Albert Lea, Minn. Prices on application.

Auto Running Gear Aligner. A practical method of aligning the front wheels of an automobile is a necessity in every repair shop. A tool that meets this need is the "Auto Running Gear Aligner." It consists of a one-inch steel tubing, malleable castings, with plungers and point-



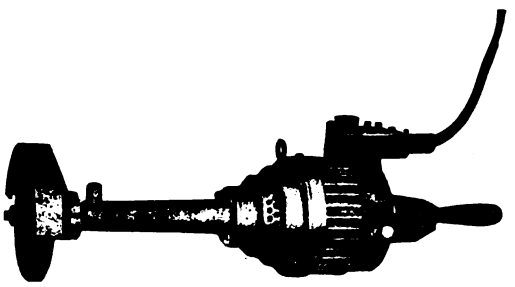
ers of steel, nickel plated; a graduated scale, etched on brass, inlaid with silver, with figures in white on a black background.

When in use the two center brackets rest on the floor, the pointers being adjusted to the centers of the tires at the front. With this adjustment of the pointers made the stand is placed in back of the axle in a similar position, and the position of the pointers noted in relation to the previous setting at the front of the tire. The difference as shown by the scale will prove the correctness of the alignment and will determine how much the tie rod shall be taken up or lengthened. By this method the maker claims the adjustment of the wheels can be made accurately.

Manufactured by the Mechanical Utilities Corporation, 5 North La Salle St., Chicago, Ill. Fully guaranteed. Price $10.

Van Dorn Aerial Grinders. The Aerial Grinder is an economical tool that can be used for many works in a garage and repair shop. It can be operated in very limited space and work can be done that would not be otherwise practical. It can be connected to any electric light fixture. It is constructed for single phase circuit, is one-third horsepower and is wired for a 60-cycle alternating current. It is equipped with one six-inch wheel, wheel guard, 10-foot electrical conductor with attachment, plug and fuses and suspension spring.

The rotor shaft is mounted on two annular ball bearings and the design insures perfect alignment. The wheel end of the extension shaft is supported by a bronze take-up bearing, which has a very simple adjustment.



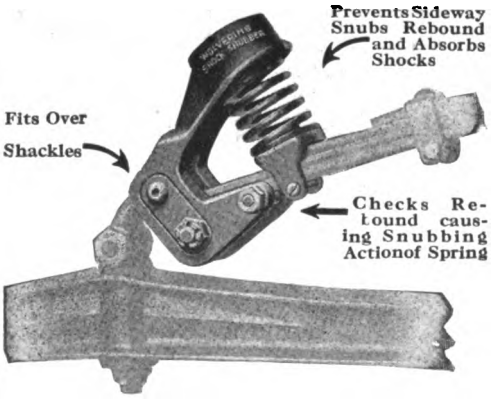
This machine is adapted for all kinds of light grinding, such as auto body work, dressing gas and arc welds, grinding castings and the like.

These grinders are made in sizes for all classes of work, such as grinding in a lathe, the work being held in a chuck, and the grinder fastened to the bed of the lathe. They are made for either direct or alternating current.

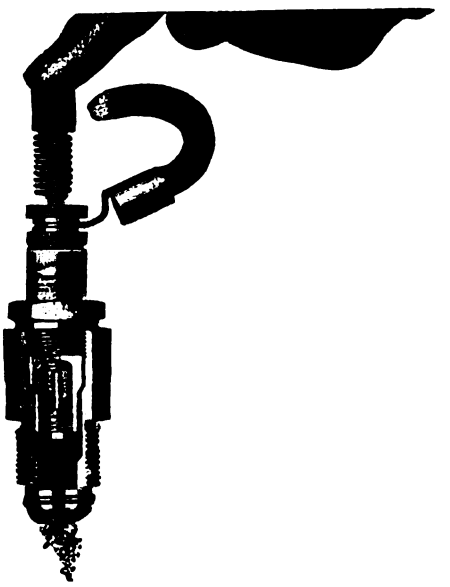
The Van Dorn Co. also manufactures a series of electric drills for garages and repair shops, for use with either direct or alternating current.

Manufactured by the Van Dorn Electric Tool Co., Cleveland, O. Prices on application.

Shock Snubber for Fords. A new shock snubber for Ford cars that is claimed by the manufacturer to prevent sidesway, absorb rebound or back throw, prevent spring breakage, increase tire mileage, prevent accidents, increase steering efficiency and relieve driving fatigue, has been placed in the market. It follows the usual construction of shock absorbers, but the side plates and castings are much heavier than those of other types and the added strength is claimed to prevent failures that are often experienced. The snubbers are fastened to the ends of the springs in the usual manner by removing the regular spring bolts and replacing them with the bolts and shackle of the absorbers, the forward ends of the absorbers being clamped to the springs of the car beneath the spring seats of the absorber. This accessory carries the regular guarantee.



Manufactured by the Wolverine Parts Co., Hastings, Mich. Prices on application.



Push Clean Spark Plug. It is an undisputed fact that the functioning of a gasoline engine is entirely dependent upon the action of the spark plug. If this useful device is broken, short circuited, or covered with carbon and oil, it makes no difference how well the rest of the machine is working, the engine will not give results.

The Push Clean Spark Plug is an innovation in spark plug design. It is both new and unique and claimed to be 100 per cent. efficient. This device consists of the conventional base, porcelain and center electrodes. The feature is the movable center electrode which is so constructed that by pressure upon the insulated top it may be pressed down, scraping away the carbon from the inside of the porcelain, as well as from the spark gap.

Two seconds time will suffice to clean all four plugs, as there is no necessity for their removal from the engine. The illustration gives a clear idea of the construction.

Manufactured by Wellman-Howe Manufacturing Co., 21 E. Van Buren St., Chicago, Ill. Price, $2.

Rose Tire Pump. The Rose Tire Pump is a single cylinder pump having patented features that the manufacturers claim make it far superior to other pumps and insures a supply of air at all times without wear. A heavy cup shaped leather is used on the plunger, air entering through the plunger rod instead of around the plunger. In the construction of this pump friction is practically eliminated, insuring

a full supply of air in the pump, with positive pressure and no leakage in the pump valve. It is made of heavy steel throughout. The Rose tire pump with its patent valve, the manufacturers claim, reduces the labor of inflating tires, making the work easier, quicker and more positive.

Manufactured by the J. H. Haney & Co., Hastings, Neb. Prices, $3 and $3.50.

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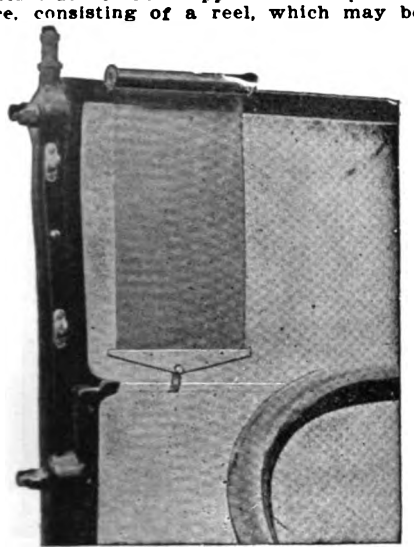
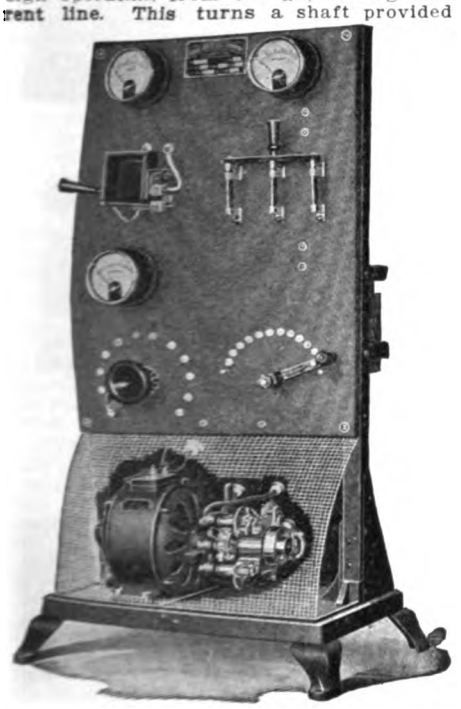
Sales Auto Glare Stopper. Every driver has at some time or other suffered the inconvenience and is aware of the danger, due to the excessive glare from the headlights of another automobile which is approaching. Some states in order to restrict the danger of accident resulting from the operator being blinded by this excessive light, have passed laws prohibiting the use of glaring headlights. The Sales Auto Glare Stopper is a simple device, consisting of a reel, which may be



attached to the top of the windshield. Upon this reel is carried a strip of colored celluloid, in a simple manner to which the ordinary window curtain is carried. At night the colored celluloid strip may be pulled out and fastened to the lower part of the windshield. Thus the blinding rays of the headlights are softened by the action of the celluloid and accidents are prevented.

Manufactured by Sales Publicity Co., 25 Carlton Court Building, Buffalo, N. Y. Price, $1.

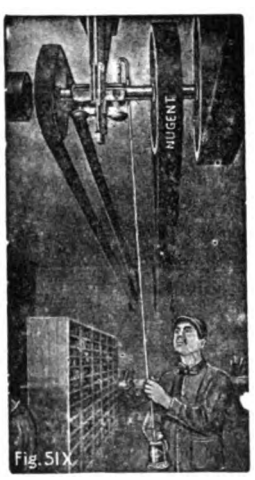
The Stahl Rectifier. Alternating current cannot be used for charging storage batteries; it must be converted to direct current before it can be used. This is the function of the Stahl rectifier, which is a low priced rectifying apparatus for garage work. The essential features are a small synchronous motor of special design operating from the alternating current line. This turns a shaft provided with collector rings and a direct current commutator. Alternating current is brought to the collector rings through brushes, taken from the rings and passed to the commutator and finally taken from the commutator as direct current by another set of brushes. The switchboard, mounted on the same frame as the motor, is provided with all the necessary switches, regulating devices, measuring instruments and automatic features. To charge a battery it is only necessary to insert a cable plug and close a switch.



This machine is made in two styles. One is for a single circuit. The other, which is for two circuit work, is illustrated in our cut.

Manufactured by the Stahl Rectifier Co., 536-538 South Clark St., Chicago, Ill. Price quoted at request.

Nugent's Shaft Oiler prevents accidents, as it does the job from the floor, saves oil and time and reduces danger to a minimum. The can holds two quarts of oil and is made of very heavy material. The pump, barrel, plunger and ball check valves may be examined, repaired, replaced or recleaned at any time, as all parts are easily accessible. The opening for the long spout is tapped one-quarter of an inch (pipe tap), so by using an elbow or a 45 degree L at this point the spout may be set at right angles or 45 degrees. The curved nozzle at the top end may be changed to suit conditions.



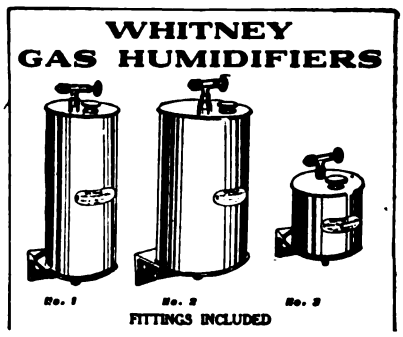
Manufactured by Wm. W. Nugent & Co., Chicago, Ill. Price quoted at request.

The Whitney Gas Humidifier. This apparatus consists of an upright cylindrical task, which is a reservoir for water and contains only a float valve and a lead pipe, which is attached to an outer connection and an adjustable needle valve. From this lead, copper tubing connects the humidifier with the manifold. When the motor is started the vacuum action in the intake manifold is effective throughout the entire system, vaporizing the water and uniting it with the gas mixture in the manifold, perfecting the combustion.

The introduction of water vapor into a motor is a carbon remover; that is, water in the combustion chamber at the time of the ignition stroke turns into steam, which prevents the formation or accumulation of carbon.

The application of the Whitney Gas Humidifier to any internal combustion motor will eliminate carbon, increase the flexibility of the motor and save fuel. Tests conducted have proven an increase of two to seven miles to the gallon of gasoline.

The Whitney Gas Humidifier is manufactured in two models for cars and a smaller size, No. 3, for motorcycles. The two sizes for cars are No. 1 and No. 2. Both are alike, the difference being in water capacity. Approximately 300 miles



may be obtained with one filling of No. 2 and 150 miles with No. 1.

Manufactured by The R. S. Whitney Manufacturing Co., 74 Nichols St., Lewiston, Me. Prices, No. 1, $8.50; No. 2, $10.50; No. 3, $8.50.

"Rusco" Brake Lining and Clutch Facing. Claim is made that more than 39 years of experience are represented in the

development of the looms which weave Rusco products and more than 25,000 shuttles are now engaged in Rusco manufacture. Only the best grade of Canadian long fiber asbestos is used in the manufacture of Rusco products. This fiber is solidly interwoven with fine brass wire (no copper wire being used) by powerful looms that insure a close, uniform weave. The fabric is impregnated with a highly developed heat and wear-resisting compound which is not affected by oil, water, grease or dirt. The material is soft and pliable with a close hugging friction surface, positive in its response to braking conditions. It is woven to correct size by special equipment and does not have to be rolled to size in fitting. This makes for elasticity and long life. The fabric retains its texture unstiffened and is unweakened by the crushing pressure of rolling.

Beside Rusco brake lining, clutch facings are also manufactured from the same material as the brake linings. These are made in stock sizes and adapted for practically all cars and trucks.

Manufactured by the Russel Manufacturing Co., Middletown, Conn. Prices and literature on application.

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Universal P. V. Ammeter. The Universal P. V. Ammeter is a new instrument of superior merit recently placed in the market. Claim is made by the manufacturer that it may be installed in any car equipped with a starting and lighting system of either single or double unit type. It is applicable to all makes and types of lighting and starting systems and all voltage systems. This is a point that is of particular interest to the garage or repair man, as in the past he has been unable to recommend an ammeter that could be fitted to any car regardless of the type of starting and lighting system used. With the Roller-Smith Universal Ammeter

this is possible, as it makes no difference, the manufacturer claims, what make and type of car and system is installed, as this instrument will operate satisfactorily under any conditions, it having been designed especially for cranking circuit use. The ammeter is a flush type, finished in black, with a range from 30-0-30 amperes. The diameter of the body of the ammeter is two inches and the opening required for its insertion in the dash is 2 1/16 inches. Each ammeter is furnished with full supply of mounting screws, nuts and washers. Directions for wiring are included with each instrument.

Manufactured by the Roller-Smith Co., 233 Broadway, New York City. Prices on application.

"Eco" Air and Water Stations. The "Eco" air and water station is an equipment designed for the garage owner who has need of supplying his customers with air and water service 24 hours a day. This outfit is operated on the prepayment plan by dropping a nickel into a slot at the side of the machine, allowing the motorist to draw out an air hose and obtain air under pressure for inflating the shoes of his car, or draw water from a faucet on the front of the machine for refilling a radiator. The outfit may be connected to any air pressure system in the garage or may be equipped with a one-quarter horsepower motor for alternating current, single-phase, 110 volt circuit to be connected to the regular shop wiring system; or it may be equipped with a motor wound for use on a 32-volt circuit, for use in isolated sections where power is only available from a farm or inn power plant. The motor and air pump are located in the base in this type of outfit and are easily accessible in case repair is necessary. The air hose is wound on a large reel in the case, which by spring tension automatically reels the hose after use. The manufacturer claims that this outfit will pay for itself in from eight to nine months with the cash received from motorists.

The "Eco" air and water station is especially adapted for use at amusement parks, inns, moving picture shows, summer resorts, etc., as it may be placed in any convenient place and being self contained all that is necessary is to connect it to a source of electrical current and a water supply and it is ready for business. On special order the station may be

equipped to operate on either a nickel, a dime or a quarter.

Manufactured by the Western Manufacturing Co., Oskaloosa, Ia. Prices: No. 12, $125; No. 10, $110; No. 17, $250; No. 15, $235; No. 19, $335; No. 21, $350, f. o. b. Oskaloosa, Ia.

Revolving Cases. Automobile repair stations and truck service stations can make good use of a combination cabinet or case for stocks of bolts and screws. These cases are made to revolve on a central axis at the bottom and are fitted to hold a large assortment of sizes of bolts or bolts and screws.

The drawers are either made in triangular or rectangular form as the customer wishes for his special needs, from the best Tennessee poplar, finished in imitation mahogany. The fronts of the drawers are made of the best Norway pine, with the sizes they contain nicely printed on them. With this cabinet the sizes may be kept separate, so a stock clerk can get

any size wanted at a moment's notice. In the rectangular cases the drawers are made in several sizes so that bolts and screws may be carried in combination.

This style may be had upon special order with the size of drawers best suited to the customer's wants. They are made in the same substantial manner as the other cases, by experienced cabinet makers, are well finished and the manufacturer claims they will last indefinitely. Each drawer has a substantial label holder and a quantity of extra blank labels are furnished with each case.

Manufactured by the American Bolt and Screw Case Co., Dayton, O. Prices and literature on application.

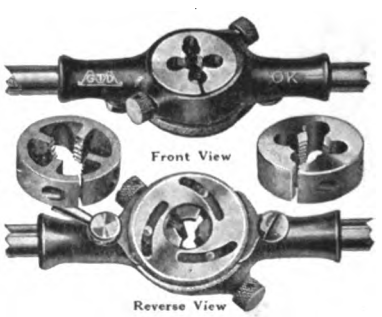
Auto Camp Stove. The Auto Camp Stove is designed for the autoist who wishes to have a small portable stove that may be carried in the car and may be set up and operated in a few moments time; that can be used for heating water, making tea or coffee, etc., while touring.

The manufacturer claims that this stove embodies all the desirable features of a camp stove. The designer after many years experience building gasoline stoves

feels that he has produced an article that has every quality demanded. The Auto Camp Stove may be safely used in a tent or shack, as it can be easily and quickly set up and made ready for use. It may be carried on the running board of the car, ready for instant use.

Manufactured by the Auto Camp Stove Co., Fort Wayne, Ind. Prices on request.

O. K. Screw Plates. A set of tools that will prove interesting to the garage and service station repairers is known by the trade name of O. K. screw plates and taps. For threading rods and rethreading bolts and tapping nuts these tools have no equal, the manufacturer claims. The O. K. dies are forged from flat bar steel, as forging improves the steel and makes the dies cut sharp, clean threads. Spaces



are left in the backs of the dies for chip clearance. Chips cannot clog O. K. dies. These spaces also make it possible to apply oil to the cutting teeth

O. K. stocks are made with an adjustable guide. This takes the place of the heavy solid guides furnished with other makes of screw plates. The cam guide is easily set to the size rod to be threaded and locked. The outfit is convenient, light and inexpensive.

Manufactured by the Greenfield Tap and Die Corporation, Greenfield, Mass. Prices on application.

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RECORD OF BUILDING OPERATIONS FOR JUNE

Contracts Made and Plans Contemplated for Alterations or Erection of Garages, Repair Shops, Service Stations and New Plants.

CONTEMPLATED PLANS AND SPECIFICATIONS.

Denver, Col.; Cartwright Tire Co., First and Broadway; one-story garage, 75x75; $10,000.

Denver, Col.; Guy Harrison; one-story garage, 50x125; $14,000.

Denver, Col.; Hannah Wormington; one-story garage, 50x125; $10,000.

Denver, Col.; J. H. Smith; one-story garage, 50x100; $35,000.

Denver, Col.; Evans Investment Co.; two-story garage, 65x100; $30,000.

Bridgeport, Conn.; William Schmidt, 1118 Main street; one-story garage, 50x114.

New Britain, Conn.; Samuel Greenberg, 94 Hartford avenue; one-story garage, 44x68; $8000.

New Haven, Conn.; Joseph Kligerman, 300 York street; one-story garage, 58x80; $8000.

Waterbury, Conn.; J. La Rose, 17 West Liberty street; one-story garage; $7500.

Waterbury, Conn.; Antonia Germa, 73 Union street; one-story public garage, 39x48; $6000.

Waterbury, Conn.; Andrew Anderson; one-story public garage, 38x66; $4500.

Washington, D. C.; A. G. Voight, Home building; two-story garage, 50x100; $25,000.

Washington, D. C.; N. Auth Provision Co.; two-story garage, 61x85; $3000.

Washington, D. C.; Ernest D. Ryerson, 1843 Kilbourne street; one-story garage, 50x110; $50,000.

Washington, D. C.; James E. Granberry, Fleming building; 50 one-story garages; $10,000.

Macon, Ga.; McCord & Catterfield; four-story reinforced concrete auto and tractor building; 210x210.

Chicago, Ill.; Roy P. Donovan, 4432 Berkley avenue; one-story garage, 47x64; $7500.

Chicago, Ill.; United States Brewing Co., 38 S. Dearborn street; one-story garage, 130x169; $50,000.

Chicago, Ill.; Z. Erol Smith, 5501 S. Prairie avenue; two-story garage, 50x138; $30,000.

Chicago, Ill.; Henry J. Schacks, 721 N. Michigan avenue; 1½-story garage; $2000.

Chicago, Ill.; Mrs. E. K. McCumber; one-story garage; $15,000.

Chicago, Ill.; Stanley Paicus; one-story public garage, 60x126; $18,000.

Chicago, Ill.; S. M. Seator, 35 N. Dearborn street; two-story garage and machine shop, 106x150; $60,000.

Chicago, Ill.; L. Affeldt, 795 S. Morgan street; one-story garage, 25x52; $7000.

Chicago, Ill.; Walter G. O'Boile, 723 Melrose street; one-story garage, 20x46; $2000.

Chicago, Ill.; A. P. Dippold, 4747 S. Cottage Grove avenue; one-story public garage, 100x253; $90,000.

Chicago, Ill.; A. W. Quanstrom, 6374 Paxton avenue; one-story garage, 50x117; $2[illegible]000.

Melrose Park, Ill.; Mike Moreno; one-story garage, 65x90; $7500.

Robinson, Ill.; A. L. Maxwell Co.; Lawrenceville, Ill.; three-story garage; $50,000.

Staunton, Ill.; Charles Blackwell; one-story public garage, 60x115; $10,000.

Troy, Ill.; J. C. McLanagan, Collinsville, Ill.; one-story public garage, 30x84; $6000.

Anderson, Ind.; S. L. Brook, Lovett building; two-story public garage, 70x144.

Beaucville, Ind.; W. Stevens; one-story public garage, 100x148; $20,000.

Indianapolis, Ind.; A. H. Mock, 326 N. Brancroft street; one-story public garage, 44x122; $3500.

Indianapolis, Ind.; Frank N. Linder, E. New York and Oxford streets; one-story public garage, 73x105; $7000.

Indianapolis, Ind.; E. M. Hardin & Co., 534 N. La Salle street; one-story garage, 120x120; $9000.

Rockport, Ind.; A. E. Moore; one-story public garage, 40x70; for Fishback & Co.; $7000.

Tabor, Ind.; Sheirbon & Williams; one-story garage, 65x100; $14,000.

Union City, Ind.; Adlesberger; one-story garage, 70x100.

Cedar Rapids, Ia.; A. J. Smith, Granby building; one-story garage, 40x140; $12,000.

Cherokee, Ia.; Flanz Jenkins; one-story public garage, 25x70; $16,000.

Cherokee, Ia.; E. W. Nelson, 219 W. Locust street; one-story brick garage, 30x70; $12,000.

Cherokee, Ia.; L. Florine, 912 W. Willow street; one-story public garage, 25x70; $11,000.

Clarinda, Ia.; Edwin L. Leslie; one-story public garage, 140x140; $35,000.

Clarion, Ia.; O. Day Auto Co.; one-story public garage, 66x120; $12,000.

Hampton, Ia.; Peter Murphy; one-story public garage, 130x132; $30,000.

Rolfe, Ia.; Rolfe Auto Co.; one-story public garage, 50x132; $15,000.

Louisville, Ky.; J. B. Hillson; one-story brick garage; $5000.

Louisville, Ky.; F. Erhart, 409 Norton building; one-story public garage, 50x110; $15,000.

Richmond, Ky.; Richmond Motor Garage Co.; one-story fireproof garage, 63x170.

Baltimore Md.; H. E. Engnoth, 100 N. Highland avenue; two one-story garages, 10x18 each; $4000.

Baltimore, Md.; George Klein, 2921 Belmont avenue; one-story garage; $7500.

Baltimore, Md.; John R. Rafferty, 548 N. Payson street; one-story garage, 10x18; $1500.

Baltimore, Md.; Acme Building Co.; care Louis Piercus, Equitable building; one-story garage; $18,000.

Baltimore, Md.; James Keelty, 1123 Poplar Grove street; two-story public garage, 52x100; $20,000.

Baltimore, Md.; Temple Joyce, 415 E. 25th street; three-story garage; $150,000.

Baltimore, Md.; E. Crouch, 3002 York road and Morris Lesser, 3702 York road; one-story garage, 81x200, at 2819 Greenmount avenue; $25,000.

Baltimore, Md.; G. Richard Good, 512 N. Eutaw street; one-story garage, 50x75; at Reistertown road and Garrison avenue.

Baltimore, Md.; Colonial Garage Co.; one-story garage 80x200; on Greenmount avenue between 28th and 29th streets.

Baltimore Md.; George Conn, 3800 Park Heights avenue; eight garages; $15,000.

Baltimore, Md.; Henry A. Knott & Co., 2101 N. Calvert street; 10 one-story garages, 16x18 each; $4000.

Baltimore, Md.; J. C. Spedden, 2715 Harlem avenue; one-story garage, 46x127; $7500.

Baltimore, Md.; Acme Garage and Auto Co., 912 Love Grove avenue; one-story garage, 90x160; $20,000.

Easton, Md.; Harry E. Clark; one-story garage and show room, 50x100; $12,000.

Boston, Mass.; W. E. Jackson, care C. F. McFarland, 163 Newburg street; one-story public garage, 70x300.

Cambridge, Mass.; Archie J. Card; two-story public garage, 52x62.

Greenfield, Mass.; W. E. Benson, 132 Main street; two-story public garage, 50x100; $20,000.

Lexington, Mass.; Paul Revere Garage Co., Inc.; one-story garage, 50x50; $15,000.

New Bedford, Mass.; Manuel Perry, 177 Thompson street; one-story public garage, 52x104; $12,000.

Somerville, Mass.; Herbert Kingman, 14 Westwood road; one-story garage, 20x20; $5000.

Springfield, Mass.; Joseph Weisenberg, 91 Belle avenue; one-story public garage, 95x108; $20,000.

Springfield, Mass.; Austin C. Wigglesworth, 25 Harrison avenue; one-story garage and salesroom, 84x145; $45,000.

Springfield, Mass.; Chaplin Realty Co., 441 White street; one-story public garage, 50x145; $22,000.

Waltham, Mass.; Gertrude E. Straut, 30 Dexter street; one-story garage, 65x74; $4000.

Detroit, Mich.; Carl Rhutenberg, 1355 Scotten avenue; 1½-story garage, 24x26; $3000.

Detroit, Mich.; William Baird, 267 Baker street; one-story garage, 26.5x112; $3000.

Detroit, Mich.; George H. Schubitt, 119 End avenue; one-story garage, 60x100; $8500.

Detroit, Mich.; G. H. Frederick, 48 Hill avenue; one and two-story garage, 60x100; $8000.

Detroit, Mich.; George H. Raynor, 2013 Dime Bank building; one-story garage, 12x15; $3500.

Detroit, Mich.; Morris A. Jack, 186 E. Hancock avenue; one-story garage, 59x183; $25,000.

Detroit, Mich.; Lee & Grady; one-story garage, 75x130.

Jackson, Mich.; H. R. Graf, 502 Carter building; two-story garage, 60x80.

Ellendale, Minn.; C. Aronsen, Waseca and Ellendale streets; one-story public garage, 50x130; $15,000.

Fairmont, Minn.; Fairmont Auto and Realty Co.; one-story public garage, 52x150; $22,000.

St. Paul, Minn.; W. McLellan, 531 Greenwood avenue; one-story garage, 49x110; $8500.

Jefferson City, Mo.; Leo Havlich-Neider; two-story garage, 52x198; $18,000.

Kansas City, Mo.; J. R. Samuel, purchasing agent; one-story garage, 52x80; $25,000.

Kansas City, Mo.; O. B. Shaw, 3700 Agnes avenue; one-story garage, 38x50.

Kansas City, Mo.; Jensen-Salsbery Laboratories, 2037 Penn street; one-story brick and stone garage, 48x105.

Sedalia, Mo.; J. R. McAllister, 209 S. Osage street; one-story garage, 91x120; $25,000.

St. Louis, Mo.; Columbia Taxi Cab Co., 4533 Delmar boulevard; one-story garage, 128x300; $100,000.

Papillion, Neb.; J. L. Clarke, 1½-story garage, 20x26; $2000.

Newark, N. J.; Mrs. Rosina Romano, 20x60; $21,000.

Newark, N. J.; Gottfried Golz, 268 Verona avenue; one-story garage, 17x53; $3000.

Newark, N. J.; I. Cohn, 36 Mercer street; one-story public garage, 58x165; $18,000.

Newark, N. J.; G. H. Lane, 208 Ridge street; one-story garage, 18x49; $15,000.

Newark, N. J.; H. Baer & Sons, 840 S. 19th street; one-story garage; $3000.

Newark, N. J.; Offenkrantz & Mark, 117 Belmont avenue; one-story garage, 20x54x55x20; $4000.

Newark, N. J.; Heller Construction Co., 800 Broad street; one-story garage, 65x65; $5000.

Newark, N. J.; Louis Koplowitz and Morris Scharff, 207 Market street; one-story public garage, 48x130; $12,000.

Newark, N. J.; Herman H. Schary, 604 High street; one-story public garage, 75x100; $18,000.

Newark, N. J.; Okin Realty Co., 790 Broad street; one-story public garage, 97x130; $20,000.

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Newark, N. J.; Meyer Geller, 64 Montgomery avenue; one-story public garage, 30x100; $8000.

Atlantic City, N. J.; Samuel Barber, 7 S. Carolina avenue; one-story public garage, 62x100; $6000.

Belleville, N. J.; A. Fosman, 167 Verona avenue; one-story public garage, 75x100; $18,000.

Elisabeth, N. J.; Burdeck Brothers, 91 Pine street; one-story public garage, 45x100; $12,000.

Elisabeth, N. J.; Julius M. Kaycoff, 438 Court street, Brooklyn, N. Y.; one-story public garage, 50x150; $16,000.

Jersey City, N. J.; Joseph Margules, 216 Linden avenue; one-story garage; $15,000.

Kearny, N. J.; Philip J. Dohn, 149 Pomery avenue; one-story garage, 75x100; $8000.

Orange, N. J.; Nathan Steinberg, 39 William street; 15 one-story garages, 18x124; $8000.

Passaic, N. J.; Morris Pinzler, 56 Third street; two-story garage and shop, 30x60; $4500.

Stockton, N. J.; F. G. Eppele, Trenton, N. J.; one-story garage, 22x40; $7500.

Union Hill, N. J.; William Oldenburg, 124 Fourth street; one-story garage; $3000.

Union Hill, N. J.; C. Soffke; one-story public garage, 42x68; $12,000.

Vineland, N. J.; Evans Kimble; 1½-story private garage, 35x40; $4000.

Brooklyn, N. Y.; Antonia Innello, 763 Bergen street; one-story public garage, 42x110; $15,000.

Brooklyn, N. Y.; Helen A. Courtney, 391 Fulton street; one-story garage, 50x200; $20,000.

Brooklyn, N. Y.; Liberty Wyona Co., Inc., 100 Bristol street; one-story garage, 100x100; $25,000.

Brooklyn, N. Y.; William Meruk & Son, 1124 Myrtle avenue; one-story garage; $3200.

Brooklyn, N. Y.; Talbenson Realty Corporation, 1404 Eastern Parkway; one-story garage, 98x100; $20,000.

Brooklyn, N. Y.; Oakcrest Garage Co., 1201 Coney Island avenue; one-story garage; $10,000.

Brooklyn, N. Y.; J. Pouch, 547 East 21st street; one-story private garage, 20x50; $3000.

Brooklyn, N. Y.; Martin Brancher, 1102 Kings highway; one-story garage, 40x141; $15,000.

Brooklyn, N. Y.; Isaac Fries, 677 Third avenue; one-story garage, 30x64; $4000.

Brooklyn, N. Y.; Simon Chadwick, 232 Osborn street; one-story garage, 75x100; $20,000.

Brooklyn, N. Y.; Joseph Davito, 383 Gold street, Astoria, L. I.; one-story garage, 33x97; $6000.

Brooklyn, N. Y.; Prosto Lorengo, 255 Hudson avenue; one-story garage, 45x101; $7500.

Brooklyn, N. Y.; Samuel Rieber, 824 Sutter avenue; one-story garage, 25x55; $4000.

Brooklyn, N. Y.; Michael De Mato, 175 High street; one-story garage, 37x78; $8000.

Brooklyn, N. Y.; Alfonzo Monaco, 71 Navy street; one-story garage, 54x75; $10,000.

Brooklyn, N. Y.; Gibraltar Construction Co., Inc., 1366 74th street; one-story public garage, 100x160; $25,000.

Brooklyn, N. Y.; David Shapiro, care H. J. Nurick, 757 Broadway; two-story private garage, 30x40; $8000.

Brooklyn, N. Y.; Labor Homes Co., Inc., 251 Broadway, N. Y.; 46 one-story garages; $23,000.

Brooklyn, N. Y.; Realty Construction Co., 44 Court street; one-story garage, 92x198; $50,000.

Brooklyn, N. Y.; Thomas F. Martin, 16 Court street; one-story garage, 127x235; $75,000.

Brooklyn, N. Y.; Borough Park Garage, Inc., 1434 49th street; two-story public garage, 40x100; $28,000.

Brooklyn, N. Y.; William Randelson & Son, 118 Raymond street; one-story garage, 25x100; $3800.

Brooklyn, N. Y.; J. Gaynor, 599 Bedford avenue; one-story private garage, 35x40; $5000.

Brooklyn, N. Y.; Libond Realty Co., 44 Court street; one-story garage, 100x156; $40,000.

Brooklyn, N. Y.; Robert W. Martin, 84 Front street; two-story garage, 25x99; $12,000.

Brooklyn, N. Y.; Louis Schilinger, 167 Van Sicklen avenue; one-story public garage, 75x100; $20,000.

Brooklyn, N. Y.; Nicholas Palermo, 1361 71st street; one-story garage, 18x18; $3000.

Brooklyn, N. Y.; Chris Morganson, 1502 Avenue U; one-story garage, 40x75; $4000.

Brooklyn, N. Y.; Isaac Meyerson, 96 Pulaski street; one-story garage, 80x100; $16,000.

Brooklyn, N. Y.; O. Stolp, 2411 Newkirk avenue; one-story garage, 40x90; $7000.

Brooklyn, N. Y.; Stone Avenue Realty Co., 50 Court street; one-story public garage, 100x100; $25,000.

Brooklyn, N. Y.; MacGran B & C Co., E. 22nd street and Avenue J; seven one-story garages, 17x19 each; $6500.

Brooklyn, N. Y.; Percy Blum, 197 Washington street; one-story garage, 34x162; $15,000.

Brooklyn, N. Y.; General Contracting and Building Co., 165 E. 54th street; one-story public garage, 100x100; $25,000.

Brooklyn, N. Y.; Harry Lamkiman, 8484 Delamere place; one-story garage, 17x80; $3500.

Brooklyn, N. Y.; Landous Realty Co., 215 Montague street; one-story public garage, 50x100; $12,000.

Brooklyn, N. Y.; Nathan Pollack, 1664 Pitkin avenue; one-story garage; $9000.

Brooklyn, N. Y.; U. S. Government, C. W. Parks, chief bureau yards and docks, Navy Department, Washington, D. C.; one-story garage; $50,000.

Brooklyn, N. Y.; Jacob Liederman; one-story public garage, 60x100; $35,000.

Brooklyn, N. Y.; Catherine J. McDermott, 1772 Carroll street; one-story garage, 50x140; $18,000.

Buffalo, N. Y.; Harry Friedman, 497 Broadway; one-story public garage, 40x50; $3000.

Buffalo, N. Y.; Blegele & Telschow, care Thomas W. Harris, 800 Erie County Bank building; one-story public garage, 34x74; $6000.

Buffalo, N. Y.; N. Kozamowski, 1435 Broadway; one-story private garage, 20x50; $4000.

Buffalo, N. Y.; St. Stanislaus Church Society, 123 Townsend street; one-story private garage, 24x36; $6000.

Buffalo, N. Y.; H. H. Lanctot, 943 Elmwood avenue; one-story public garage, 68x100; $5000.

Buffalo, N. Y.; Dr. A. B. Cobb, 368 Main street; one-story private garage, 22x30; $3000.

Buffalo, N. Y.; Wheat's Ice Cream Co., 221 Elm street; two-story garage, 92x150; $30,000.

Far Rockaway, L. I., N. Y.; A. Gussow, 395 Fourth avenue; one-story private garage; $4500.

Friendship, N. Y.; T. Moser; one-story private garage; $3000.

Hopewell Junction, N. Y.; Robert Stuart; one-story private garage, 25x70; $5000.

Jamaica, L. I., N. Y.; Elm City Improvement Co., 626 Essex street; Brooklyn, N. Y.; one-story garage, 88x110; $25,000.

Long Island City, N. Y.; S. Moller, 140 Jackson avenue; one-story garage and machine shop, 25x100; $5000.

Long Island City, N. Y.; M. Masseo; one-story garage, 25x48; $3000.

New York, N. Y.; E. M. B. Co., 260 W. 36th street; one-story garage, 38x38; $8000.

New York, N. Y.; Dayton Estate, care O. H. Kempner, 17 W. 42nd street; two-story public garage, 75x25x184x92; $150,000.

New York, N. Y.; Scammell Water Garage Co., Inc., 147 Fourth avenue; one-story garage, 99x100; $20,000.

New York, N. Y.; John W. Nichols, 11 Thomas street; one-story garage, 19x46; $4000.

New York, N. Y.; Fifteenth Street Garage, Inc., 412 W. 15th street; two-story garage; 100x100.

New York, N. Y.; George H. Read, 10 E. 176th street; one-story garage, 20x25; $3000.

New York, N. Y.; George M. McCabe, 96 Fifth avenue; two-story garage, 125x125.

New York, N. Y.; Vintaria Garage, 235 E. 117th street; one-story public garage, 75x100; $16,000.

New York, N. Y.; Joseph Sicacca, 2267 Second avenue; one-story garage, 50x100; $20,000.

New York, N. Y.; Mathilda E. R. Stuyvesant, Allemauch, Warren county, N. J.; one-story garage, 90x100; $8000.

Niagara Falls, N. Y.; R. V. Bogart, 515 21st street; one-story public garage, 66x112; $14,000.

Ridgewood, L. I., N. Y.; Henry Henkes; one-story garage; $3000.

Utica, N. Y.; Joseph George, 619 Bleecker street; two-story garage, 58x88; $8000.

Yonkers, N. Y.; Hodgman Rubber Co.; one-story garage, 50x62; $7000.

Fargo, N. D.; Alex Stern; two-story garage, 75x140.

Fargo, N. D.; Co-Operative Garage Co., Equity building; two-story public garage, 50x140.

Larimore, N. D.; Piper Garage Co.; one-story garage; $10,000.

Mandan, N. D.; Lurent & Bunting; one-story garage, 50x110; $20,000.

Akron, O.; Frank Romark, 100 Bock avenue; one and two-story commercial garage, 58x190; $55,000.

Cincinnati, O.; Louis L. Rauh, 752 Crescent avenue; one-story private garage, 21x23; $1800.

Cleveland, O.; Whitworth & Johnson, 413 Engineers' building; two-story garage, 27x80; $10,000.

Lakewood, O.; C. Lee Graber; one-story garage, 21x55; $4000.

Shelby, O.; B. S. Kieber; two-story private garage, 23x37; $2500.

Troy, O.; Dayton & Troy Auto Co., Second and St. Clair streets; two-story public garage and salesroom, 50x120; $50,000.

Pawhuska, Okla.; P. E. Voygles; one-story garage, 50x140; $12,000.

Tulsa, Okla.; W. A. Reynolds, 2 Kirkpatrick building; two-story garage, 22x26; $3000.

Altoona, Pa.; Harry Kerlitz, Hollidaysburg, Pa.; two-story storage garage, 70x100; $25,000.

Big Run, Pa.; Pifer & Pifer; one-story commercial garage, 55x75; $4000.

Big Run, Pa.; Big Run Milling Co., care H. Gorley; two-story commercial garage, 70x100; $15,000.

Columbia, Pa.; Frank Janson; one-story private garage, 30x30; $5000.

Erie, Pa.; J. V. Sink; one-story commercial garage, 40x100; $6300.

Harrisburg, Pa.; Burton Van Dyke, 808 16th street; one-story private garage, 20x110; $3000.

Philadelphia, Pa.; William T. Clark, 1635 Broad street; one-story garage, 24x54; $2000.

Philadelphia, Pa.; N. Snupman, 2133 Ridge avenue; one-story garage, 52x55; $8000.

Philadelphia, Pa.; Sulkin Brothers, 55th and Woodland avenue; one-story garage; $30,000.

Philadelphia, Pa.; J. D. Fortheringham, 1008 Arrot street; one-story garage, 20x140; $2800.

Philadelphia, Pa.; Albert Granich, 914 Market street; one-story garage, 17x35.

Philadelphia, Pa.; Walter Smith, 3519 N. Eighth street; one-story garage; $2898.

Philadelphia, Pa.; H. H. Kline, 536 Mifflin street; one-story garage, 57x441; $3000.

Philadelphia, Pa.; Louis Bravnnig, 4933 N. Fifth street; one-story garage, 17x96 and 10x19; $2500.

Philadelphia, Pa.; D. J. Pappano, 1401 South 13th street; two-story garage, 47x73.

Philadelphia, Pa.; Pasquale Ingeniti, 820 Christian street; two-story garage, 64x66; $4000.

Philadelphia, Pa.; Christian White, 511 N. 63rd street; one-story garage, 25x70; $2000.

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Philadelphia, Pa.; J. M. Kennedy, 1001 Chestnut street; one-story garage, 97x160; $35,000.

Tyrone, Pa.; Tyrone Motor Co., care F. D. Beyer & Son, Lincoln avenue and 15th street; one or two-story commercial garage, 50x180; $15,000.

Big Stone City, S. D.; W. P. Nitz; one-story public garage, 48x80; $8000.

Chattanooga, Tenn.; Fred Bryan, three-story fireproof garage, 75x150; $50,000.

San Antonio, Tex.; Albert Kronkisky; one-story garage, 112x150; $20,000; lessee, Harry L. Miller.

Houston, Tex.; J. Stadler; one-story brick and tile garage; $4500.

Wichita Falls, Tex.; Motor Supply Co.; two-story fireproof garage; $35,000.

Lynchburg, Va.; James R. Gilliu, Jr.; one-story private garage, 22x42.

Newport News, Va.; Shipbuilding Realty Corporation; two-story public garage, 54x116; $60,000.

Norfolk, Va.; Barton Myers, Arcade building; one-story garage, 52x100; $14,000.

Norfolk, Va.; J. L. Blassingham, 4811 Myers avenue; one-story garage; $3000.

Norfolk, Va.; Travelers' Garage; two and three-story public garage, 86x117 and 118x200.

Norfolk, Va.; H. Garrett Smith, Citizens' Bank building; two-story garage, 40x160; $40,000.

Suffolk, Va.; T. A. Barbes; one-story garage; $10,000.

Janesville, Wis.; J. A. Drummond; two-story public garage, 35x56; $15,000.

Kenosha, Wis.; Kenosha Motor Sales Co., 885 Pomeroy street; one-story garage, 55x127; $15,000.

Kenosha, Wis.; White, White, White & Co., Public Service building; two-story garage and salesroom; $35,000.

Madison, Wis.; John Peterson, care Wisconsin Construction Co.; one-story garage, 75x165; $35,000.

Manitowoc, Wis.; C. G. Stangel, 620 N. Ninth street; one-story garage, 22x28; $3000.

Milwaukee, Wis.; Charles Thielke, 987 36th street; one-story garage, 18x20; $15,000.

Milwaukee, Wis.; L. Heidbronner, 738 Shepard avenue; one-story garage, 20x24; $3000.

Milwaukee, Wis.; L. R. Schendel; one-story garage, 53x135; $15,000.

Milwaukee, Wis.; J. L. Stanage, 144 Oneida street; one-story garage, 40x70; $10,000.

Contracts Awarded.

Birmingham, Ala.; Blythe & Delaney; one-story garage; for Henry Thane; $25,000.

Bridgeport, Conn.; William F. Chatlos, 1374 Barnum street; one-story public garage, 47x100; for J. C. Bedmar and A. J. Metro, 1358 Pembroke street; $7000.

Hartford, Conn.; Mehlman & Adoff; one-story garage, 50x80; for H. J. Brightman, 82 Wooster street; $20,000.

Hartford, Conn.; J. H. Grozier Co., 721 Main street; one-story garage, 75x80; for Hartford Electric Light Co.; 266 Pearl street; $40,000.

Washington, D. C.; Weller Construction Co., 816 14th street, N. W.; one-story service garage, 77x86; for Walter Harrison, 425 12th street, S. E.; $5000.

Washington, D. C.; Richard A. Colson, 1138 Genoa street, N. E.; one-story garage, 20x48; for Luther F. Hall.

Washington, D. C.; W. A. Kimmel, Evans building; two-story garage, 80x125; for Bruce S. Branson, Evans building; $40,000.

Washington, D. C.; R. R. Whitty & Co., Union Trust building; one-story garage; $75,000.

Washington, D. C.; George A. Fuller Co., Munsey building; one-story garage, 21x45; for Equitable Building Association, 915 F street; $3000.

Washington, D. C.; D. E. Nichols, Real Estate Trust building; one-story garage, 19x20 and 20x20; for E. J. Stillwagen, 1843 Biltmore street, N. W.; $3500.

Washington, D. C.; Skinker & Garrett, 1416 F street, N. W.; four-story public garage, 96x114; $100,000.

Daytona, Fla.; H. V. Whipple; one-story fireproof garage, 70x150; for A. J. Malby; $18,000.

Atlanta, Ga.; J. W. Jenkins; one-story garage, 90x150; hollow tile with brick veneer, limestone trimmings, composition roof; for James Prichard Motor Co.; $18,000.

Chicago, Ill.; A. Karhn, 3306 W. 12th street; one-story public garage, 50x125; for Weinstein & Wieberg, Kedzie and Grenshaw avenue; $15,000.

Chicago, Ill.; E. Z. Sproul Co., 2001 W. 39th street; one-story public garage, 105x200; $40,000.

Chicago, Ill.; O. F. Brooks & Sons, 6711 Olmster avenue; two private garages, 20x26; $2500.

Chicago, Ill.; Dreucker, 3640 N. Artesian avenue; one-story garage, 25x63; $3000.

Chicago, Ill.; C. H. McDonnell, 6723 Clyde avenue; one-story garage, 18x18; $1000.

Evanston, Ill.; Thomas McCall, 1016 Main street; one-story garage, 45x50; $3500.

Pana, Ill.; William Stech, 704 E. Fifth street; one-story public garage, 30x80; $7000.

Attica, Ind.; H. E. Sutton; one-story garage and service station, 60x120; for J. E. Norton; $25,000.

Hammond, Ind.; George Bates, 415 Becker street; one-story garage, 50x136; for L. Wolf, 740 State street.

Des Moines, Ia.; Kincaid & Longnecker, 228 W. Seventh street; one-story garage, 100x115; for Puslow estate; $16,000.

Sioux City, Ia.; H. M. Singer, 1609 Fourth street; one-story public garage, 59x135; for Fish Brothers, 1910 Center street; $15,000.

Covington, Ky.; Frank G. Ader Construction Co., Sixth and Saratoga streets; one-story garage, 66x115; for Harry C. Sprinks, Fifth and Monmouth streets; $14,000.

Baltimore, Md.; Thompson & Peterson, 220 St. Paul street; one-story garage, 50x169; at Payson and Vine streets; for Continental Investment Co., Continental building.

Baltimore, Md.; H. E. Blake, Law building; one-story garage, 55x130; for George A. Blake, 1212 N. Charles street; $30,000.

Baltimore, Md.; Joseph S. Small, 3565 Cedar avenue; one-story garage, 10x18; for Harry Grauel, Roland Park; $4000.

Washington Grove, Md.; Price Construction Co., Maryland Trust building, Baltimore; one-story garage, 26x32; for Standard Oil Co.; $5000.

Brookline, Mass.; A. W. Neal, 293 Boylston street; one-story public garage, 80x124; for A. Hill, 316 Boylston street; $35,000.

Detroit, Mich.; Cudahy Brothers Co., 508 Forest avenue; one-story garage, 50x80; $10,500.

Detroit, Mich.; Bryant & Detwiler, 2236 Dime Bank building; one-story public garage; for Frederick Stearn Co., Jefferson and Bellevue avenue; $8000.

McHenry, Miss.; George S. Gully; one-story brick garage, 60x100; for McHenry Automobile Co.; $7000.

Kansas City, Mo.; Long Construction Co., 600 Rialto building; 1½-story garage, 25x26; for Robert Keith, 11th and Grand avenue; $5000.

Kansas City, Mo.; J. Hague, 725 W. 39th street; two-story garage; for Eyler Brothers, 1401 Main street; $6000.

Kansas City, Mo.; George Jones, 1041 Shawnee street; one-story garage, 75x110; for D. F. Campmire; $5000.

St. Joseph, Mo.; R. L. Ficklin, 1024 Francis street; one-story garage, 50x50; for T. J. Harvey; $2000.

St. Louis, Mo.; H. H. Herweek, Title Guaranty building; two-story garage, 75x154; for Ollie E. Haupt Motor Co., 4129 Olive street; $32,000.

St. Louis, Mo.; W. McDonald, Odd Fellows' building; one-story garage, 40x60; for Peltsch Undertaking Co., 5966 Easton avenue; $4000.

Omaha, Neb.; Charles S. Nelson; one-story public garage, 99x115; for E. T. Heyden, 5206 Webster street; $25,000.

Omaha, Neb.; Jepsen Brothers, 25th and Cuming streets; one-story garage, 54x116; $6500.

Newark, N. J.; George S. Clark's Sons Co., 31 Clinton street; one-story private garage, 25x36; for Richard M. Clark, 312 Ridge street; $4000.

Newark, N. J.; M. Sukoneck, 44 Barclay street; one-story public garage, 30x100; for M. Geller, 64 Montgomery street; $10,000.

Ridgewood, N. J.; William L. Platt Co., 152 Market street, Paterson, N. J.; one-story garage; for William H. Moore, 268 W. Ridgewood avenue; $15,000.

Brooklyn, N. Y.; Mary Palumbo, 1203 38th street; one-story garage, 20x40x90; for $12,000.

Buffalo, N. Y.; Huntley & Derrenger, Buffalo General building; one-story garage, 34x42; for National Lamp Co. of General Electric Co.; $4500.

Patchogue, L. I., N. Y.; Clarence Vrooman; one-story garage, 75x90; for Justus Roe & Sons; $10,000.

Rochester, N. Y.; James Passero, 285 Magee avenue; one-story garage, 43x52; for Antonio Lario, 1734 Clifford avenue; $5000.

Rye, N. Y.; Thomas T. Hopper Co., 101 Park avenue, New York; two-story private garage; for Benjamin F. Johnstone; $15,000.

Syracuse, N. Y.; Carlercou & Tappazeni, 623 E. Fayette street; one-story garage, 40x50x15; for Delia Lambert; $3000.

Akron, O.; Eli Sagawencky; one-story garage, 76x93; for J. N. Wiener, 41 Bowery street; $15,000.

Cincinnati, O.; McMiller & Raft, Hulbert block; one-story private garage, 22x23; for Clifford Dean, Clifton and Greendale avenues; $2200.

Cleveland, O.; George J. Weeky, 4610 Denison avenue; one-story garage, 30x40; T. A. Miscenik, 1111 Fairfield avenue; $2500.

Columbus, O.; M. J. Delaney, 231 Sycamore street; one-story private garage, 21x36; for Sisters of the Good Shepherd, 31 S. Sandusky street; $2200.

Columbus, O.; J. E. Demorest, 984 W. Broad street; one-story garage, 39x50; for Louis Holcomb, 238 Eureka avenue; $3500.

Dayton, O.; C. Henry; one-story private garage, 30x42; for Ward & Ward Co.; $3500.

Toledo, O.; Walmon & Spenthoff, 623 Oakwood avenue; one-story garage, 22x40; for H. D. Fallis, 1072 Prospect avenue; $2000.

Warren, O.; J. H. Smith; one-story garage, 80x145; for R. E. Hempel; $10,000.

Enid, Okla.; M. C. and B. A. Garber, Washington street and West Broadway; one-story brick and concrete garage, salesroom and repair shop, 50x140; $30,000.

Tulsa, Okla.; L. B. Wood Realty Co., 6 East Fifth street; two-story garage; for George B. Johnson, 1401 S. Elwood street; $5000.

Tulsa, Okla.; J. I. Buck, 1170 N. Main street; one-story garage, 55x60; for Tulsa Realty Co., 405 Robinson building; $4000.

Tulsa, Okla.; Philip Bromberg, 1139 N. Penoa street; one-story garage; for Robert A. Stekoll, 1524 W. Cameron street; $12,000.

Pittsburgh, Pa.; Hyman Grodstein, 1846 Webster avenue; one-story private garage, 30x35; for Jacob Weissberg, 5505 Black street; $7300.

Pittsburgh, Pa.; J. A. Atkinson, 719 Bellefonte street; one-story garage, 21x40; for W. M. Schwartz, 147 Carver street; $3000.

Philadelphia, Pa.; E. G. Kolb; one-story brick garage, 17x91; west side Broad street, south Passyunk avenue; $2600.

Philadelphia, Pa.; Peter J. Scully; one-story brick garage, 18x84, at 2739 N. Howard street; $500.

Philadelphia, Pa.; Thomas P. Moran Co.; one-story brick garage, 16.9x16; at 634 S. 57th street; for E. S. Kramer; $660.

Philadelphia, Pa.; W. C. Wright; one-story garage, 17.10x29; at 227 Gowen avenue; for C. Clapham; $1700.

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Philadelphia, Pa.; Rush Brothers; one-story brick garage, 80x117; at northwest corner Mulberry and Wakeling streets; for E. Snowden; $15,500.

Philadelphia, Pa.; William C. Wright; one-story brick garage, 20x22; at 150 West Washington lane; for E. N. Simons; $2100.

Philadelphia, Pa.; C. Bonner; one-story brick garage, 16x18; at 1139 Arrott street; for Camille De Doering; $600.

Philadelphia, Pa.; Henry Hobert; one-story brick garage, 16x23; at 127 E. Tioga street; for F. Schafer; $800.

Philadelphia, Pa.; Edward B. Miller; one-story brick garage, 15x19; at 4358 N. Darien street; for Edward Munch; $600.

Philadelphia, Pa.; Rudolph Lukens; two-story stone garage, 18x21; at 5105 Overbrook avenue; for J. N. Brown; $1400.

Philadelphia, Pa.; Charles W. Irwin; one-story garage, 20.9x37; northeast corner Windrin and Wyoming avenues; $2600.

Philadelphia, Pa.; H. E. Sweger; one-story brick garage, 26x40; north side Courtland street, east Fifth street; for John Donahue; $2400.

Philadelphia, Pa.; J. J. Kelly Contracting Co.; one-story brick garage, 67.6x68x82.6; northwest corner 16th and Rockland streets; $8000.

Philadelphia, Pa.; John E. Walt; one-story garage, 16.8x75.6; northeast corner Germantown and Chestnut Hill avenue; $3800.

Philadelphia, Pa.; John Cloak; one-story garage, 12x18; at 4741 N. 11th street; for M. Mamliu; $2250.

Philadelphia, Pa.; L. H. Stanford; one-story garage, 16x24; at 2008 Fitzwater street; for T. S. Burwell; $825.

Philadelphia, Pa.; Frank W. Zebley; one-story brick garage and shop, 20x50; at 6012-14 Hegerman street; $3300.

Philadelphia, Pa.; William H. George; one-story brick garage, 17x17; at 4837 N. 11th street; for Robert A. Wilson; $850.

Philadelphia, Pa.; John Tengley; two one-story garages, 20x22; at 505-7 67th avenue; for William Lotz and Charles Mullen; $800.

Philadelphia, Pa.; Walter Ludwig; one-story brick garage, 20x37.6; at southeast corner Tyson and Edmund streets; $500.

Philadelphia, Pa.; H. Pearl; two-story brick garage, 16x20; at southwest corner 59th and Chestnut streets; for Irving Belinow; $3500.

Philadelphia, Pa.; Rush Brothers; one-story brick garage, 18x99; east side Rutland street, north Fillmore; $2000.

Philadelphia, Pa.; Max Belinsky; one-story brick garage, 18x29; at 1135 Leopard street; for George Reisser; $1100.

Philadelphia, Pa.; Louis Kinsley; one-story brick garage, 20x50.5; at 6124-26 Jackson street; $1000.

Philadelphia, Pa.; William J. Baltz; one-story brick garage, 12.6x18.6; at northwest corner Mervine street and Lindley avenue; for Byron Hancock; $925.

Philadelphia, Pa.; Barclay White & Co.; one-story brick garage and repair shop, 72x190; with two-story wing, 30x101.6; at 2626-28 Huntingdon street; for F. M. Venzier; $15,000.

Philadelphia, Pa.; George R. Dewees; one-story brick garage, 20x27.6; south side Grange avenue, east Third street; for William Smith; $800.

Philadelphia, Pa.; Louis Braening; one-story brick garage, 18.6x96, with wing 10x19; east side Sixth street, north Louden; $2500.

Philadelphia, Pa.; N. Nargoski; one-story brick garage, 16x20; at 2341 Orthodex street; for Andrew Grof; $600.

Philadelphia, Pa.; Alfred Steinhauser; one-story brick garage, 16x20; at southeast corner A street and Fisher avenue; for J. F. Burkary; $700.

Philadelphia, Pa.; Alfred Steinhauser; one-story brick garage, 12x20; at 5418 Westford road; for Harry E. DeGroot; $800.

Philadelphia, Pa.; Albert McBain; 10 one-story brick garages, 10x16 each; west side Ninth street, south 66th avenue; $4000.

Philadelphia, Pa.; LeRoy K. Smith; one-story brick garage, 12x20; at 1830 Spruce street; for Dr. George B. Wood; $1000.

Philadelphia, Pa.; C. West & Co.; one-story brick garage, 11.6x18; at 1231 Wakeling street; $600.

Philadelphia, Pa.; Thomas F. Devine; one-story garage, 20x57; at southeast corner 66th street and Haverford avenue; for J. Simson Sons; $1250.

Philadelphia, Pa.; Joseph B. Shenfield; one-story brick garage, 15x20; at 5821 Chestnut street; $750.

Philadelphia, Pa.; R. J. Lechner; one-story brick garage, 10x18; at 1204 Windrim avenue; for Louis T. Hoffman; $575.

Philadelphia, Pa.; Lam Building Co.; one-story brick garage, 18x24.4; at 1216 Nectarine street; for Tinius Olsen Testing Machine Co.; $2250.

Philadelphia, Pa.; F. A. Havens Co.; one-story garage, 23x28; at northeast corner Wissihickon avenue and Horter street; for Bromley; $4000.

Philadelphia, Pa.; Fox Brothers; one-story brick garage, 50x200; at 1518-22 Cayuga street; for Sadie Lubarsky; $17,000.

Philadelphia, Pa.; Jeannette L. Harris; one-story brick garage, 19x21; at 6405 N. Sixth street; $1000.

Philadelphia, Pa.; W. J. Gruhler Co.; one-story stone garage, 23x25, with wing 7.6x9; south side Chelten avenue, east Seventh street; for Herbert Webb; $2500.

Philadelphia, Pa.; Samuel Harting; eight one-story brick and stone garages, each 11x23; northeast corner Musgave and Maryland street; for Theodore Ulmer; $6000.

Philadelphia, Pa.; Nicola D. Amico; two-story brick garage, 28x40; north side Gerritt street, east 13th; for Giuseppi Caruso; $4000.

Philadelphia, Pa.; H. C. Krooker; one-story brick garage, 16x20; at 2918 Melvale street; for Dr. M. B. Brenner; $800.

Philadelphia, Pa.; H. Blumenthal; one-story brick garage, 16x16; at 335 Cypress street; for L. Walton; $600.

Philadelphia, Pa.; H. C. Dahl; one-story brick garage, 15x24, at 1941 N. Broad street; for L. J. Link; $1000.

Philadelphia, Pa.; Charles J. Spencer; one-story brick garage 18x29.6, with rear wing 18x62; at 1106-8 East Berks street; for John Winkler; $1200.

Philadelphia, Pa.; Frank & Keiser; one-story brick garage, 14x34; at 600 S. 12th street; for Joseph Krassky; $850.

Philadelphia, Pa.; Moss & Taylor; 16 one-story stone and brick garages, each 12x20; at 803 to 829, 901 and 903 N. 64th street; $11,200.

Philadelphia, Pa.; Metzger & Fisher; one-story brick and terra cotta service station, southeast corner 63rd and Ludlow streets; for Atlantic Refining Co.; $12,000.

Philadelphia, Pa.; E. R. Hall; one-story brick garage, 32x61; north side Kater street, west Alder; for H. S. Ioslovitz; $4000.

Philadelphia, Pa.; L. Davis; one-story stone and brick garage, 11.6x16; at 6702 N. Eighth street; for H. Gelbarth; $500.

Philadelphia, Pa.; E. B. Miller; one-story brick garage, 14.6x22; at 4341 North Darien street; for George Flurer; $700.

Philadelphia, Pa.; John F. Davies; one-story brick garage, 11x17.6; at 1225 Wakeling street; for Edward Pollett; $550.

Philadelphia, Pa.; L. Davis; one-story brick garage, 11.6x18; south side Champlost avenue, east Park avenue; for J. H. Arrup; $600.

Philadelphia, Pa.; George J. Baurele; one-story brick garage, 14.7x21; at 4327 North Darien street; for Edwin Graw; $600.

Philadelphia, Pa.; Liberty Construction Co.; one-story brick garage, 14.10x16; at 731 East Tioga street; for Joseph Sutcliffe; $550.

Philadelphia, Pa.; Berger & Deubbs; one-story brick garage, 18x50; at 2231 N. Fourth street; for George Berk; $1800.

Philadelphia, Pa.; Francis J. Blatz; one-story brick garage, 18x60; at 502-6 Ruscomb street; $1600.

Philadelphia, Pa.; Willard Myers; one-story brick garage, 18.6x36; at northeast corner 20th and Fern streets; for L. B. Levy; $2500.

Philadelphia, Pa.; W. F. Koelle & Co.; one-story garage; at 24-26-30 Germantown avenue; for Breyer Ice Cream Co.; $15,000.

Philadelphia, Pa.; D. C. Moyer & Co.; one-story brick garage, 12x16; at 5443 N. Sixth street; for Howard Shoenning; $500.

Philadelphia, Pa.; Edward T. Bender; one-story frame garage, 18x20; at 3101 Decatur street; for W. J. Gibbons, Jr.

Philadelphia, Pa.; Frank G. English; one-story brick garage, 22x79; at 1629 N. Willington street; for William Boland; $4000.

Philadelphia, Pa.; Thomas Duff; one-story garage, 12x16; at 700 West Wyoming avenue; $500.

Philadelphia, Pa.; George A. Foster; one-story brick garage, 33x76; at 1504-6 Frankford avenue; $3000.

Philadelphia, Pa.; M. Moister & Co.; one-story iron on iron frame garage, 18x20; at 6808 N. 11th street; for D. R. Taylor; $540.

Philadelphia, Pa.; George A. Foster; one-story brick garage, 54.11x24; east side Lei street, north Jefferson; $2000.

Philadelphia, Pa.; Charles Goetz; one-story brick garage, 36x92; at northeast corner Seventh and Bristol streets; $3200.

Philadelphia, Pa.; J. A. Dunkelberger; one-story stone garage, 15x23; at 409 Westview street; for Harold M. Null; $1595.

Philadelphia, Pa.; Joseph Levin; one-story brick garage, 97x135; at 911-15 N. Second street; for S. Ladenson; $12,000.

Philadelphia, Pa.; Max Cotler; one-story garage and storage station, 26x30; at 718-20 New Market street; for Brown & Sons; $5300.

Philadelphia, Pa.; Pasquale Ingenito; one and two-story brick garage, 64x86; at southeast corner Passyunk avenue and Federal street; $4000.

Philadelphia, Pa.; John Y. T. Adair; one-story brick garage, 22x38; west side J street, north Robins avenue, for Emil Lampe; $1000.

Philadelphia, Pa.; Mitchell Brothers; one-story brick garage, 22x26; at southwest corner Blair street and Columbia avenue; for Floyd Garrett Co.; $1000.

Washington, Pa.; Dr. George Kelly, 2 Marden street; one-story commercial garage, 53x62; $8000.

Florence, S. C.; W. D. Harper; two-story brick garage, 42x125; tin roof, concrete floor; for R. D. Oglesby; $17,000.

Laurens, S. C.; A. D. Martin; one-story filling station, 50x125; for Auto Gas and Oil Co.; $2500.

Chattanooga, Tenn.; A. W. Duncan, 506 Duncan avenue; two-story repair shop and supply station, 59x200; for Poindexter & Montague.

Beaumont, Tex.; C. W. Prince; one-story cement block garage; for Mrs. I. Barr; $4000.

Fredericksburg, Va.; Walter Snellings; one-story garage, 23x26; for A. T. Embray; $2500.

Newport News, Va.; George W. Whitley, 920 24th street; one and two-story garage and shop, 75x100 and 50x100; for Enterprise Garage Co., 2805 Washington avenue; $55,000.

Newport News, Va.; James D. Bohlken, 2609 Washington avenue; two-story public garage, 50x100; $25,000.

Norfolk, Va.; W. Joseph Atkinson, Arcade building; two-story garage and service station; for J. D. Stens, Arcade building; $3000.

Norfolk, Va.; Max Colman, 198 Cumberland street; one-story public garage, 47x75; $7000.

Norfolk, Va.; G. F. Cox, Chamberlain building; three one-story garages; for N. W. Hohn, 218 28th street; each $3500.

Clarksburg, W. Va.; I. F. Lawman, 310 North street; one and two-story commercial garage, 100x145; for Garrett Automobile Co., 1302 Second street; $20,000.

Fairmont, W. Va.; Walter Elias; one-story commercial garage, 50x110; for Engineering and Equipment Co., Wheeling, W. Va.; $10,000.

Durham, Wis; G. Wolff, 614 Seventh avenue, Milwaukee; one-story garage, 40x72; for John Bosch; $7000.

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NEW CONCERNS RECENTLY INCORPORATED

Monthly Record of New Business Houses for which Charters Have Been Issued in the Various States and Classified According To Nature of Business.

NEWLY ORGANIZED MANUFACTURERS OF CARS, TRUCKS AND TRACTORS.

Dover, Del.; American Tractor-Harvester Co., Inc.; $500,000; to manufacture, sell and deal in and with tractors; F. R. Hansell, J. Vernon Pimm, E. N. MacFarland.

Dover, Del.; Union Motor Truck Co.; $1,500,000; James R. Tainter, Howard P. Woodworth, George Beaulieur.

Wilmington, Del.; Lancaster Body Co.; $500,000; to manufacture, buy, sell and deal in and with automobiles and parts; T. L. Croteau, M. M. Clancy, P. B. Drew.

Wilmington, Del.; Maximum Tower Co.; $100,000; to manufacture, buy, sell and repair cycles and motor cars; T. L. Croteau, M. M. Clancy, P. B. Drew.

Wilmington, Del.; The Wright Standard Tire and Rubber Co.; $1,000,000; to manufacture automobiles and vehicles of all kinds; T. L. Croteau, M. M. Clancy.

Jackson, Miss.; The Mississippi Motor Co.; $15,000,000; to buy, sell, own or change and deal in and with automobiles, motor trucks and motor vehicles of all kinds and accessories; R. H. Green, J. C. McCarthy, W. B. Carthy.

Newark, N. J.; Martin Motor Co.; $50,000; to manufacture motor vehicles of all kinds.

Trenton, N. J.; Albany Auto Co.; $30,000; to manufacture automobiles, boats, vehicles and airplanes.

Brooklyn, N. Y.; Virkytex Oil and Gas, Inc.; $500,000; to manufacture, sell and deal in anl with automobiles and supplies; Grace L. Perechean, Smith E. Roberts.

Memphis, Tenn.; Superior Motor Co.; $10,000; R. R. Prest, A. B. Lewis, Robert Wilson, W. D. Kyser, J. S. Allen.

PARTS AND FITTINGS MAKERS.

New York, N. Y.; Motoalarm Corporation; $75,000; to manufacture devices for use on automobile radiators; Teresa L. Tompson, Teresa A. Schnickling, Agnes R. May.

New York, N. Y.; Rex Distributing Co., Inc.; $25,000; to distribute spark plugs and automobile sundries; F. Spiro, M. R. Schneer, B. Ladinsky.

New York, N. Y.; Universal Auto Specialty Corporation; $10,000; to manufacture timers for motors, automobiles, engines and cabs; John A. Ferguson, Julia Ferguson, Theodore Fertig.

Rockingham, N. C.; The Auto Service Co.; $150,000; to conduct an automobile and parts supply business; James N. Vaughan.

Akron, O.; Akron Plug Co.; $50,000; Charles H. Spence, J. L. Rose, E. Hackathorn.

Dayton, O.; Gem Auto Co.; $10,000; Philip Burger, Albert A. Hortzman, Calvin H. Merrick, Wm. H. Frame, Lewis P. Poto.

Columbia, S. C.; The Columbia Battery Shop; $2000; W. L. Morris, L. E. Muritiashaw.

GARAGES AND REPAIR SHOPS.

New Haven, Conn.; Triangle Garage, Inc.; $50,000; Chester A. White, James A. McKay.

Chicago, Ill.; Baltimore Avenue Garage; $5000; D. E. Hastetter, C. A. Burnette, R. B. Webster.

Chicago, Ill.; Rector's Garage; $2500; Harlan S. Rector, Ross B. Rector, Glynn W. Smith.

Mt. Washington, Ky.; Mt. Washington Garage Co.; $1000; H. P. Wigginto, Oscar Porter, E. T. McAfee.

Boston, Mass.; Eliot Street Garage Co.; $1,000,000; George W. Harvey, Clinton J. Warren, Charles L. Ayling, George B. Baker, Robert G. Wilson.

Framingham, Mass.; Framingham Garage, Inc.; $25,000; James E. MacPherson, Louis W. MacPherson.

Lexington, Mass; Paul Revere Garage, Inc.; $25,000; to deal in automobiles; Theodore A. Custance, Howard E. Custance, Walter S. Beatty.

Asbury Park, N. J.; Surf Garage; $40,000; J. C. English, Otto Morris, Ward Kremer.

Brooklyn, N. Y.; Erie Basin Auto Repair Co.; $10,000; B. F. McCormick, B. J. McManus, J. B. McManus.

Brooklyn, N. Y.; Marvel Motor Truck Co.; $100,000; to manufacture motors and to conduct an automobile and garage business; A. W. Deal, S. Rampeil, P. Rampeil.

New York, N. Y.; East Eighth Street Automobile and Supply Co., Inc.; $10,000; to conduct a garage; Joseph Richter, M. L. Richter.

New York, N. Y.; Greenwich Village Garage; $10,000; P. Crovo, M. Malavita, F. Camisa.

New York, N. Y.; K. & B. Auto Garage Co.; $10,000; H. Karp, J. Berenson, S. Berenson.

New York, N. Y.; O. K. Garage, Inc.; $8000; to conduct a general garage and automobile storage business; Otto Kolb S. Moerchen, Otto Plotski.

New York, N. Y.; Prime Garage, Inc.; $10,000; K. and A. and M. K. Klepock.

Burgaw, N. C.; Burgaw Garage Co.; $25,000; to conduct an automobile and repair business; J. B. Davis, A. H. Davis, T. A. Barden.

Akron, O.; Central Garage Co.; $500,000; John A. Brittain, George W. Billow, Edwin L. Billow, Robert J. Coleman.

Akron, O.; Star Garage Co.; $50,000; Wilson E. Bickel, Paul E. Meyers, Henry Benhouser.

Dayton, O.; Air City Garage and Tire Co.; $25,000; A. S. James, Harry Glaser, A. J. Kammer, Carl C. Swallow.

Cleveland, O.; Union Garage Co.; $10,000; Wm. S. Salisbury, L. H. Morris, H. M. Frantz, I. C. Frantz.

Philadelphia, Pa.; Biltmore Garage Co.; $18,000; William F. Birch.

Pittsburgh, Pa.; Douglas Garage; $10,000; John E. Crowley.

Newport, Va.; Baker Auto Sales Co. and Repair Shop Corporation; $25,000; R. C. Baker.

ACCESSORIES, EQUIPMENT AND SUPPLIES.

Dover, Del.; American Gasoline Corporation; $3,000,000; T. L. Grotezu, M. M. Clancy, P. B. Drew.

Dover, Del.; Gibraltar Tire and Rubber Corporation; $1,400,000; Richard Kruse, M. A. Heyser, Arthur Watson.

Wilmington, Del.; Ohio Savoid Tire Co.; $2,000,000; P. B. Drew, M. M. Clancy, T. L. Croteau.

New Haven, Conn.; Yale Tire and Rubber Co.; $500,000; to manufacture pneumatic automobile tires; J. E. Hudinger, Charles W. Murdock.

Chicago, Ill.; National Auto Supply Co.; $50,000; O. J. McCalla, Richard E. Kropf, R. B. McFadden.

Chicago, Ill.; Proehl Tire and Rubber Co.; $15,000; David L. Golden, Theresa Nichols.

Des Moines, Ia.; Savage Tire Sales Co.; $100,000; James A. McCoy, J. A. McCoy, Jr.

Louisville, Ky.; Moore & Stevers; $15,000; to manufacture automobile accessories; $15,000; John C. Robinson, P. B. Radin, Robert F. Vaughan.

Boston, Mass., and Lewiston, Me.; Bell Auto Supply Co.; $25,000; Hyman L. Glovsky, Walter R. D. Owen, Abraham Padler.

Boston, Mass.; Bitwel Tire Corporation; $50,000; to deal in rubber tires; John D. Rudnick, David R. Silverman, Harold A. Rudnick.

Boston, Mass.; Standard Tire and Rubber Co.; $150,000.

Mt. Vernon, N. Y.; Mechanical Tire Co.; $10,000; R. and C. S. Bornheim, A. Bers.

New York, N. Y.; G. & G. Tire and Rubber Co.; $20,000; J. M. Goldman, B. Gottlieb, A. J. Halprin.

New York, N. Y.; John Lurie, Inc.; $110,000; to deal in automobile supplies; S. L. Schwartz, H. W. F. Adams, J. Lurie.

New York, N. Y.; Majestic Tire Co.; $10,000; F. Nordenschild, N. Weinberg, M. Levin.

New York, N. Y.; Perfection Tire and Rubber Co.; $100,000; E. W. McCarthy, A. I. Farb, J. T. Lordan.

New York, N. Y.; Stainley Tire and Rubber Corporation; $50,000; H. A. Cohn, S. Fischel, R. Heller.

New York, N. Y.; Tire Service Co.; $25,000; W. Mackey, Charles E. Barker, John S. Oglivie.

Winston-Salem, N. C.; The Foxey Tire Tread Co.; $30,000; to manufacture a flexible steel tire tread for automobiles; M. E. Fox, R. L. Ryan, N. C. Sawyers.

Ashland, O.; Ashland Tire and Rubber Co.; $1000; Harry L. Diebel, A. J. Pepsa, M. T. Vollmer.

Canton, O.; More Mileage Tire Co.; $10,000; to deal in tires and to conduct a tire repairing shop; C. D. Burns, B. A. Cope, O. C. Rardon.

Cleveland, O.; Atlas Tire and Rubber Co.; $50,000; Joe M. Mendelson, A. J. Schanfarber, B. D. Gordon.

Cleveland, O.; Brown & Caine Co.; to deal in automobile accessories; Ogden W. Brown, Philip R. Dawson, Tracy H. Duncan.

Cleveland, O.; Ohio Auto Equipment Co: $25,000; Ben B. Wickman, John L. Cannon, M. L. ReLoeken.

Cleveland, O.; Penn-Ohio Tire Distributor Co.; $10,000.

Cincinnati, O.; Heisey Tire and Rubber Co.; $50,000; H. C. Heisey, Walter Schmitt, H. Albert Lackman, O. Alvin C. Broeman.

Philadelphia, Pa.; Tire Service Co.; $10,000: Paul Jann.

Knoxville, Tenn.; Holston Motor and Tire Co.; $5000; S. B. Griffin, James Walker, C. E. Susong, Ira S. Griffin.

Memphis, Tenn.; The Wood-Wilson Tire Co.; $15,000; to deal in automobile accessories and equipment; H. C. Wood, J. S. Wilson, Dr. A. A. Johnson, Isadore Scott, Harry Spears.

Lebanon, Va.; The Lebanon Motor and Supply Co.; $10,000; T. B. Lynch, J. C. Monk, C. R. Lynch.

Huntington, W. Va.; Huntington Storage Battery Co; $10,000; O. A. Blair, R. V. Surbaugh, T. A. Barden.

Galveston, Tex.; Chicago Tire and Adjustment Co.; $10,000; J. L. Carter, George E. Haussinger, Fred E. Hempel.

DEALERS IN AUTOMOBILES, MOTOR TRUCKS AND TRACTORS.

Birmingham, Ala.; Cox Motor Co.; $5000; S. M. Cox, W. B. Hicks, Grace Alexander.

Birmingham, Ala.; Ranger Motor Sales Co.; $10,000; W. E. Hammers, Charles Wegelin, C. D. Dodge.

Montgomery, Ala.; Rainbow Auto Co.; $10,000; E. L. Marx, W. Rainer, E. H. Noa, G. D. Ownes.

New Haven, Conn.; The Ford Owners' Associates, Inc.; $50,000; to deal in automobiles and conduct a general automobile garage business; Della F. Malhoit, Alfred O. Poirer, Ernest F. Bennet.

Washington, D. C.; Capital City Sales Co.; $10,000; to deal in and with automobiles and motor bodies; Harry V. Ruebsam, Harry M. Henderson, M. A. Ballinger.

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Dover, Del.; Beams Own, Inc,; $110,000; to conduct a trucking, hauling and draying business; T. L. Croteau, P. B. Drew, M. M. Clancy.

Dover, Del.; General Auto Sales Co.; $50,000; W. J. Goulden, Edward J. Kelly, Mary L. Cutton.

Dover, Del.; Lancaster Body Co.; $500,000; to deal in automobiles and parts; M. M. Clancy, T. L. Croteau, P. B. Drew.

Dover, Del.; Motor Appliance Corporation; $1,000,000; to deal in automobiles; Samuel B. Howard, Robert K. Thistle, Arthur W. Britton.

Brunswick, Ga.; Atlanta Motor Co.; $80,000; to buy and sell automobiles, motor trucks and motor vehicles of all kinds and all parts equipment, supplies, accessories and appliances.

Frankfort, Ky.; Lawrenceburg Service Motor Co.; $25,000; James O. Roberts, Edwin Norris, Frank English.

Chicago, Ill.; Biddalo Automobile Co.; $20,000; Harry L. Blim, M. J. Flaherty, M. L. Mueller.

Chicago, Ill.; Chicago and Indiana Motor Transportation; $10,000; Wilbur C. Bacon, Robert M. Pierson, Harry Lunt.

Chicago, Ill.; Hartnett-Stewart Motor Co.; $30,000; W. E. Waugh, Max Haloff, L. L. Hisey.

Chicago, Ill.; Highway Motors Co.; $100,000; Wm. J. Harsch.

Chicago, Ill.; Twenty-Four-Hour Auto Service Co.; $30,000; Capt. B. Lipsner, William Winek, Harry Block.

Peoria, Ill.; The Moon Motor Sales Co.; $10,000; to deal in automobiles; William A. Hoerr, Edward C. Leisy, W. T. Irwin.

Franklin, Ind.; Franklin Motor Car Co.; $40,000; to deal in automobiles; Arno E. Spielberg, Wm. L. Ross, Grace Spielberg.

Indianapolis, Ind.; Jones-Whitaker Sales Co.; $100,000; to buy, sell and exchange automobiles; Ocie M. Jones, Granville T. Whitaker, Virgil L. Jones.

Whiting, Ind.; The Sheffield Co.; $35,000; J. H. Fetterhoff, Alfred J. Sloan, Mike Bukvick.

Davenport, Ia.; Schrup Motor Car Co.; $25,000; to buy and sell automobiles and supplies and to conduct a service station; A. F. Schrup, John W. Schwind, Jr., George J. Schrup, Clarence T. Schrup.

Boston, Mass.; Commonwealth Motors, Inc.; $60,000; to deal in motor vehicles; Adonis D. Howard, Harrison D. Dockray, Alfred L. West.

Framingham, Mass.; Framingham Motor Supply and Tire Exchange; $10,000; Joseph J. Madeau, George H. Farrar, Samuel Rubin.

West Springfield, Mass.; Boutwell, Dewsnap & Field; $25,000; Harris M. Boutwell, Stanley Dewsnap, Harlan Field.

Worcester, Mass.; Robert D. Hunter Co.; $10,000; to deal in automobiles and accessories; Duncan MacLennan, M. F. MacLennan.

Detroit, Mich.; Security Motor Corporation: $8,000,000; W. A. Chapman.

Grand Rapids, Mich.; The Kalamazoo Motors Corporation; $250,000.

Belt, Mont.; Chamberlain Motor Co.; $40,000; A. E. Chamberlain, Arthur Chamberlain, Maud J. Chamberlain, Bertha K. Chamberlain.

Butte, Mont.; Overland Butte Co.; $100,000; to buy and sell automobiles; Roy Hitchcock, M. L. Goodkind, O. W. McConnell.

St. Louis, Mo.; Hammond Motor Co.; $3600; to deal in trucks and tractors; Louis A. Stenkel, Herbert E. Hammond, Charles H. Sandhaus, Herbert H. Hammond.

Elizabeth, N. J.; Standard Motor Car Co.; $100,000; Charles Sanders, W. F. Charlock, H. K. Corban.

Hackensack, N. J.; New Jersey Auto Co.; $15,000; T. S. C. Halberton, H. C. Leonard, R. B. Altschuler.

Brooklyn, N. Y.; Geizmann Motor Engine Co.; $5000; E. F. Feizmann, L. F. Feizmann, J. G. Schmitt.

Brooklyn, N. Y.; P. & K. Auto Service Co.; $5000; to deal in automobile supplies and accessories; F. A. Kunzing, Arthur M. Pippin, Carl Pflunger.

Brooklyn, N. Y.; Scott Motor Co.; $5000; E. Wyman, M. F. Gossett, W. A. Scott.

Brooklyn, N. Y.; Silsbe-Du-Temple Motors Corporation; $100,000; to deal in automobiles and accessories; Milton Hertz, Henry Weismann, S. F. Burkard.

Brooklyn, N. Y.; Smith-Schermerhorn Corporation; $10,000; to conduct an automobile business; Otis F. Presbrey, Pierrepont Davenport.

Buffalo, N. Y.; Farsca Motors Corporation; $100,000; J. W. Farrar, B. J. and A. M. Seaman.

Buffalo, N. Y.; Jones Motor Sales Co.; $25,000.

Buffalo, N. Y.; Standard "Eight" Sales Corporation; $150,000; to deal in automobiles and motor vehicles; G. L. Reichardt, M. Packard, J. E. Barry.

New York, N. Y.; Aetna Motors Corporation; $50,000; J. C. Kennedy, D. E. Jacobson, J. C. Peters.

New York, N. Y.; Bennet & Sigerson, Inc.; $5000; H. and N. A. Bennet, E. B. Sigerson.

New York, N. Y.; California Motors Corporation; $5000; to deal in automobiles and motors; A. T. Smith, Edward B. Abbey, H. L. Abbey.

New York, N. Y.; Dixie Auto Sales Co., Inc.; $10,000; Maurice Steiner, F. Hartstein.

New York, N. Y.; Hartman & Inman, Inc.; $10.000; H. B. Hartman, W. Inman, J. P. Quirk.

New York, N. Y.; May Motors Service Co.; $5000; J. Jacobson, J. Kennedy, H. May.

Akron, O.; Industrial Motor Service Co.; $50,000; Edmund Burroughs, Elmer Tham, Charles La Mont.

Cleveland, O.; Amateur Automobile Association of America; $10,000; H. G. Tremmel, H. C. Boester, M. J. Herr, A. Stickney.

Cleveland, O.; Automobile College of Cleveland Co.; $10,000; S. D. Corlett, A. E. Powell, John W. Leahy, A. L. McGannon, John S. Mazanec.

Cleveland, O.; Goldie Auto Livery Co.; $10,000; I. Grohs, S. T. Powell, F. M. Wheeldin, P. Kuederle.

Cleveland, O.; Kyman Brothers Co.; $10.000; Mary B. Grossman.

Cleveland, O.; Leech Motor Co.; $100,000; Edward P. De Gollier.

Cleveland, O.; Metal Auto Block Co.; $24,000; William Linguist.

Cleveland, O.; Tacoma Auto Service Co.; $30,000; Val F. Housmann.

Cleveland, O.; Triangle Auto Service Co.; $10,000; Mel Stringer, Edward W. Hoffman.

Cincinnati, O; A. B. C. Motor Car Co.; $10,000; E. H. Strong, W. D. Megrue, W. E. Braun, Leo H. Beckman.

Dayton, O.; Co-Operative Vulcanizing Co.; $5000; Elmer W. Mink, Clyde C. Clem, Verner B. Du Vall.

Dayton, O.; Gid Kramer Co.; $15,000; to deal in cars and tires; Gid Kramer, E. P. Coffman, F. T. Griest.

Fremont, O.; Fremont Motor Sales Co.; $20,000; L. G. Post, Chester A. Culbert, Dr. C. R. Truesdale, Cienna Post, J. C. Clarkson.

East Liverpool, O.; Standard Motor Sales Co.; $20,000; Peter Mullen, W. C. Brown, J. Homer Browne.

Portsmouth, O.; F. E. Byran Auto Co.; $10,000; Frank E. Byran.

Portsmouth, O.; The United Transfer Co.; $5000; Robert F. Bayerl, Samuel E. Frowine, Henry Bayerl.

Pittsburgh, Pa.; Selden Automobile Corporation; $25,000; K. K. Cunningham.

Allendale, S. C.; Allendale Motor and Battery Co.; $5000; to conduct a general automobile business; W. M. Lightsey.

Charleston, S. C.; Overland-Harper Co.; $10,000; J. C. Harper.

Columbia, S. C.; The Charleston Aero Association; $10,000; to conduct a general business in motors, accessories and to transport passengers, for pleasure and for business; Harry Ariall, John Klenke, J. D. E. Meyer.

Greenville, S. C.; Greenville Cadillac Co.; $36,000; W. H. Thompson.

Carthage, Tenn.; Carthage Motor Co.; $25,000; W. B. Ford, N. G. Lee, C. S. Baker, J. B. Flippin.

Memphis, Tenn.; Cotton States Motor Cars Co.; $50,000; John T. Walsh, C. R. Arnoult, L. J. McGaughran.

Huntington, W. Va.; Elcar Motor Sales Co.; $50,000; P. C. Parker, H. L. Hamilton H. Thompson.

Memphis, Tenn.; Wood-Wilson Tire Co.; $15,000; to deal in automobile tires, accessories and equipment; H. C. Wood, J. S. Wilson, Dr. A. A. Johnson.

Nashville, Tenn; Mississippi Automobile Accessory Co.; $75,000; D. D. Price, J. A. Thompson, A. R. Casey, E. H. Trenary, H. H. Price.

Pulaski, Tenn.; Martin Motor Co.; $5000; W. F. Martin, C. H. Witt, Sam Smith, W. H. Wilson, C. L. Hamlin, Andrew Mitchell.

Financial Notes

FISK RUBBER.

The growth in the sales of the Fisk Rubber Co. has made desirable at this time a revision and increase in the capitalization and the directors have consequently decided to issue $15,000,000 of new seven per cent. first preferred and $2,500,000 of seven per cent. second preferred. The first preferred will be issued at $100 and the second preferred at $135 per share. Both issues have been underwritten. With the proceeds from the sale of the new first preferred and additional second preferred the present first preferred, callable at $120, and the first convertible preferred, callable at $110 a share, will be retired.

The first preferred stockholders of record June 10 will have the right to subscribe to the new first preferred stock and second preferred and common stockholders of record July 15 will have the right to subscribe to the new second preferred.

The capitalization of the company after the new financing will consist of $15,000,000 of seven per cent. first preferred, $7,000,000 of seven per cent. convertible second preferred and $8,000,000 of common stock.

DU PONT.

The du Pont interests, under the leadership of Pierre S. du Pont, chairman of the board of directors of the E. I. du Pont de Nemours & Co., are planning the formation of a $250,000,000 du Pont Securities company, to be capitalized with 2,500,000 shares of $100 par value each. The new company's stock will be exchanged par for par for the stock of the explosives company. It was explained recently by officers of the company that the directors were finding it desirable to invest a considerable part of the surplus which has been accumulating ever since the European war started in industries other than the explosive business. Now it is supposed these investments will be made for the benefit of the new du Pont Securities company, while the explosives business will continue under the management of the du Pont de Nemours & Co. organization.

STROMBERG CARBURETOR.

The Stromberg Carburetor Co. of America, Inc., for the three months ended March 31 last, reports earnings of $157,146 and other income of $1514, making total income of $158,661. Administration and general expenses amounted to $46,959, leaving net profits of $111,702. A reserve of $25,000 was set aside for Federal taxes for 1919, and on March 15, 1919, $25,000 was paid for war taxes. Dividends amounting to $50,000 were paid, leaving a total surplus as of March 31, of $1,207,312. The consolidated balance sheet shows cash amounting to $36,220, Liberty bonds, $50,000; notes and accounts receivable of $212,277, inventories of $566,998, and deferred charges of $66,068. Property and plant were carried at $589,357 and patents at $131,476, making total assets of $1,652,397. Accounts payable and accrued accounts amounted to $135,597, the reserve for Federal taxes to $25,000, and deferred liabilities to $1,207,312.

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Stocks on New York Exchange

Securities and Markets
Financial Personals

Automobile and Tire Quotations

New York Stock Market

Following are the quotations at the close on June 22:

	Bid	Asked
Ajax Rubber	93¾	94
Allis-Chalmers Mfg.	42⅝	43
Allis-Chalmers, pfd.	95⅝	95¾
American Bosch	102½	103
Cent. Foundry	23	24
Cent. Foundry, pfd.	49	49½
Chandler Motor	213	214
Electric Storage Battery	84	89
Fisher Body	87½	89½
Fisher Body, pfd.	99⅜	99¾
General Electric	163	165
General Motors	240	240¼
General Motors, pfd.	94	94¼
General Motors, 6% deb.	90	90⅛
Goodrich, B. F.	79⅛	79⅝
Goodrich, B. F., pfd.	105½	106
International Harvester	142	143¼
International Harv. pfd.	119½	120¼
Kelly-Springfield Tire	123½	125
Kelly S. T., pfd.	98½	100
Kelsey Wheel	55	56
Kelsey Wheel, pfd.	100	101
Keystone Tire	103¼	103½
Lee Tire	33	33½
Maxwell Motors	48½	48⅞
Maxwell 1st pfd.	77¼	77⅞
Maxwell 2nd pfd.	38½	39⅜
Pierce-Arrow	62⅜	62⅝
Pierce-Arrow, pfd.	106	108
Republic Motors	55	56
Stromberg Carb.	56½	57½
Studebaker	105½	106
Studebaker, pfd.	99½	100
Stutz Motor	*72	72¾
U. S. Rubber	126¾	127
U. S. Rubber, 1st pfd.	115	115½
Westinghouse	56¾	57⅛
Westinghouse 1st pfd.	70	75
White Motors	56½	56¾
Willys-Overland	35½	35⅞
Willys-Overland, pfd.	95½	97

*Ex-dividend.

STEEL MARKET.

Pittsburgh—There has been a further improvement in the demand for sheets and the great bulk of the business is being done at full or regular prices. There continues to be shading, but it affects no more than approximately 10 per cent. of the total sales. No serious fears are entertained that wage disputes will interfere with mill operations. While it is quite improbable that an agreement will be reached by July 1 with the Amalgamated Association on the scale, it is thought that there will be no more idleness than that of a few union mills at the outside.

An order for 245,000 tons of steel has been placed with the United States Steel Corporation by the General Motors Corporation. The Ford Motor Co. has placed an order for 150,000 tons.

Demand for long ternes, which are used almost exclusively by automobile builders for certain parts of cars in place of galvanized sheets, is very heavy, and some mills are sold out for three or four months to come.

Chicago—Mill quotations are 4.35c for No. 28 black; 3.55c for No. 10 blue annealed and 3.55c for No. 28 galvanized. Jobbers quote Chicago delivery out of stock: No. 10 blue annealed, 4.57c, No. 28 black 5.37c and No. 28 galvanized, 6.72c.

NEW YORK METAL EXCHANGE.

These prices were quoted on the New York Metal Exchange:

	May 23 Bid	May 23 Asked	May 21 Bid	May 21 Asked
Lead	..	..	5.20	..
Spelter	..	..	6.60	6.90
Antimony	..	8.50	..	8.50
Aluminum	*32.00	33.00	*32.00	33.00
Iron, No. 2 X Silicon	..	31.90	..	31.90

*Nominal.

Electrolytic copper was quoted in the open market at 17¾c, 30 days; on Metal Exchange 17⅝c for spot.

DECLARED DIVIDENDS.

Company	Rate	Payable	Stock of Record
Advance Rumely, pfd.	1½%	*July 1	June 16
Allis-Chalmers Mfg., pfd.	1¾%	*July 15	June 30
do back	¾%	July 15	June 30
American Bosch Magneto	$1.50	*June 30	June 15
Apsley Rubber, pfd.	3½%	**July 1	June 30
Avery Co., pfd.	1¾%	*July 1	June 21
B. F. Goodrich Co.	$1.00	*Aug. 15	Aug. 5
Chandler Motor Car	4%	*July 1	June 18
Continental Motors, pfd.	1¾%	*July 15	.....
E. I. du Pont de Nemours debenture stock	1½%	July 25	July 10
Electric Auto-Lite, pfd.	1¾%	*July 1	June 24
Electric Storage Battery	1%	*July 16	July 1
do pfd.	1%	*July 16	July 1
General Electric	2%	*July 15	June 7
do stock	2%	*July 15	June 7
General Tire and Rubber, pfd.	1¾%	*July 1	June 20
Goodrich, B. F., pfd.	1¾%	*July 1	.....
Goodyear Tire and Rubber, pfd.	1¾%	July 1	.....
Gray & Davis, pfd.	$1.75	*July 1	June 20
Hupp Motor, pfd.	1¾%	*July 1	June 20
Kelly-Springfield Tire, pfd.	$1.50	*July 1	June 16
Keystone Tire and Rubber	3%	*July 1	June 24
Mason Tire and Rubber, pfd.	1¾%	*July 1	June 10
Pennsylvania Rubber	1½%	*June 30	June 15
do pfd.	1¾%	*June 30	June 15
Pierce-Arrow Motor, pfd.	2%	*July 1	June 16
Reo Motor Car	2½%	*July 1	.....
Sims Magneto Corp.	$1.50	*June 30	June 14
Stutz Motor Car	$1.25	*July 1	June 3
Westinghouse Electric Mfg., pfd.	$1.00	*July 15	June 30
White Motor	$1.00	*June 30	June 14
Willys-Overland, pfd.	1¾%	*July 1	June 20

*Quarterly.

**Semi-annually.

Automobile Stocks

	Bid	Asked
Chalmers	9¼	9¾
Chevrolet	230	300
Hendee Mfg. Co.	33	36
Hupp Motors	11½	11¾
Inter Motor	50	55
Inter Motor, pfd.	85	95
Inter Motor, 2nd pfd.	60	65
Mitchell Motors	35	55
National Motor	20	30
Peerless	38½	39½
Scripps Booth	20	50
United Motors	49	54

CHANDLER MOTOR.

The Chandler Motor Car Co. has declared a quarterly dividend of $4 a share, payable July 1 to holders of record June 18. This places the stock on a $16 annual basis, as compared with the $12 yearly rate which has obtained heretofore.

Following the meeting of the directors of the company President Chandler issued the following statement:

"Business is splendid and the directors feel justified in putting the stock on a regular dividend basis of $4 quarterly. The 1919 output will be the largest the company has ever had and this will be the most prosperous year in the company's history, and plans call for an even larger output next year. The company is in a very strong cash position, having on hand cash and government securities amounting to $4,500,000."

MARTIN-PARRY.

The Martin-Parry Corporation, representing a consolidation of the Martin Truck and Body Corporation, York, Pa., and the Parry Manufacturing Co., Indianapolis, Ind., has been formed with a capital of 100,000 shares of no par value. The company will go into the manufacture of automobile commercial bodies and parts on an expanding scale. Among the directors will be Guy E. Tripp, James F. Shaw, F. M. Small, S. C. Parry, Walter R. Herrick and George H. Walbridge.

WHITE MOTORS.

Stockholders of White Motors have approved the increase in the capital stock from $16,000,000 to $20,000,000. The intention of the directors to declare part of this increase as a stock dividend only awaits a decision by the United States Supreme Court that such a declaration is not subject to the income tax, which expected to be rendered soon after the reassembling of the court on Oct. 6 next.

FISHER BODY.

The annual report of the Fisher Body Corporation for the year ended April 30, 1919, shows a surplus of $1,298,750 after charges. Federal taxes and preferred dividends, this being equivalent to $6.49 a share on the outstanding common stock. In the previous year the surplus was $2,528,177, or $12.64 a share on the same stock.

GENERAL MOTORS.

The stockholders of the General Motors Corporation have approved an act of the directors increasing the capital stock from $370,000,000 to $1,020,000,000, divided between $500,000,000 debenture stock, $500,000,000 common stock and $20,000,000 preferred stock.

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Gastine Organization Develops World Business

THE GASTINE CO., Bridgeton, N. J., is the manufacturer of the famous product bearing the name Gastine, the power producer, carbon remover and gasoline saver. This product has been on the market for over four years and already has world-wide distribution. The company was started in a small way by its founder, I. W. Goldberg, who is now the president and general manager. Mr. Goldberg, ably assisted by H. L. Whitney, general sales manager; Roger Thomas Butts and Frederick J. Werner, both the latter being connected with the export department, has built up an organization that reaches to the four corners of the earth.

The low grades of gasoline and kerosene need rejuvenation, such as Gastine gives. Poor gasoline causes a quick accumulation of carbon in the cylinders.

The rapid growth of the Gastine Co. is due to the fact that the organizers are practical men. Mr. Goldberg studied chemistry at the West Jersey Military Academy. Mr. Whitney is a practical oil investigator. Fate, it seems, brought these two men together both for the welfare of the motorist and the future of this organization.

During the world war it was a problem for the export department to ship its orders to its distributors in the various parts of the world, but it was one of the very few firms that was never refused an export license to ship Gastine, even though shipping space was at a premium. This is indeed a record that can only be appreciated by men who have had to do with export shipping.

Recently when the luxury tax was put on automobile accessories, the head office of the Internal Revenue Commission issued a ruling that inasmuch as Gastine was a product to rejuvenate low grades of gasoline it was non-taxable.

Many big corporations, chemists and municipalities use, indorse and recommend Gastine. Some recently added to the list are Wilson & Co., the big Chicago meat packer; the chief of the fire department of Birmingham, the City of Waltham, Mass.; Walter H. Flood, expert chemical engineer of Chicago; Milton Hersey & Co., Ltd., Montreal, Canada. And so on it goes, testimonial after testimonial praising Gastine.

The Philadelphia branch of the War Trade Board indorsed and used Gastine, the indorsement coming unsolicited. Gastine booths were in charge of various salesmen at the following shows last spring: New York, Philadelphia, Boston, Allentown, Paterson and some in the West and in Canada. Thousands of boxes were sold at these shows, resulting in many new customers and also many new dealers.

The sales method of this company is a little peculiar, in that it does not sell its output entirely through wholesalers. The company sells through resident distributors, who in turn sell to jobbers, dealers, garages, etc. Many drug stores have recently taken on the sale of Gastine, as well as hardware, department and general merchandise stores.

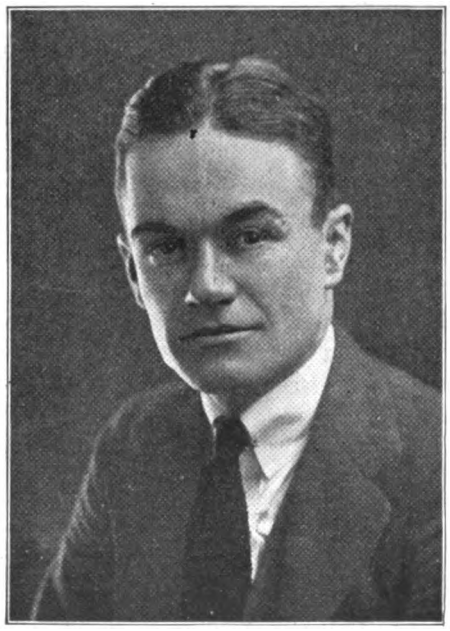
Cloud Again Advance Advertising Manager

Kenneth Cloud has resigned from the Touzalin Agency, Chicago, to resume duties as advertising manager of the Advance Automobile Accessories Corporation, 56 E. Randolph street, Chicago. He was identified with Advance in its early days, when he directed its national campaign. Advance's advertising has become so big that the officers of the company decided to have their own advertising department.

"It is very satisfactory," says M. C. Smith, sales manager of Advance, "when I read out missionary men's reports and find on one after another—'Cork Insert and White Stripe in stock; well satisfied.' Look at these reports—from all over the United States, and most all of them from small towns. That shows we have a good distribution, and if our goods were not right dealers would not stock them. Of course, all the jobbers carry stock—they are supposed to; but it's the dealer's stock that tells the story of successful goods and distribution.

"Advance has territorial salesmen, calling on jobbers, and each salesman has two missionary men constantly combing the territory for new avenues of business. The selling plan has been met by all jobbers and dealers in a most gratifying manner and today, after two years in the field, Advance shows a sales distribution that is quite remarkable."

M. C. SMITH.
Advance's Sales Manager.



K. G. CLOUD.
Advance's Advertising Manager.

MORMILES TABLETS FOR INCREASING GASOLINE EFFICIENCY.

Mormiles tablets are for use in gasoline, kerosene or distillate, for automobiles, trucks, tractors and gas engines. They may safely be used in the highest grade machines. Greater power and mileage are obtained with the added value

of cleaning the motor and keeping carbon eliminated. The manufacturer guarantees that the tablets do not contain anything injurious or detrimental to any metal, or to the mechanism or operation of any motor, carburetor or vacuum feed system.

Mormiles tablets have been manufactured for about two years and have reached such a point of efficiency as to warrant the manufacturer in guaranteeing the product in every respect.

Full information will be supplied by writing to the Mormiles Co., 226 So. La Salle street, Chicago.

Ralph O'Reilly, for two years with the sales department of the Sparks-Withington, Jackson, Mich., is now sales manager.

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©THE FISK RUBBER CO. 1919

THE FEDERAL BUREAU OF MARKETS reports higher depreciation charges on trucks than is necessary. *Good Tires* save trucks, cut down wear and tear and reduce depreciation.

FISK CORD TRUCK TIRES keep your trucks working more steadily and keep them in service longer.

THEY PERMIT sustained running at speed without damage to the truck itself, or damage to perishable or fragile freight.

KEEP ACCURATE cost sheets.

WITH FISK TIRES your operating costs are less: it costs you less per pound of freight per mile hauled. Fisk Tires last longer. Save stress and strain on working parts of the truck.

NEXT TIME—BUY FISK.

FISK TRUCK TIRES

(When Writing to Advertisers, Please Mention the Accessory and Garage Journal.)

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Ahlberg Bearing Co. Has Moved into Its Splendid New Factory in Chicago

The New Factory Building of the Ahlberg Bearing Co., Chicago, Which Is Operated with 17 Branches in Different Cities of the Country.

The Ahlberg Bearing Co., which specializes regrinding worn ball bearings for replacement purposes for motor trucks, passenger cars and machinery, recently moved into a new factory at 317-327 East 29th street, Chicago.

There are numerous interesting aspects of this particular industry. One of these is the exchange system. Throughout the country the company has a chain of branches, located in 17 cities, which have complete stocks of reground and new bearings.

A customer desiring a reground bearing for replacement may take the worn unit from his truck or car and at the nearest Ahlberg factory office exchange it immediately for a reground bearing of the same make and type. No additional charge is made for this exchange service, it being maintained for the customer's benefit.

During the 10 years of its existence the company has accumulated a stock of all sizes and types of bearings, many of which are now obsolete. If a customer has a bearing of obsolete type he can usually have it exchanged at one of the Ahlberg branches without delay, whereas if he tried to secure a new one from the original manufacturer he could not procure it.

At each factory branch there is a service man who has been through a school maintained at the factory, who is able to give customers information of their replacement problems and of new special bearings. Each of these service men have been trained in a course which covers at least a month of full eight-hour days. He first works at what is called the disassembling bench. At this he tears down worn bearings until he is thoroughly familiar with all different types and sizes and the defects of each type and size.

He next works in the grinding room, where he observes the methods of the grinders. He is not permitted to do actual grinding work, as this would interrupt production and might lower the quality which is carefully maintained in the grinding room. From observing the grinders he learns what is necessary to make a perfectly true raceway. He next observes the inspectors and from experience learns the methods of inspection. He is next turned over to the assemblers, who instruct him in the methods of assembling the various types of ball bearings.

Following this and some other steps taken in between he works in the Chicago service department for approximately two weeks. This experience makes him thoroughly capable of giving truck owners or fleet owners the best possible advice obtainable on short notice.

FULLER & SONS MFG. CO. LARGELY INCREASE BUSINESS.

Statement is made by Fuller & Sons Manufacturing Co., Kalamazoo, Mich., that its shipments of products for the first five months of this year exceed by 62 2/3 per cent. the shipments made during the corresponding period of 1918. A great demand exists for the new four-speed type GU transmission gearset for unit mounting for two and 3½-ton chassis. Delivery is just beginning of models LTU-4 and LTU-5 for unit mounting and LT for amidship mounting. These gearsets have a four to one low gear ratio, which is a reduction much desired for truck construction; have three forward speed ratios and reverse, and are fitted for pumps for inflating pneumatic tires and power take-off installations. They are regarded as the greatest advance in transmission gearset design.

SHEEPSHEAD'S WINNERS HAD DIXON'S THROUGHOUT.

Of the nine cars that started in the first 10-mile race at Sheepshead eight were lubricated throughout with Dixon's graphite automobile lubricants. These included Tom Milton, Ralph Mulford and Dario Resta. In the 30-mile event Dixon's finished first, third and fourth, in the Frontenac with Mulford, the Meteor with Dave Lewis and the Mercer with Joe Thomas. In event No. 3 the first, second and fourth winners were Dixonized throughout, in cars driven by Mulford, Joe Boyer and Lewis. In the 50-mile race all but one car was lubricated with Dixon's throughout.

JOIN MOTOR AND ACCESSORY MANUFACTURERS.

The following were recently admitted to membership in the Motor and Accessory Manufacturers' Association:

Auto Wheel Co., Lansing, Mich.; Benjamin Electric Manufacturing Co., 806 W. Washington Boulevard, Chicago, Ill.; Black & Decker Manufacturing Co., 105-115 S. Calvert street, Baltimore, Md.; Budd Wheel Corporation, 22nd street and Lehigh avenue, Philadelphia, Pa.; Columbia Axle Co., 850 East 72nd street, Cleveland, O.; E. Edelmann & Co., 351 East Ohio street, Chicago, Ill.; William R. Johnston Manufacturing Co., 359 East Ohio street, Chicago, Ill.; Parker Axle and Products Corporation, 19 West 44th street, New York; Standard Tire Co., Willoughby, O.; Sunderman Corporation, Lake and Ann streets, Newburgh, N. Y.; Texas Co., 17 Battery Place, New York; U. S. Ball Bearing Manufacturing Co., 4535 Palmer street, Chicago, Ill.

BREMER PERMANENTLY ENTERS FORD RADIATOR FIELD.

The Bremer Manufacturing Co., Chicago, has permanently entered the Ford radiator replacement field during the past year and has developed a replacement business in both fin tube (regular Ford type) and the honeycomb type. Sales Manager Ian E. Maltby reports that the war period left the company with no bad effects and that the Ford replacement department of the business will soon equal the company's special truck and tractor radiator business. The company for many years has been a heavy producer in the truck and tractor field.

FRACTO SPECIALTY CO. TO MARKET DIRECT TO TRADE.

The Fracto Specialty Co., 161 Massachusetts avenue, announces that hereafter it will market its products direct to the trade, discontinuing all connections through which it has sold to the trade. The company is handling Franco lenses, Universal vulcanizers, Ford radiator caps, accelerator foot rests and electrical connections.

ECHOLS VICE PRESIDENT OF GREENFIELD TAP AND DIE.

F. G. Echols, for many years general manager of the small tools department of Pratt & Whitney Co., Hartford, Conn., has accepted a position as vice president of the Greenfield Tap and Die Corporation, Greenfield, Mass.

PRISON FOR AUTO THIEVES.

Gov. Coolidge of Massachusetts has signed a bill which makes the larceny of automobiles or motorcycles a prison offense.

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When Springs Break

put on

VULCAN QUALITY

The Replacement Spring

Dealers in accessories and allied lines who have not entered the "replacement" field are overlooking one of the most profitable branches of the Automobile Trade.

"Spring Service for a Nation"

as rendered by VULCAN is a combination of consumer demand, Supreme Quality and constant supply plus ***Profit.***

It is the ***Foundation*** upon which a profitable and prospering business can be built. ***Write for Particulars.***

Jenkins VULCAN Spring Co.

Factory

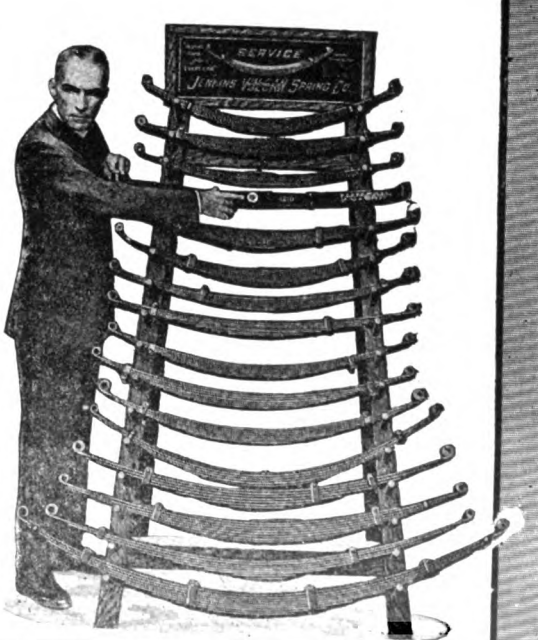
Richmond, Ind.

Branches

Atlanta, Ga. Minneapolis, Minn.
Boston, Mass. Reading, Pa.
Dallas, Tex. St. Louis, Mo.
Sumter, S. C.
Kansas City, Mo.

This Splendid RACK FREE

Ask about How to get it.



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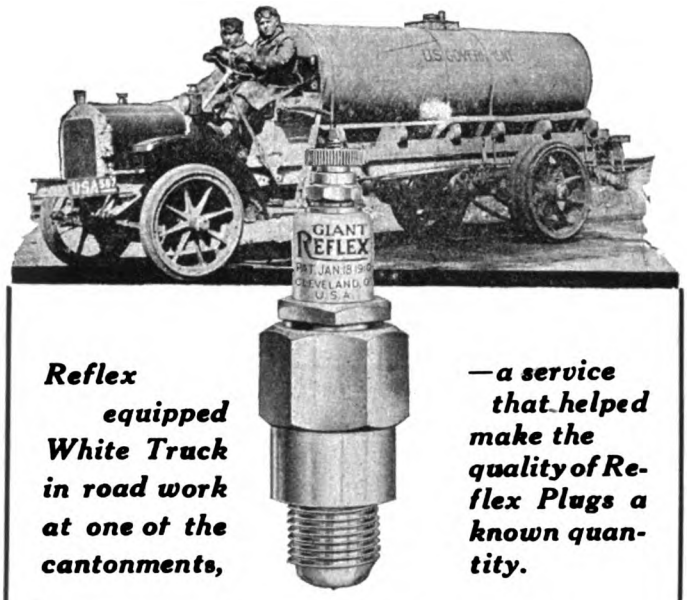

Reflex equipped White Truck in road work at one of the cantonments,

—a service that helped make the quality of Reflex Plugs a known quantity.

Proved Past Performance Sells Reflex Spark Plugs

Past performance sells Reflex Spark Plugs. Dealers point to the real reliability that has been given in the hardest known service—in war and commercial trucks. That is a definite argument which testifies convincingly to the quality of Reflex Plugs—reliability that makes it profitable to sell Reflex Plugs.

In every service these plugs have proved their merit. Good roads are now being maintained good, new roads are being built, and poor ones improved to a great extent by Reflex equipped trucks. In this work as standard equipment on White Trucks, the Reflex "Giant" urged these trucks on rigid schedule through the almost impassable sites selected for cantonments. Next, Reflex Plugs were materially responsible for building roads to them—and later, in keeping them in as good shape as many roads today.

As a dealer you will appreciate these tangible facts—of learning of Reflex past performance.

You can see how Reflex known quality, selected by the critical White engineers because of Reflex high-duty electrodes and cromite war-service porcelain, will make sales and hold trade for you.

And you can learn of the better Reflex proposition by simply writing to your jobber or us today for details. You can learn how the Reflex Company, a long established concern, helps you to sell—how you can sell a Reflex for every purpose to every user whether for passenger car, truck, motorcycle, tractor or motorboat. A post card brings the details.

The Reflex Ignition Company

Dept. A1 Cleveland, U. S. A.

REFLEX SPARK PLUGS

KEEP THE CAR ON THE GO!

THE ACCESSORY AND GARAGE JOURNAL

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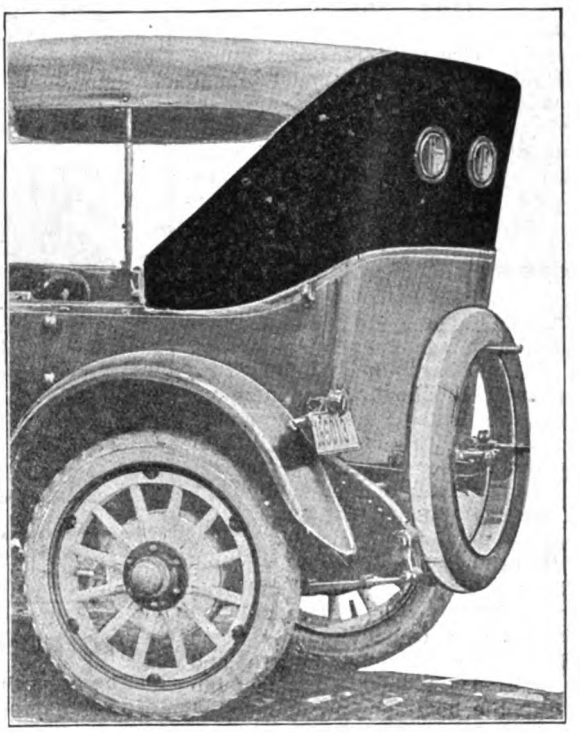

Badger

Back Curtains

With Plate Glass Windows

The very latest, classiest Back Curtain ever put out. "Pierce-Arrow" effect. Rich plate glass windows. Gives touch of distinction that makes motorists eager purchasers.

Heavy demand. Splendid profit allowance to dealers. Pays royal return on small stock investment. Write today for Dealer's Proposition—and ask for catalog of

Badger Seat Covers

Most complete line on the market. Highest quality procurable. Prices that out-bargain those asked for inferior makes. Endless selection of beautiful fabrics and colorings. Guaranteed fit. All makes of cars. Extensively advertised.

Badger Slip Roofs

Simplest—most serviceable of all. Cut by car manufacturers' patterns. Certain fit. Supplied complete. Tacked on in few minutes time. The peer of tops. No competition in quality, convenience or cost.

Badger Tire Covers

Another big BADGER value. A most attractive cover made of most serviceable materials. Highly skilled workmanship. Extreme care in making. A cover that stands the racket—at prices that give you sales security.

Get acquainted with the entire BADGER Line. The most active of accessories sellers.

Wisconsin Auto Top Co.

1 MAIN ST., RACINE, WIS.

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ATLAS TIRE CO. CONDUCTS SPECIAL TIRE SALE.

The Atlas Tire Co., 822 Broad street, Philadelphia, is having a special sale in automobile tires, which are guaranteed for 4000 miles. The company carries a full line of new and constructed tires. Tires and tubes are shipped with express paid. The prices quoted are unusually attractive.

WAR CAR RUMOR MONGER IS AGAIN UNDER ARREST.

Captured by secret service agents, Frank E. Speicher, who is alleged to have spread throughout the country rumors that the United States government planned to flood the market with war cars, is again under arrest.

SHEEPSHEAD RACES.

(Continued from Page 22.)

whirled down the home stretch and over the line, leading by more than a mile.

Lewis came in second by only three feet, Boyer third, Thomas fourth and Hickey fifth. De Palma on his last lap came down the home stretch at a speed estimated at about 115 miles an hour.

Nearly all of the races were run at a speed of between 112 and 113 miles an hour average.

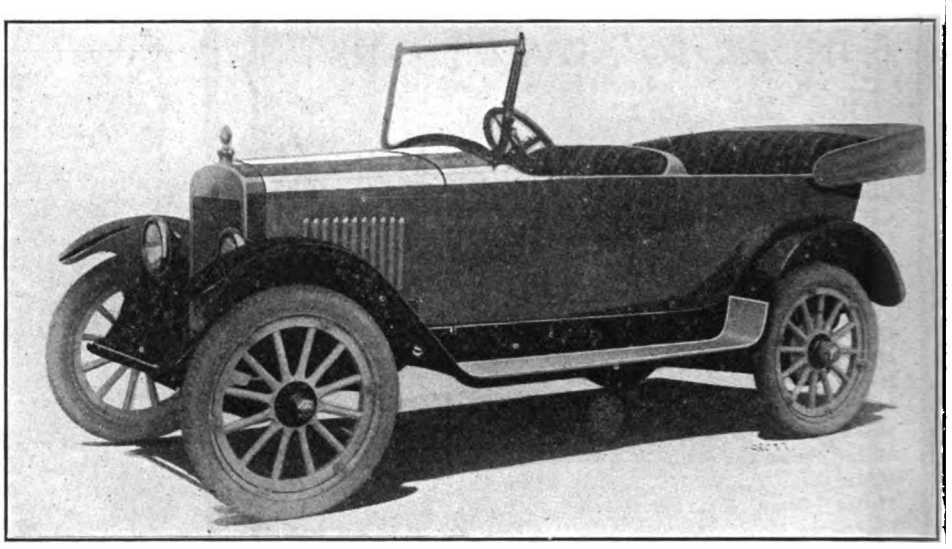
THE SUMMARIES.

Ten miles, race one, Class E, non-stock, 300 or under cubic inches displacement—Won by Tom Milton, Duesenberg; Ralph Mulford, Frontenac, second; Dario Resta, Resta Special, third (time, 5:20 1/5; new record); De Palma, Packard, fourth; Ray Howard, Peugeot, fifth; J. M. Reynolds, Frontenac, sixth; Joe Thomas, Mercer, seventh; Ralph Mulford, Frontenac, eighth. Ira Vail, Hudson, quit from engine trouble at six miles. Louis Chevrolet, Frontenac; Dave Lewis, Meteor, and Joseph Boyer, Jr., Frontenac, were scratched.

Thirty miles, Class E, non-stock, 300 or under cubic inches displacement—Won by Ralph Mulford, Frontenac; Ralph De Palma, Packard, second; Dave Lewis, Meteor, third (time, 16:20 3/5 (new record); Joe Thomas, Mercer, fourth. Louis Chevrolet, Frontenac, quit at three miles because of burnt valves. Dario Resta, Resta Special, quit at eight miles because of blown out spark plugs. Ray Howard, Peugeot, quit at 15 miles because of engine trouble. Denny Hickey, Stickel, was distanced and dropped out at 26 miles. Tom Milton, Duesenberg, was making repairs and did not start. J. M. Reynolds, Frontenac, because of burnt bearings, did not start. Ira Vail, Hudson, and Joseph Boyer, Jr., Frontenac, were scratched.

Ten miles, race two, Class E, non-stock, 300 or under cubic inches displacement—Won by Ralph Mulford, Frontenac; Joseph Boyer, Jr., Frontenac, second; Ralph De Palma, Packard, third; Dave Lewis, Meteor, fourth; Joe Thomas, Mercer, fifth. Time, 5:24 1/5. Tom Milton, Duesenberg, quit on first mile, engine trouble. Resta, Resta Special; L. Chevrolet, Frontenac; Hickey, Stickel; Reynolds Frontenac; Vail, Hudson; Howard, Peugeot, were scratched.

Fifty miles, Class E, non-stock, 300 or under cubic inches displacement—Won by Ralph De Palma, Packard; Dave Lewis, Meteor, second; Joseph Boyer, Jr. Frontenac, third. Time, 26:23 1/5 (new record). Hickey, Stickel; Thomas, Mercer, distanced. Resta, Resta Special, quit on first mile, engine trouble; Vail, Hudson, quit on sixth mile, engine trouble; Milton, Duesenberg, quit on 12th mile, engine trouble; Mulford, Frontenac, quit on 30th mile.



The New Olympian—This Is a Four-Cylinder, Five-Passenger Touring Car, Selling for $1240. It Is Claimed That the Olympian Can Be Driven from Three Miles an Hour to More Than 50 Miles in High, with 26 Miles on a Gallon of Gas.

Champion Spark Plug Salesmen In Session

The seventh mid-year sales convention of the Champion Spark Plug Co., held in Toledo the week of June 9-15, was a record breaker in many respects, particularly from an attendance standpoint. More than 125 factory representatives of the big Toledo concern answered to the roll call on Monday morning, this being the largest gathering of salesmen ever brought together by a manufacturer of spark plugs.

E. B. Caswell, sales manager of the company, believes that a specialty salesman cannot know too much about the article he is selling. For that reason he calls the Champion representatives together twice a year from all parts of the United States and Canada and devotes a week to coaching them on the finer points of salesmanship.

The convention program this year included regular business sessions every morning and afternoon at which officials of the company, heads of the different departments and a number of specialists in other lines of business addressed the men on various subjects relating to salesmanship. Other features were a trip to Detroit and inspection of the company's big insulator plant located there, the breaking of ground in Windsor, Ontario, for the new $250,000 Canadian plant of the company, an athletic meet at Toledo Beach and various social functions.

President R. A. Stranahan welcomed the men to Toledo and Sales Manager Caswell spoke on "Selling Without Misrepresentation." Robert Martland, secretary of the California Trades Association, addressed the Monday afternoon session, followed by H. L. Corey, advertising manager. and O. C. Rohde, chief engineer of the Toledo concern. In the evening special cars were run out to the Toledo Yacht Club, where dinner was served, the men getting their first glimpse of the huge arena built for the Willard-Dempsey fight.

Early Tuesday morning the sales force left for Detroit. A fleet of motor cars met the men at the station and drove them out to the Jeffery-Dewitt plant where the famous 3450 Champion insulators are produced. A new leer, or tunnel kiln more than 300 feet long was the chief center of attraction, although every step in the art of making porcelain proved a study in itself. After a luncheon at the Detroit Athletic Club the salesmen crossed over to Windsor, where special cars were waiting to take them out to the site recently purchased by the Champion Spark Plug Co. for its Canadian plant. Mayor Winter and other Windsor officials attended the ground breaking ceremonies, the Mayor turning the first sod. The return trip to Toledo was made by boat.

On Wednesday the business session were resumed at the Champion Convention Hall. Lieutenant Commander J. L. Moots, medical chief for the company, Dr. C. B. Lundy, superintendent of the recreation committee; George W. Frit field secretary of the Automotive Equipment Association, and a number others addressed the meeting. An athletic meet, in which all members of the sales force participated, was held at Toledo Beach late in the afternoon. The was followed by a barbecue luncheon the beach.

Thursday was devoted entirely to business. Among the speakers not affiliated with the company were E. A. Hart of the Willys-Overland Co. and Rice Wray the New York Life Insurance Co. The big banquet of the week was held at the Toledo Club in the evening, the feature of which was the distribution of cash prizes awarded by Mr. Caswell to members of the sales force. Seventy-three prize checks, totaling several thousand dollars, were given to those who had shown unusual ability during the past year.

On Friday and Saturday the men were grouped for special class meetings, supervised by the territorial managers. Saturday night saw most of them gone.

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GARDNER AIR PUMPS

Result of 50 years manufacturing experience.

An inefficient air pump makes your air service expensive. It hurts the quality of your service.

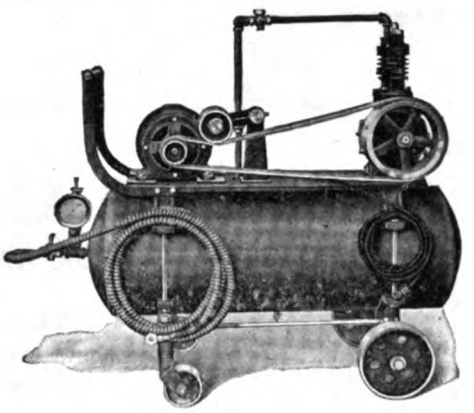
Makes a customer dissatisfied and hurts your business generally.

Install a GARDNER

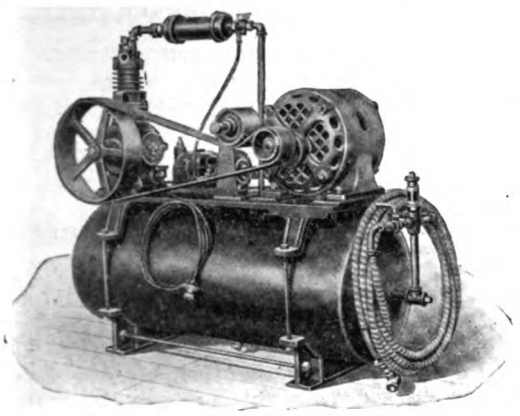
It will pay for itself in a short time.

It is simple, rugged and efficient.

The fact that many filler stations supplying hundreds of car owners daily use the Gardner air pump is proof that experience had demonstrated it is economical.



GARDNER AIR WAGON



GARDNER AUTOMATIC UNIT

Made in Single and Two Stage Types

Variety of sizes ***Prompt shipment***

There is a Gardner Air Pump to meet the demands of every garage no matter how large or small.

Ask your jobber for prices.

THE GARDNER GOVERNOR COMPANY

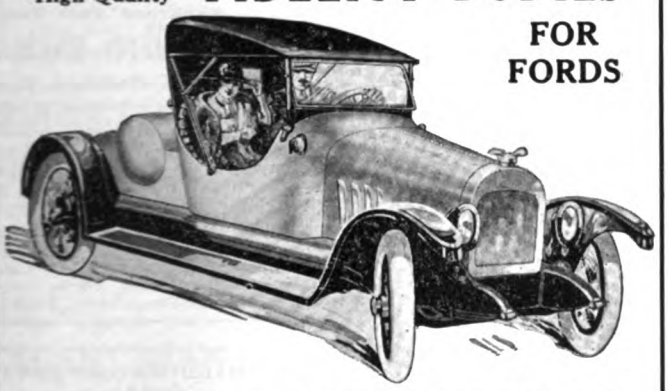
138 Williamson Street, Quincy, Ill.

Garage Department

The Little Salesman

Our Dealers' Confidential Price List Shows These

Low Priced High Quality **FIDELITY BODIES FOR FORDS**



Make money on second-hand Fords by EQUIPPING THEM WITH FIDELITY BODIES. They are Handsome, Stylish, Sturdy and Comfortable and LOW-PRICED. Made in Runabout, Roadster and Touring Styles.

Do you get the "Little Salesman," our Dealers' Confidential illustrated net Price List of

AUTOMOBILE SUPPLIES

We are mailing it to over 80,000 dealers, every 60 days—if you don't get it, it is because we haven't your address.

THE NEW ENGLAND MILLS CO.

1219-1221 South Michigan Avenue CHICAGO

WE SELL WHOLESALE ONLY!

Attention! American Manufacturers

London Engineering and Motors Company

Dacre House, Victoria Street Westminster, London

Import and export all classes of goods; sell and buy on commission and on own account.

Limited number of Agencies for good American Manufacturers solicited.

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TRADE OUTLET

PURITAN HAS IT

New Parts for All Cars — *IF IT'S FOR AN AUTOMOBILE* — We Do Not Wreck Cars

SEND FOR MONTHLY BARGAIN BULLETIN

STARTING AND LIGHTING BATTERIES

BRAND NEW—guaranteed—with universal terminals will fit most every car.
6-volt, 110 ampere.....$25.00
12-volt, 60 ampere..... 36.00
Send for Our Circular (Electrical) H-400

ELECTRICAL MATERIAL.

6 volt Autolite Generators $15.00
6 volt Ward Leonard Starting Motors with Bendix Drive 15.00
6 volt Menominee Lighting Generators..... 12.50
6 volt Menominee Generators—complete with all attachments for Fords.. 23.50
Master Vibrators for Fords 1.98
12 volt Klaxon Horns for Dodge and Maxwells.... 15.00
6 volt Trojan Motor Horns 2.90
Bijur Starting and Lighting System for Scripps-Booth 35.00
Bosch DU4 Magnetos—rebuilt 35.00

CARBURETORS.

1 inch Kingston top intake
1 inch "R" Schebler Carburetors 12.50
1 inch Zenith Carburetors, top intake..... 12.50
Fletcher Carburetors for Fords 8.50
Gardner Carburetors for Fords 8.50

SPARK PLUGS SPECIAL.

$1.00 ½ inch Sando Spark Plugs—each 35c
.90 ½ inch Champion X Plugs—only 4 to a customer 45c
1.00 Red Head Spark Plugs—all sizes.....45c
1.09 A. C. ½ inch special plugs 45c
1.25 Marcy ⅞ plugs....19c
1.25 Marcy—Metric—Motorcycle size.....19c
1.00 7.8" Spark Plugs.....19c
1.00 Bethlehem ⅞" Extension A. L. A. M....45c
1.00 Bethlehem ⅛" Extension 45c
1.25 Jumbo ⅛" Extension..45c
1.00 A. C. 7.8" long—Dodge 45c
2.50 Mosler Spitfire ⅞ A. L. A. M.....45c

FOR YOUR FORD.

Racing type bodies—snappiest, easy riding, speedster outfit on the market. Includes gas tank, nicely upholstered seats, cowl, etc.....$60.00

SPECIAL RATIO RACING GEARS, 2¾ AND

3 to 1 ratio ring gear and pinion $15.00
4 to 1 gears for commercial use 15.00
Speedster Fenders, set of 4 10.00
Heavy Crown Fenders, set of 4..... 18.00
Tool boxes—with lock—22 inches long..... 1.35
18-inch Steering Wheels with corrugated rim.... 3.05
Fan Belts—for all models 18c
Standard Roller Bearings for front wheels—set of 4 7.50
Bumpers 5.00
Warner and Shaler Lens, per pair..... 1.75
One-man Mohair Tops—complete with top boot and curtains for touring car 35.00
For roadster..... 25.00
Honeycomb Radiators for 1917-18-19 ..... 22.50
Honeycomb Radiators for 1914-15-16 ..... 20.00

TRACTOR ATTACHMENT.

Attaches to back of your Ford; will do the work of three horses. Attachment can be made to your Ford and removed in a few hours time.

LIVE WIRE DEALERS WANTED.

SPECIALS.

Timken Worm Drive Truck Axle—complete with hubs and drums $85.00
Brand new late model 5-passenger Packard Body, complete, top and shield.....$200.00
5-passenger Studebaker Bodies $50.00
Complete Steering Gears—left or right — Jacox, Gemmer and Warner makes.....$15.00
6-volt Atwater Kent K-2 Unisparkers $10.50
6-volt Atwater Kent coils..$5.00
6-cyl. Lycoming Motors..$150.00
1-inch Zenith Carburetors for Chevrolet 490.....$12.50

NEW PARTS FOR ALL CARS

Gears, Axle Shafts, Bearings, Transmissions, Axle and Motor Parts, Piston Rings, Pistons, Universal Joints, Hubs and Hub Parts, Springs, etc.
Write us for quotations.

RIMS AND WHEELS

All makes for all cars—Let us quote you prices

RADIATORS FOR ALL CARS

Brand new Honeycomb Type for all cars. Write for price list

SPRINGS FOR ALL CARS

High grade standard Springs for all cars. Better prices; better service.

BEARINGS

All makes and sizes in stock. Bearings suitable for all cars. Immediate deliveries.

ELECTRICAL REPAIRS

Are you having trouble with your Starter, Lighting Generator, Magneto Coil, Switch, etc.?

LET THE PURITAN OVERHAUL IT

Better service. Better prices.

ELECTRIC LIGHT YOUR FORD

Complete lighting system. Includes generator complete, storage battery, electric side and tail lamps, switches, wiring, etc. Everything complete installation. Regular price $29. Our price, $17.50.

PURITAN MACHINE CO., 606 PURITAN BLDG. Detroit, Mich.
EASTERN BRANCH, 245 WEST 55TH STREET, NEW YORK, N. Y.

Send it to Detroit

MAGNETOS.

Bosch DU4 Variable spark.....$30.00
Bosch DU-4 set spark..... 25.00
Bosch D4 and Dr4..... 25.00
Bosch D6 and Dr6..... 30.00
Splitdorf 4 cyl. Dixie, high tension 25.00
Splitdorf 4 cyl., Models A, T, X and D..... 10.00
National 4 cyl. low tension..... 8.00
Briggs 4 cyl. low tension..... 8.00
Remy 4 cyl., type R L..... 15.00
Simms SU4 high tension..... 22.00

GENERATORS.

Deaco 6 volt.....$12.00
Auto Lite 6 volt..... 15.00

COILS.

Splitdorf T S type.....$10.00
Splitdorf box type..... 6.00
Bosch type A..... 10.00
Remy box coils..... 6.00
Remy type LC and LE..... 8.00
Briggs box coils..... 6.00

DETROIT MAGNETO REPAIRS ARE BETTER.

WE REPAIR any make magneto, coil, lighting generator or starter and give 24 hours service. Member Detroit Automobile Trade Association.

Detroit Magneto Exchange
192 Grand River Ave. Detroit, Mich.

AUTO SAVE 50-90% FOR 400 CARS PARTS

POPE, PACKARDS, PIERCE, BUICK, STEVENS-DURYEA, KNOX, OVERLAND, ETC.

Motors.....	$25.00 up	Presto Tanks .	$ 4.50 up
Magnetos ...	4.00 "	New Spotlights	2.00 "
Carburetors . .	3.00 "	Generators. . .	10.00 "
Rear Axles . .	15.00 "	Gears	1.00 "
Front Axles . .	5.00 "	Bearings	1.00 "
Cylinders . . .	5.00 "	Radiators . . .	10.00 "

912 Diamond Bumpers.....$6.50

Jobbers in Bankrupt Auto Supplies.

BRIGHTMAN AUTO EXCHANGE
84 Wooster St., Hartford, Conn.

QUANTITY PARTS

100 Pressed Steel Frames, new..	$3.00
4-cyl. Motors, new.....	60.00
4-pass Bodies, upholstered, painted, top, windshield, front fenders, hood.....	125.00
Speedster Bodies for Ford or Maxwell	60.00
Roadster Bodies, upholstered and painted.....	40.00
3000 ft. 1½" Rubber Hose, per ft.	.18
250 Retreaded Tires, all sizes (these are not guaranteed), each	10.00

Send for our Bargain Sheet.

AUTO AUCTION COMPANY,
726-728 W. Jackson Blvd., Chicago, Ill.

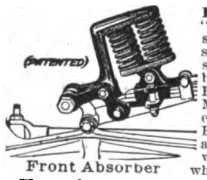
AUTO PARTS.
50% to 90% Off List.
24 Hour Service. Unlimited Stock.
Pope-Hartford, Columbia, Reo, Overland and 200 other makes.

Motors, $20.00 up | E. Presto Tanks, $4.00
Magnetos, $3.50 up | B. Presto Tanks, $4.75
Cylinders, $3.00 up | Bearings, 50c up
Springs, $1.00 up | Rims, $1.00 up

1000 Other PARTS Bargains.
If you want any part not listed here, **Write Us—We Have It.**

Conn. Auto Parts Co. Inc.
1070 Main St., Hartford, Conn.

LOZIER OWNERS—Why buy counterfit repair parts. We have all **Original Parts.** Made from original Patterns. Order from headquarters.
LOZIER MOTOR CO.
Fort and 6th Sts., Detroit, Mich.
Service Stations—E. A. Cornely, Inc. 1445 Bush St., San Francisco, Cal. Lozier Motor Co. of New York, Inc., 47th St. and 11th Ave., New York City.



FOR FORD CARS. "Champion" Shock Absorbers. The perfect spring suspension. Absorbs all jar and rebound. Easy to attach. Fully guaranteed. Makes Fords ride as easy as any $5000 car. Ford dealers, agents and owners, this ad is worth $10 to you. Ask why. Write today.
Champion Shock Absorber Sales Co., Inc., Indianapolis, Ind., Mfs.

EXPERT REPAIRING; every known Magneto and Ignition System, Starters, Motors, Generators. **Magneto Exchange and Repair Shop, 269 Halsey Street, Newark, N. J.**

GARDNER CARBURETORS FOR FORD CARS.

Send us $10.50 and we will mail you one. Run it 30 days. If not satisfactory return and we will refund your money.
FACTORY SALES CO.
Sun Building, Detroit, Mich.

Classified Advertising

BRINGS BIG RETURNS

20 Cents a Line, Seven Words to Line.

Auto Mailing Lists

Send for our free complete Price List covering Auto Dealers, Owners, Ford Dealers, Truck Dealers and Owners, Garages, Auto Mfrs. and etc., any state.
A. F. WILLIAMS, Mgr. of List Dept. 168 W. Adams St., Chicago. Franklin 1182.

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TRADE OUTLET

CYLINDER GRINDING

Pistons—Rings—Piston Pins

Prompt Service—Prices Right

Ford Cylinders Reground, new Pistons, Rings, Wristpins and Bronze Bushings fitted.....$14.50 Net

We Use Genuine Ford Parts.

STERLING ENGINE CO.
329 S. CLINTON ST., CHICAGO, ILL.

GARDNER CARBURETORS

FOR FORD CARS

Dealers write us for special price.
Salesmen with Ford Cars Wanted.

FACTORY SALES COMPANY
Sun Building, Detroit, Mich.

Every Ford Owner Should Read "TRANSFORMING THE FORD." Tells how to secure smooth, positive brake action that no car can excel. A little "transforming" and your car will glide to a quiet, quick stop without the annoying, irritating clatter that you now experience. It will go into low or reverse without jumping or jerking and you can pick up speed with all the smoothness and ease of a high-priced car. All accomplished without additional expense and the result is a clear saving of 75 per cent. in one direction alone. "TRANSFORMING THE FORD" tells how it's done. Send for your copy this very minute. IT IS FREE. Cormack & Co., 500 Fifth Ave., New York City.

WANTED: SCRAP PLATINUM

We will pay highest price. Small amounts especially solicited. Send in what you have. We will forward cash in return.

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Metallurgical Laboratories,
232-242 East Ohio St., Chicago, Illinois.

WANTED: OLD MAGNETO ARMATURE CORES

We pay cash for armatures you have no use for.

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to handle our 5,000-mile guaranteed tire.

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SELLING AGENTS
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CARLISLE CORD TIRE.
Dealers write for our special proposition.
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Thousands of Dealers

are regularly receiving lists of our MONEY EARNING BARGAINS.

Write and have your name placed on our mailing list. Large stock of all standard makes

SECONDS

always on hand

Broadway Tire Jobbers, Inc.
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WATCH FOR OUR MONTHLY SPECIALS

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Autolite	$25.00	Vesta	$20.00
Gray & Davis	25.00	Ward Leonard	25.00
Splitdorf	35.00	Wagner	30.00
Remy	30.00	Westinghouse	30.00

Complete stock of brushes and parts for the above generators.

Starter and Generator Chains. All makes. $4.00 to $15.00 each.

SPECIAL BOSCH OUTFITS FOR FORDS
Complete $65.00

We have a most complete line of Magnetos, Coils, Distributors, Starters and Generators, as well as the parts thereto. Our Expert repair department gives 24 hours service. It will be to your advantage to give us a trial.
All merchandise and repairs fully guaranteed.

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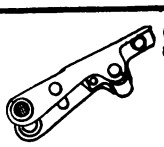
1216 Prospect Ave., Cleveland, Ohio



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FOR ALL

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Used for Years by the Best Repair Shops Everywhere

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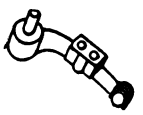

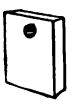

Specialty Manufacturing Co.
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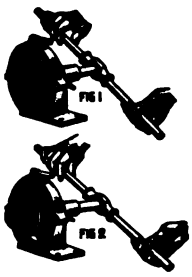
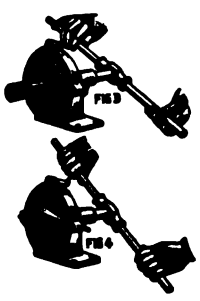
FORD REPAIR MEN

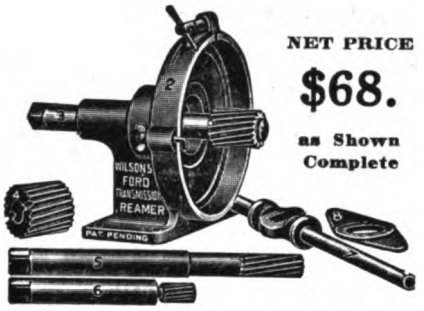
Cut Your Labor Costs to Just One-Third What They Now Cost You by Ordinary Methods and Do the Work Better Than the Best Job You Ever Sent Out.



This great saving of time means a big additional profit, but is now a loss. There is BIG MONEY in Ford repairing if you have efficient tools that save time and eliminate guesswork and experts. The two outfits listed here will save their cost on a very few jobs and enable you to render the quickest possible service to your trade.

TRANSMISSION REAMING MACHINE reams every bushing in a Ford Transmission to a perfect fit and alignment, so the gears mesh perfectly on their pitch diameter and run without noise or excessive wear. Impossible with any other tool equipment ever offered. **30 Minutes to Completely Overhaul and Re-Bush a Transmission,** making it as good as new. Can you beat it.



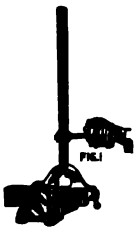


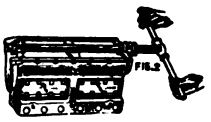
NET PRICE

$68.

as Shown Complete

Main Bearing and Connecting Rod Aligning Reamer





30 Minutes to Fit Perfectly All Main Bearings and Connecting Rods.

"A DAY'S JOB DONE IN HALF AN HOUR."

Pilots guide the reamer. No chance to make mistake. Far superior to any other known method. Motors put up this way can be started by hand. I have only a limited supply of this material on hand. Send your order promptly to avoid disappointment. One per cent discount if you mention this magazine. Send for catalogue of other special tools, reamers, etc.

Price $28.

I Make the BEST HONEYCOMB RADIATOR at any price.

K. R. WILSON

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Screw Machine Products

for

Dodge—Overland—Hudson & Ford Cars

DODGE PARTS

No.	Description	List Price
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E167	King Bolt Bushing	.40
E165	Tie Rod Bolt	.40
E178	Tie Rod Bolt Bushing	.07
J1714	Spring Shackle Bolt	.43
J1715	Spring Shackle Bolt	.43
2508	Piston Pin	.70
263	Piston Pin Bushing	.67
R67	Rear Axle Shafts	3.67

OVERLAND PARTS

No.	Description	List Price
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11239	Rear axle shaft, Model 83 L	5.00
15871	Rear axle shaft, Model 75R	4.50
15872	Rear axle shaft, Model 75L	4.50
12265	King Bolt	1.50
15767	King Bolt	1.50
6AA212	Piston Pin	1.00
11829	Front Spring Bolt	.50
3364	⅞-dia. Piston Pin	.75

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THE OHIO CARBON COMPANY

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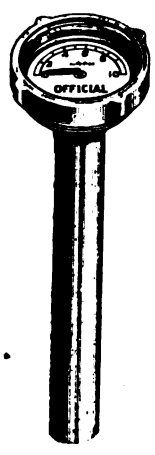

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"Official" Ford Filler Cap Gauge

USEFUL—ACCURATE—

A dependable instrument that tells the amount of gas in the tank at a glance by lifting off the cushion. It saves time, trouble and worry when desirous to know the gasoline supply.

Is simple in construction—nothing to get out of order.

GUARANTEED FOR FIVE YEARS.

No installing required—takes place of filler cap. Price, $1.25.

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There's economy in using the best fluxes you can find for particular welding jobs. Insure better and stronger welds, more easily and more rapidly made, by using

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For Acetylene, Gas and Electric Welding

Best on the market for all grades of iron and steel. Weld at lower heat. Leave no scale. They cleanse the molten metal, assist fusion and improve the quality and appearance of your work. Guaranteed to give perfect satisfaction or your money refunded.

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ANTI-BORAX COMPOUND CO.

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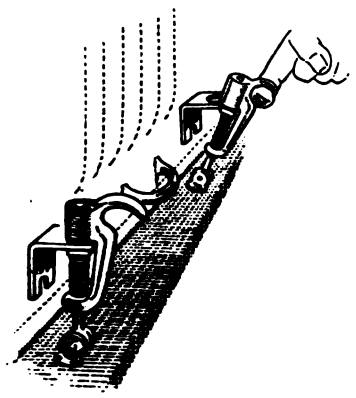
Your car needs a set of

HOLTON HOOD CLIPS



This is a spring clip that takes the place of those slow, troublesome thumb screws on engine hood. Can be installed in one minute by removing thumb screw from swing bolts and attaching Holton clips to same bolts. Enabling the hood to be opened and closed in one second.

STOPS HOOD RATTLES

A time saving necessity—never slips, never rattles

4 to a set—Price in Black, $2.25 set
4 to a set—Price in Nickel, $2.75 set

JOBBERS AND DEALERS—Write for proposition.

Manufactured and patented by the

HOLTON HOOD CLIP COMPANY

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UNCLE SAM'S FIGHTING BOYS WEAR

IRONCLAD KHAKI

(Twill Cloth)

You men and women on the "firing lines" of industry should wear garments of this patriotic economy cloth, too. It's fast color and *wears like leather.*

Coveralls, Overalls,

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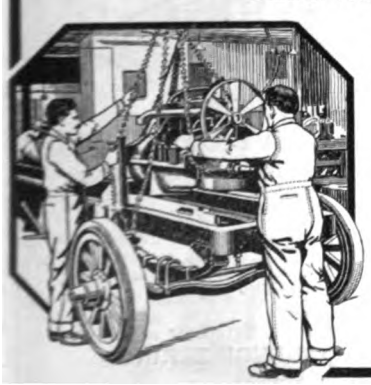

made of the genuine IRONCLAD KHAKI (the kind Uncle Sam uses) carry the yellow "Army label" like the above. LOOK for it and the Guarantee Bond in the garments before you buy.

See for yourself what Ironclad Khaki and Miss Ironclad Khaki, the special woman's overall cloth, look like. Write today for free samples.¶

Garments on Sale by Dealers —Everywhere.

We are makers of the cloth only

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134 Market Place Baltimore, Md.

Electrical BASCO TRADE MARK *Specialties*

UNILITE

A Tail Light Outfit for Ford Cars

UNILITE OUTFIT

Unilite Adapter

The Unilite Outfit is especially designed to provide an electric tail light for Ford Cars, operated from the magneto when running and from dry cells when the car is parked. It is the only reliable tail light outfit on the market for Ford cars not equipped with a storage battery. It is much cheaper to operate than a storage battery and its first cost is very much less. The unit feature makes it possible to install one or both electric side lamps in addition to tail lamp at any time desired.

Outfit can be installed by anyone in a few minutes with no tools, except a screw driver.

Complete outfit consists of one **Unilite Adapter,** with bulb, as shown in cut, one **Unilite Controller** and **Switch,** as shown, and all wire necessary for installing. Complete instructions are packed with each outfit.

PRICE COMPLETE, $4.00.

Extra Unilite Adapter with bulb and wire for attaching to switch terminal on Unilite Controller

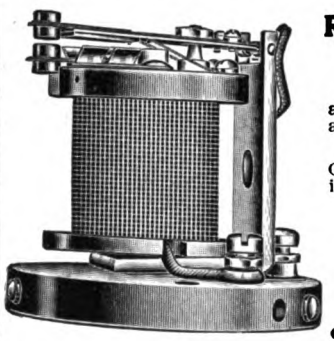
$1.60 EACH.

Separate Controller and Switch,

$2.40 EACH.

Write for our circular fully describing the Unilite.

Unilite Controller and Switch



Reverse Current Cutout No. 2

Automatically connects and disconnects the battery and the generator.

For Automobiles, Battery Charging and Farm Lighting.

	Price Each
6 volt—15 ampere..	$4.25
12 volt—15 ampere..	4.50
32 volt—15 ampere..	4.75
32 volt—30 ampere..	5.00
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Combination Lighting and Battery Ignition Switch

The illustration represents a push key type lighting and battery ignition switch for series parallel or two bulb dimming.

A limited quantity on hand at

$1.35 EACH.

Dealers Write for Discounts and Further Information

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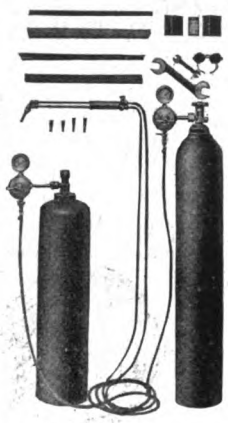


Boost your profits—Swing the big profitable welding business to your shop. Thousands of repairers are doing it and most of them use a Waterhouse outfit.

Time is money and a Waterhouse Welding Outfit saves the time as well as labor. It affords utility great enough to meet any shop requirement, yet no shop is too small to own one.

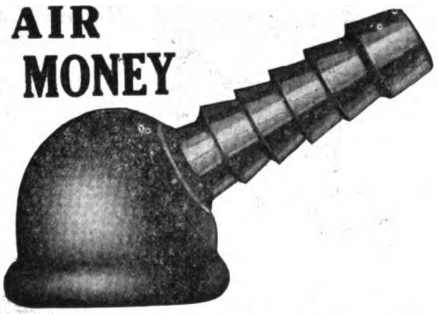
The great difference in welding outfits is all in favor of the Waterhouse. That means quality, utility, long service life, simplicity, dependability, low first cost and the best and most complete welding apparatus ever offered to the trade.

Write for descriptive catalogue, or better still, tell us your requirements. Do it today. We can supply the exact outfit for your needs.

All Waterhouse outfits are guaranteed.

WATERHOUSE WELDING COMPANY, 3 PELHAM STREET, BOSTON, - MASS.

FREE AIR COSTS MONEY



when the customers for whose convenience you provide an air station forget to turn off the flow after they have filled their tires.

Guard against this waste by attaching a

Schrader Universal Inflating Valve

to your air hose.

Thanks to this appliance your bottled air locks itself into the tank the minute it is taken off the tire-valve. You turn on the air by pressing the nozzle of the inflating valve against the tire-valve and you turn it off by removing the device from the tire-valve.

Made to fit any diameter of hose from ¼ in. to ⅝ in.

PRICE $1.50 in U. S. A.

Manufactured by **A. SCHRADER'S SON, Inc.**
800 Atlantic Avenue, Brooklyn, N. Y.

Schrader products were awarded a Grand Prize and two Gold Medals at the Panama Pacific International Exposition. "There's a Reason."

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A Tractor Journal devoted to the tractor industry and trade

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BATTERY TURN TABLES Makes work on heavy batteries easy and a pleasure. Saves time and energy—soon pays for the installation. Every shop should have four or five. Simple, sturdy, everlasting. Each $4.

BATTERY CARRIERS Specially designed carrier handles—fit any battery instantly — makes it easy to remove battery from car. One man can carry two batteries — each $1.75. Pair $3.25.

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Get these from your Jobber—or direct if he cannot supply you.

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Makers of the Famous AMBU Electric Trouble Shooter.

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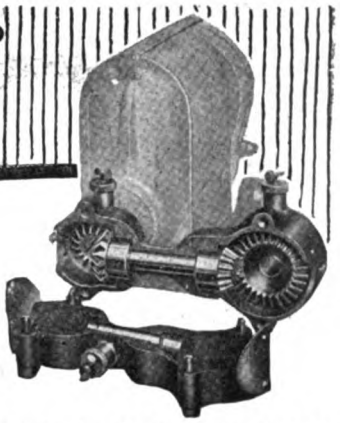

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MAGNETO ATTACHMENT
for FORDS

Magneto ignition was a big factor in winning the war. On every road in France and on every battle front, the magneto was standard equipment on trucks, tractors and tanks.

The magneto increases power, speed and flexibility; saves gas, simplifies wiring and means easy starting and quick pick-up.

HY-TEN
MAGNETO ATTACHMENT

With the HY-TEN, a novice can quickly install, in 30 minutes without special tools, an Eisemann, Bosch, Splitdorf, Sims or any other standard magneto on a Ford car.

Simple in construction. Attachment complete (magneto base, gear housing, gears, spark advance rod, with all bolts and screws necessary for installing).

RETAIL PRICE $25.00. *Liberal Trade Discounts*
A big money-maker for live dealers. *Write for Agency Proposition*

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THE PEERLESS HAND HOIST

Single Cable Quadruple Worm Gear Drive.

For Any Make or Type of Truck.

A wonder in efficiency and speed. It will fit any chassis and body. Weighs but 200 pounds. Simple, fool proof, wholly dependable and will last for years in the hardest service.

Any one that can drive a truck can hoist the heaviest load to 30 or 50 degrees in the longest body in less than two minutes. The smaller the body and load the quicker the action.

But two gears are used, quadruple worm and gear (both machine cut) and housed to protect from dirt and dust. The single cable makes an even pull. Compact and can be installed without drilling holes in chassis frame. The body hitch is also furnished.

We specialize in building all-steel bodies for any need.

Write for complete information.

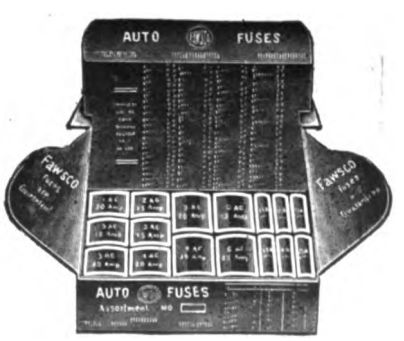
THE AUGLAIZE MOTOR CAR CO.
NEW BREMEN OHIO

Sell FUSES
Bulk Stock
and
Display Assortments

J. H. FAW, INC.
27 Warren Street, New York

CONTENTS

	Type		No. 1	No. 2
1 AG	20	amp.	20	40
2 AG	15	"	10	24
3 AG	10	"	9	25
	15	"	15	30
	20	"	10	25
4 AG	20	"	10	20
5 AG	20	"	8	15
6 AG	15	"	6	6
6 AF	20	"	3	6
	25	"	3	6
15 A	Velie		3	5
16 A	Auburn		3	5
17 A	Mitchell		4	10
20 A	Buick		4	7
21 A	Abbott		3	4
22 A	Pullman		3	4



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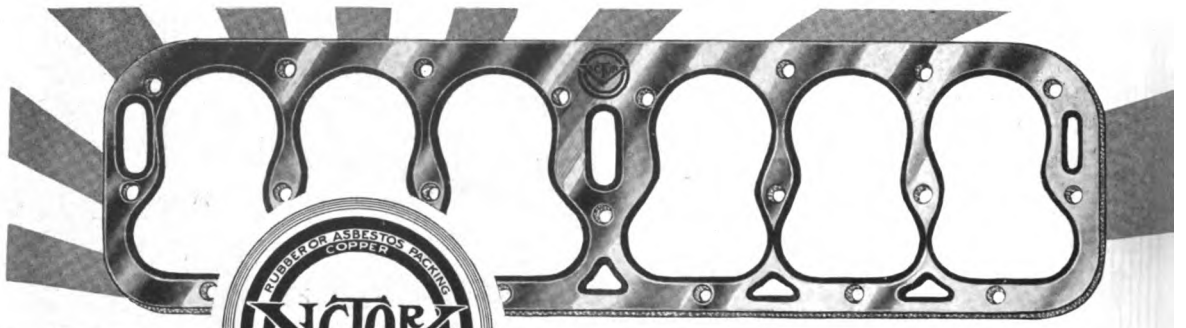

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Dealers, Garage and Repair Men

For repair and replacement work, to be sure of a dependable, durable job that will save your customer money and annoyance, use Victor Gaskets. Made from pure Lake Superior Copper and highest quality asbestos. Absolute insurance against leaks and blowouts. Used in almost every make of automobile vehicle. We can ship gaskets for new and obsolete model engines at a moment's notice, because our big, modern plant carries complete stocks. Order Victor Gaskets through your jobber.

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World's Largest Gasket Manufacturers — **TROY AND TWENTY-FIRST STREETS, CHICAGO, ILL.**

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A National Selling Organization having several high grade motor car specialties can market a few more patented articles of merit.

We have representatives in every large city in the United States and Canada.

Send full information in first letter.

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Wanted: Distributors

Manufacturer of well known and nationally advertised automobile shop equipment will consider applications from jobbers and distributing agencies for exclusive territorial rights. This is one of the easiest selling and most profitable selling lines open today, and the opportunity is offered only because of a change in selling policy. In answering please state lines you are now handling on a similar basis, number of salesmen and territory covered. None but high grade connections will be considered, and inquiries will be treated as confidential. Address

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Fitted with "Essentialite" Lenses.

THE FIBRE WELD.

Frame: Vulcanized fibre, non-conductor of heat and electricity, non-inflammable and infusible not affected by moisture, leather center, ventilated side pieces, adjustable elastic head band. We have demonstrated conclusively that with these lenses we vanquish the so-called "fatigue-weariness" and headaches caused by Ultra Violet and Infra Red rays. Circulars and prices at request. Price each, prepaid, $3 pr.

Manufactured by

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are positively guaranteed to hold air indefinitely without loss of pressure.

(117 years old. Founded 1802)

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SCAIFE GASOLINE STORAGE OUTFITS

ARE IDEAL FOR PRIVATE GARAGES.

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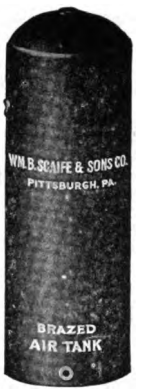
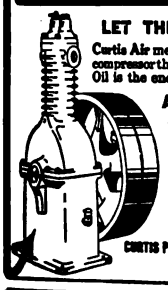


CURTIS AIR FREE FROM OIL — MOTORISTS Have CONFIDENCE IN THIS SIGN

LET THEM FIND IT AT *YOUR* DOOR.



Curtis Air means more mileage, because Curtis is the only air compressor that can't flood cylinder with more oil than it can use. Oil is the enemy of rubber. It rots tires, causing blow-outs.

A Curtis Compressor is Dependable

requires practically no attention, costs very little, quickly pays for itself, always delivers the kind of cool, clean air that makes tires last longer.

5 sizes and 125 combinations. Write for full particulars and let us tell you why the Curtis will prove to be your best investment. Ask your jobber for prices—but be sure and mention Curtis—the name is your protection against substitution

CURTIS PNEUMATIC MACH. CO. 1621A Kienlen Ave. St. Louis, Mo.
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BRAKE LINING

2 inches wide by 3-16 inch thick

Per foot . . .	40c
Per 100 feet . .	38c per foot
Per 500 feet . .	35c per foot
Per 1000 feet or more,	30c per foot

MAKES:

J. M., Garco, Stanwal and Stabestos
(State 1st, 2nd and 3rd choice)

Bargains in other sizes, also bargains in axle shafts for Overland, Chevrolet and Maxwell. Send for complete list.

S. BREAKSTONE 1326 Michigan Avenue Chicago, Ill.

GENEROMETER

The new and practical generator testing instrument. It will locate shorts and grounds in generator armatures where most of the trouble is of a Lighting System. You will need this instrument if you want to be 100% efficient in your electrical repair work. Further particulars upon request.

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232 E. Ohio Street, Chicago, Ill.

Niehoff Laminated Magnetizer

This is the most scientific and practical Magnetizer ever constructed. It will magnetize any size magnet from a Ford to all the various other magnets used on the different cars today. Due to the fact that it generates an enormous amount of magnetism, with a pulling power of about 75 pounds, you can more quickly remagnetize a magnet, and, therefore save much current. All magnetizers are subject to considerable wear. The faces will wear down according to their use. The top pieces of our Magnetizer are especially hardened and also detachable so that when worn down they may be replaced at a very small expense. We have two types; one for 6 volt storage battery and another for 110 volt D. C. current. Write for further information.

PAUL G. NIEHOFF & CO., INC.

232 E. Ohio Street, Chicago, Ill.

"The Most Trustworthy TIRES Built"

THE OLDFIELD TIRE COMPANY

BARNEY OLDFIELD, President

CLEVELAND, - - OHIO

NEW DEPARTURE BALL AND ROLLER BEARINGS

Strength
Stamina
Service

The New Departure Manufacturing Co., Bristol, Conn.

Conrad Patent Licensee

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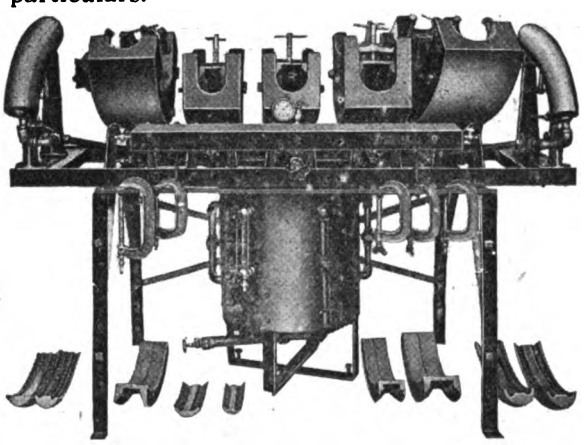
Could You Handle $100 A Day?

You open a **Tire Repairing Shop**—business pours in—your Vanderpool Vulcanizer (5 Cavity) has capacity of $100 worth of work a day. We supply FREE TIRE REPAIRING MANUAL. We are pioneers in the manufacture of the DRY CURE vulcanizer—the only vulcanizer that guarantees absolutely PERFECT work. We ship them right into Akron, the center of the tire world—which proves them best. Write at once for Manual and full particulars.

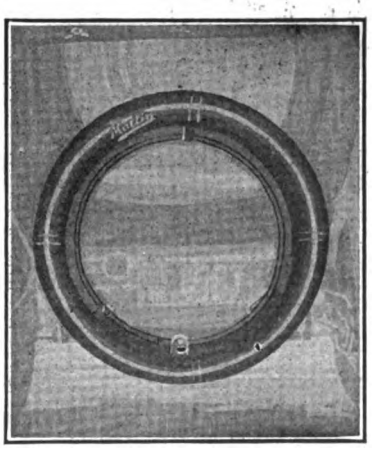


In answering address Dept. T 10.

WM. VANDERPOOL CO., Springfield, O.

Martin Tire Covers

The lowest priced, highest quality, fastest selling tire covers made.



The Martin Style C Cover.

A "sale on sight" line with all dealers. Will fit any tire whether carried on or off extra rims.

Sold in sizes listed. Made of heavy selected enameled drill, long lasting and attractive in appearance.

Sizes	List Prices
28-30	$1.70
31-32	1.80
33-34	2.00
35-36	2.15
37-38	2.20
39-up	3.00

Jobbers and Dealers Write for Catalogues and Discounts. The Martin full line includes specialties that afford big returns to the trade.

MARTIN MANUFACTURING CO.
Lancaster Ohio

Battery Charging will clear $100 to $200 Extra Profit every month.

There is BIG PROFIT in battery charging with HB Equipment. It takes about 2 KW of current to charge a battery. Cost is 10c to 15c. Customer pays at least 75c to $1.50. Figure the profits yourself. It sounds almost too big, yet hundreds of HB users are making **even more.** Their letters prove it. You, too, can make a **Big Business of Battery Charging.**

An HB 500 watt charger will be your Biggest Money-Maker

Compare HB charging profits with profits on other lines. Leads them all. Charges 1 to 7 6-volt batteries at once. No burnouts, no expensive renewals. Absolutely dependable, runs 24 hours every day. Never wears out. No electrical or mechanical knowledge required to install or operate.

Small Payment Puts this Money-Maker in Your Garage on Money-Back Guarantee

Balance on easy monthly terms. Earnings easily pay for machine. HB Absolute Money-Back Guarantee and easy payment plan are your certain protection. Write TODAY for full information. NOW is the time to make the big profits.

Hobart Bros. Co., *Box C6* *TROY, OHIO*
Successful Manufacturers Since 1893.

Write for information on HB Ball-Bearing Motors and Generators

BUNTING BEARING BRONZE B.B.B. CO. No. 1

Same quality as our finished bronze bushings and bearings used by manufacturers the country over.
Your repair stock is not complete without it.

All leading jobbers
Ask for catalog N

The Bunting Brass & Bronze Co.
727 SPENCER STREET
TOLEDO, OHIO.

CORED BARS

STOCK SIZES				
PIECE NO.	Outside Diameter	Inside Diameter	Length	Approx. Weight
A	1	½	12	2
B	1¼	½	12	3⅛
C	1½	¾	12	5
D	1¾	¾	12	7
E	2	1	12	8⅛
F	2¼	1¼	12	10
G	2½	1½	12	11⅛
H	2¾	1¾	12	12⅝
I	3	2	12	13⅝
J	3¼	2¼	12	15⅛
K	3½	2½	12	17
L	4	3	12	21
M	4¼	3¼	12	20

BURKE AUTOMOBILE PRODUCTS

THE BURKE Ox-iliator

Ox-iliator

supplies the gasoline motor with additional oxygen (moisture) needed for complete combustion; consumes carbon; saves fuel; increases motor power. Inexpensive, easily installed.

Oxy-Genii capsules

double efficiency of any air moistener; surcharge water through which air passes with **free** oxygen. 30 capsules—3 months supply—75 cents. Write for booklets.

Oxy-Genii

AUTOMOBILE DEVICES COMPANY
PHILADELPHIA, U. S. A.

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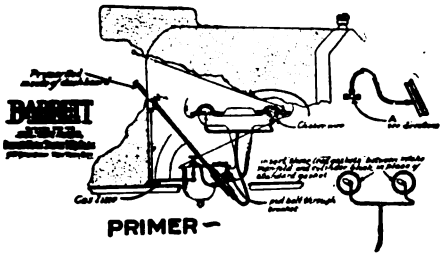
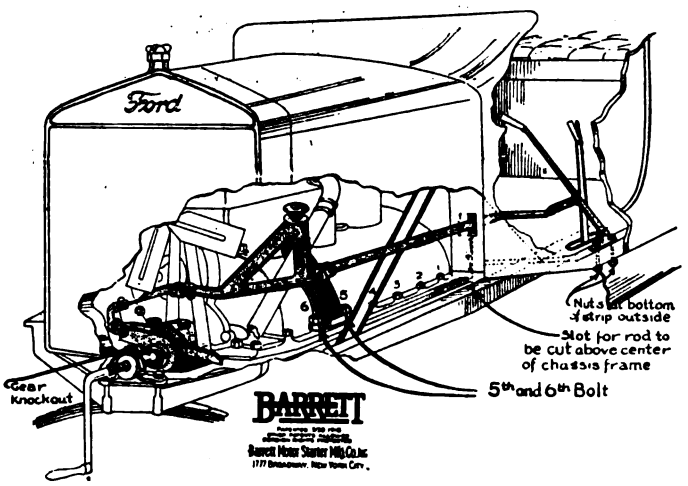
A Proven 100% Dependable Starter for Ford Cars

The Barrett Starter and Primer gives distinctive service and quality to your Ford car equipment. It has stood the test of time and thousands of owners and all of Ford car experts recommend it. The car can be started in zero weather. There are no wearing parts and no upkeep costs. It is always ready to use. It does not depend on the motor for power. It is made of chrome nickel steel, AND GUARANTEED FOR FIVE YEARS.

List Price with Primer $25



No cables, chains, pulleys or springs.
No holes to drill to install.
No oiling, no noise.
No danger from backfiring.
Gives double the leverage and makes the Ford an every day car for women to drive.
No broken arms or wrists.



SALESMEN AND AGENTS' ATTENTION.

We are now offering special inducements to county dealers. A demonstration means a sale. The returns are quick, big and constant.

Write at once for our special county selling offer.

Barrett Motor Starter Mfg. Co., Inc.

1777 BROADWAY Dept. C-2 NEW YORK CITY

SPECIAL SALE—AUTO TIRES

GUARANTEED 4000 MILES

If a tire fails to give service of 4000 miles we will replace it with another tire for ½ price marked below:

Size	Plain	Non-Skid	Tube
28x3	$6.45	$7.45	$2.30
30x3	7.45	8.35	2.15
30x3½	8.95	9.95	2.40
31x3½	9.45	10.45	2.45
32x3½	9.95	10.90	2.50
34x3½	10.45	11.30	2.80
31x4	13.45	14.60	3.20
32x4	13.95	14.95	3.30
33x4	14.45	15.45	3.35

Size	Plain	Non-Skid	Tube
34x4	$14.95	$15.95	$3.45
35x4	15.45	16.95	3.55
36x4	15.95	17.50	3.60
34x4½	18.45	20.45	4.30
35x4½	18.95	20.95	4.40
36x4½	19.45	21.45	4.45
37x4½	19.95	21.95	4.50
35x5	20.95	23.45	5.15
37x5	21.95	24.75	5.30

Deduct 2 Per Cent. When Check or Cash Accompanies Order.
10% Deposit Required on All C. O. D. Orders.
We Carry a Full Line of New and Reconstructed Tires.

ATLAS TIRE COMPANY, Tires and Tubes Shipped Express Prepaid

Telephone Poplar 2970

822 BROAD STREET, PHILADELPHIA, PA.

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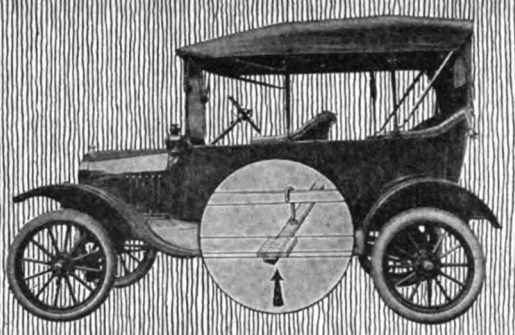

Dow Auto Body Brace

For Ford Cars

A real seller with the jobber and dealer.
Worth its weight in gold to the Ford owner.
Quantity sales with large profits.
Write for quotations and our Agency.

Dow Wire and Iron Works, Incorporated
Louisville Kentucky

DOW LOUISVILLE

BILT - RITE COMBINATION DRILL AND VALVE GRINDER

A device that is as standard, dependable and efficient as any motor.
The constant changes found necessary to make in other types only emphasizes the wonderful service giving qualities of the Bilt-Rite.
Why experiment at your own expense? Why not equip today with the greatest time and labor saving equipment ever offered to repairers. The Bilt-Rite will do the work quicker and better than any other drill or valve grinder. It has every good practical feature found in other combination electrical portable drills and valve grinders. Besides that it has distinctive features that you must have and which are not to be had in other makes.
YET THE COST IS NO MORE.

Any one can do the work any time with a Bilt-Rite. When quality, economy and service count the Bilt-Rite has always proven to be ideal equipment in any shop.

SEND TODAY FOR COMPLETE DESCRIPTIVE CIRCULAR AND TRADE DISCOUNTS.

BILT-RITE PRODUCTS SALES COMPANY
WORCESTER, MASSACHUSETTS

TIRES QUALITY AND Economy for Motorists

Slightly used. and factory repaired tires and tubes of the best known standard makes that mean big cash savings for every car owner.

A SATISFIED CUSTOMER IS OUR BIGGEST ASSET, THEREFORE WE MUST SATISFY YOU

Size	Used Tire	New Tube
30x3	$4.50	$1.95
30x3½	5.50	2.30
31x3½	5.75	2.40
32x3½	6.00	2.40
34x3½	6.50	2.60
31x4	7.00	3.00
32x4	7.75	3.05
33x4	8.50	3.25
34x4	8.50	3.40

Size	Used Tire	New Tube
35x4	$8.75	$3.50
36x4	8.75	3.65
34x4½	9.00	4.15
35x4½	9.25	4.25
36x4½	9.50	4.40
37x4½	10.00	4.50
35x5	10.25	4.60
36x5	10.25	4.70
37x5	10.75	4.75

Complete Stock of New Tires

Write for Prices Terms: $1.00 deposit with each tire ordered, balance C. O. D. subject to inspection. Specify style of rim to avoid delay. Although at the above prices these tires bear no mileage guarantee we will make reasonable adjustments should they prove unsatisfactory. All tires sent in for adjustment must be prepaid.

LINCOLN TIRE & SUPPLY CO.
1463 S. Michigan Ave.
Dept. E
CHICAGO, ILL.

TIRES

ATLANTIC PNEUMATIC GREASE GUN

The Grease Gun is operated with power or foot pump, spare tire or compressed air. It will force the old grease and dust out of joints and fill with new grease.

It is clean in use, saves 90% in time and labor. It never fails to carry the lubricant where needed. Any grade of grease can be used. Capacity 16 oz.

List Price With Filler, $6.00

JOBBERS AND DEALERS: This is the gun that you have been looking for. Prices and discounts at request.

Atlantic Motor & Supply Co.
1045 TREMONT BLDG., BOSTON, MASS.

Works:
63 Gorham St., West Somerville, Mass.

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What Garagemen Think About "TRIPLEXD"

Extract No. 5

I. J. Smith, Irving Garage, 1005-7 Ave. Q, Brooklyn, N. Y.

3 Years

(Another Testimonial to Triplexd Permanence.)

"NEARLY three years ago, June 5, 1915, I purchased a length of this hose, the ¾" size. For six months I used it at Ocean Parkway and Kings Highway, after which time I moved to Ave. Q and Coney Island Ave. and made sure that the hose—after such excellent service at the first station—came with me to the new place. It has been in constant service at this place, a very busy auto thoroughfare, since originally installed. . . . This hose has been outside all the time exposed to all sorts of weather, as well as receiving such knocks and abuse as gasoline hose usually gets."

Watch from Month to Month for *What Garagemen Think.*

TRIPLEXD

GASOLINE HOSE

METAL HOSE & TUBING CO.
INCORPORATED
227 Tillary St.
BROOKLYN, N. Y.

ATTENTION!

THE
M. & E.
GREASE CUP
PATENTED

This cup is always on duty and dependable under all conditions, because the top will not rattle off from vibration.

The illustration shows the efficient construction. "B" is the pawl, which engages in the corrugation "A" in the top. This holds the top securely.

The Packard and many other leading makes are equipped with "M & E" Ratchet Top Grease Cups.

Made of Steel and Brass.

Send for sample and prices.

Kindly mark your inquiry for Dept. 2.

MERCHANT & EVANS Co

NEW YORK PHILADELPHIA WHEELING
BALTIMORE CHICAGO
ATLANTA ST. LOUIS
CLEVELAND KANSAS CITY

Our Line is a Money-Maker for you—Stock Now—Immediate shipments.

Write for
CATALOG
illustrating our Complete Line with Prices

It Will Pay You

A. W. ROSEN & CO.
MANUFACTURERS
610-614 Broadway New York

RADIATORS

For FORD Cars
will fit car of any year

All Brass Tank Construction
Special Re-inforced Bottom Tank

Either Fin-Tube or Honey Comb Types

Models from 1917-1919 equipped perfect black enamel shell of 20 gauge Steel

Shell Assembled by Electric Spot Weld.

No Solder Used.

Write today for Prices

BREMER MANUFACTURING CO.
Canal and Forquer Sts., Chicago

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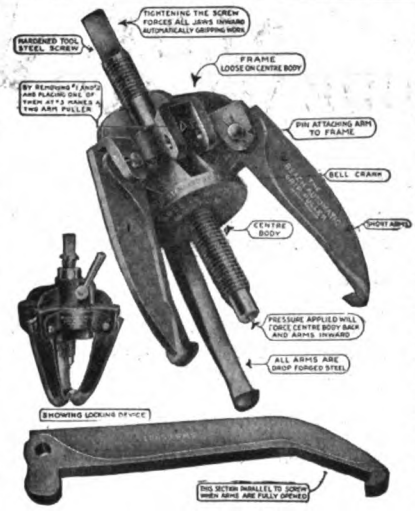
GREB AUTOMATIC GRIP PULLER
BEACH PATENT



A Combination of 2 or 3 Arms.

Gear Pulling Made Easy

The GREB AUTOMATIC GRIP AND GEAR PULLER gets a job done quick and without danger or damage. This means larger profits and quicker work.

Scientifically designed, well made, quick acting, strong, simple and trouble-proof. Adjusts itself instantly to work—locks in any desired position.

We also make the GREB RIM TOOL and GREB AUTO LOCK.

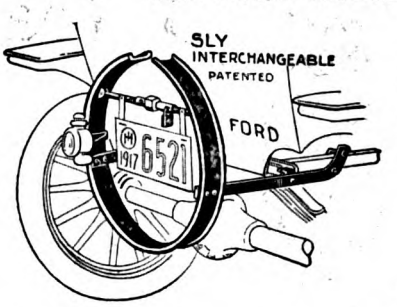
TWO SETS OF ARMS
Senior Size—Capacity 1" to 10" and 1" to 18"
Junior Size— " 1" to 4" and 1" to 7"

10 DAYS TRIAL

If your jobber does not have them, we will send you one. Try it ten days. If not satisfactory return it to us and we will refund your money.

THE GREB CO.
202 State Street, Boston, Mass.

THE MODERN REAR TIRE CARRIER FOR ALL FORD MODELS



"Sly Perfect" Interchangeable Rear Tire Carrier

It takes but a moment to unlock the SLY Perfect Interchangeable Rear Tire Carrier Lock, and slip off your spare tire. An expanding band, like a Demountable Rim, holds your spare tire naturally in place, gripping it by the bead as a tire should be handled.

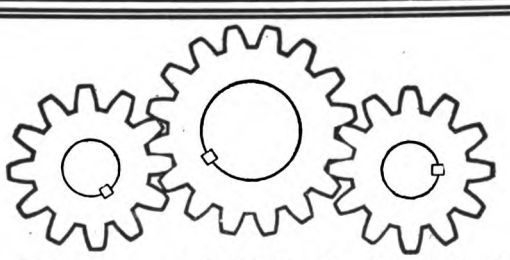
Will carry casings alone or casings on Demountable Rims. Avoids all contacts or chaffing. Combines places for lamp and number plate.

Quickly attached to frame by one "U" bolt. Small "L" on arm catches on cross frame.

PRICES FOR ALL FORD CARS

No. 150—Single—Plain Rims	$5.25
No. 152—Single—Firestone Rims	5.25
No. 252—Double—Plain Rims	7.85
No. 254—Double—Firestone Rims	7.85

NEW ERA SPRING & SPECIALTY COMPANY
1177 Hamilton Ave., Grand Rapids, Michigan



Do Plain Grease and Oil Really Do Their Duty

But costly experience shows that they do not. They are all right under the most favorable conditions, but show a tendency to "bunch up" and "pull away" from the moving gears in cold weather—to "crowd back" into the corners and let the gears run free. Heat breaks them up. Pressure "squeezes them out."

DIXON'S GRAPHITE Transmission and Differential LUBRICANT

is a high grade grease and oil combined with a special flake graphite.

This preparation is impervious to temperature. Pressure only helps to make it more effective, by forcing the graphite into the thousands of microscopic indentations always present on the surfaces of the most finely finished gears; giving absolute smoothness.

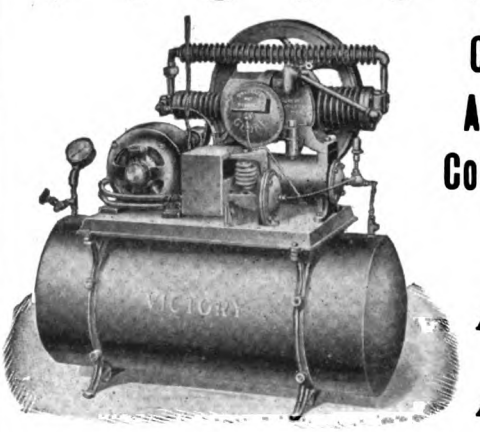
Write for Booklet No. 49-G and Dixon's Dealer's Deal.

Made in Jersey City, N. J., by the

Joseph Dixon Crucible Company

Established 1827.

VICTORY



Complete Automatic Compressor Unit

ACE OF ACES

GLOBE TYPE B—Original Two-Stage Garage Compressor. Saves power, time and money.

WONDERFUL new system of AUTOMATIC LUBRICATION insures Oil-Free Air, provides abundant and continuous lubrication and wastes NOT AN OUNCE of lubricant.

Automatic Pressure Unloader protects belts, fuses and motors.

15 Sizes and Styles of LAST WORD Equipments from which to select.

Desk C.

Globe Manufacturing Co., Battle Creek, Mich., U.S.A.

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IF YOUR CAR LACKS POWER

PISTON RING GROOVE

Just slip these steel NU PEP Ring Expanders behind the old piston ring

Nu Pep Piston Ring Expander

Guaranteed to increase compression in any motor

Results: More Power, Less Carbon, Gas Saved

Try a Set at Our Expense — SEND NO MONEY — *Use Them One Week—pay if satisfied—return if not*

4-cylinder set $2.00
6-cylinder set $3.00
MENTION CAR

NU PEP MFG. CO. 1224 H FARWELL AVE., CHICAGO, ILL.

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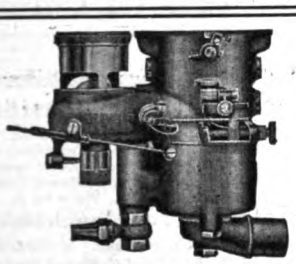
Is the oldest Automobile magazine published in America devoted wholly to owners of passenger cars.

A quality magazine, with prestige and circulation that brings results to advertisers.

TIMES BUILDING
PAWTUCKET, R. I.



YOUR CUSTOMER HAS BEEN LOOKING FOR SUCH A CARBURETOR FOR A LONG TIME

More Mileage—More Power—More Speed

Get him to try it for 15 days. Satisfaction guaranteed.

WEBBER MANUFACTURING COMPANY

Factory: 66 Stanhope Street, Boston, Mass. New York Branch: 1765 Broadway

SPRINGS—COILED AND FLAT.
Steel, Brass and Phosphor Bronze.
Spring Cotters, Small Washers.

16 lbs. Assorted Springs..... $2.00
25 lbs. Assorted Cotters..... 5.00
Subject to Market Changes.
Send for Catalogue.

PLUG READY TO EXPAND

SPECIAL POINTS (FOR QUICK ASSEMBLY)

Welch Patent Expansion Plug.
For Closing Core Holes.

M. K. HUBBARD SPRING CO., Pontiac, Mich.

JEFFERSON ELECTRIC MFG. CO. CHICAGO, ILL.

Announcement

Your attention is directed to the JEFFERSON trade mark—the emblem of quality—reproduced above.

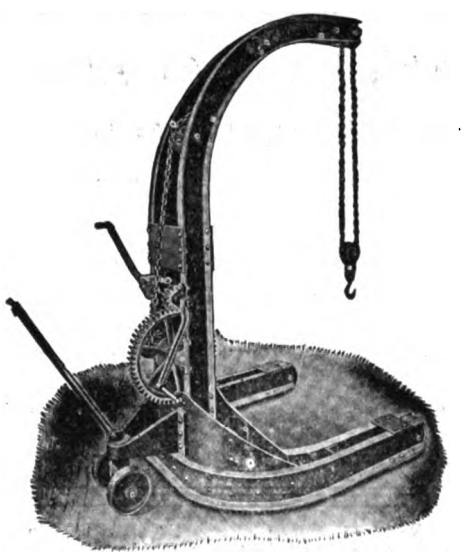
All **Jefferson Products** have this trade mark on them—it is a small brass disc, lettered with our name, and means that the article to which it is attached is of **genuine Jefferson manufacture**—guaranteed unconditionally.

The Jefferson trade mark stands for Mechanical and Electrical Perfection, Dependability and Reliability. It is your protection, as we back, without reserve, the quality of every JEFFERSON PRODUCT.

When you buy Ignition Coils make sure that you get genuine Jefferson Products—the 100% Coils—protect yourself and your customers—demand **JEFFERSON** Coils and do not allow substitution.

A small thing to look for.
A big thing to find.

Jefferson Electric Manufacturing Co.
429 S. GREEN ST. CHICAGO, ILL.



SAFE POWERFUL CHEAP

"LAFAYETTE PORTABLE STEEL CRANE"

The war is over and we are ready again to fill orders promptly. Labor and materials are 100% higher than pre-war. Our advances are only 50%. It is steel. It will not break. Roller bearings. Low center of gravity and will not upset. Double locked. It is safe. It is a heavy, strong machine for heavy, rough work. It won't wear out in 100 years. For the thousands in use we have not furnished $100 worth of repairs in seven years. It will always invoice at cost. It is in every state and most foreign countries. The only successful steel crane made and standard everywhere. It saves its cost in a short time. No first class garage or shop is without them and none other should be. For sale by jobbers everywhere. If the jobbing men who call upon you do not have it listed, write direct to the manufacturers.

LAFAYETTE ENGINEERING COMPANY
LAFAYETTE, INDIANA.

(When Writing to Advertisers, Please Mention the Accessory and Garage Journal.)

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INSULATED AIR-COOLED FLANGES PREVENT BUMPS

USE MILLER'S WHY EXPERIMENT

"ONE" OF 60 KINDS

Less Boiler, $135.

Per Cut Gas. $168

Per Cut Gas. $165.

Extra Ply Tires, Tubes, Vulcanizers

60 kinds.

6 kinds Wrapping Machines—Tire Building Stands—Air Pumps—Repair Stocks—Reliners—Steam Boilers.

Complete Tire Shop Outfits

Rubber Workers Tools and all Supplies—Boot and Shoe Vulcanizer—FREE 84-page Catalog—Four Cavity Ribbed Retreader. Write today. Don't delay.

CHAS. E. MILLER
1402 Meridian St.,
Anderson, Ind. U. S. A.

TANKS

The tightest, safest, strongest tank it is possible to construct by any known method. Process originated by us over twenty-five years ago.

We also make a special portable emergency tank for filling tires. Throw it in your emergency car and take it with you.

Gasoline and Oil Storage Tanks and Pumps

AIR-TIGHT STEEL TANK CO.

Main Office and Works
PITTSBURGH, PA.

Guaranteed Bearings

We Exchange Rebuilt Bearings for old or worn ones — BILODEAU BALL BEARINGS WORKS

In Order to Obtain

EFFICIENCY and ECONOMY

in Bearings, send your worn bearings to us for repairs. We will rebuild them, make them as good and better than new at a fraction of the cost of new bearings.

SATISFACTION GUARANTEED.

Garage and Repair Men cannot afford to miss this splendid service. **No delay.** We carry a big stock of Rebuilt Bearings to exchange for worn ones. Catalog sent and discounts quoted on application.

BILODEAU BALL BEARING WORKS

66 Stanhope Street, BOSTON, MASS.

KEEP SPRINGS GREASED
KNOWLSON SPRING SPREADERS

No. 1. $1.75

Both Guaranteed.
Either or Both Delivered.
Your Money Back if You Want It.

They Fit Any Spring. Easy to Operate. Both Drop Forged.

Nickel-plated and polished.

100% EASIER RIDING.

SQUEAKING STOPPED.

Spring Breakages Eliminated.

Use a Heavy Grease (not oil) for real results.

DON'T RUIN YOUR SPRINGS BY NEGLECTING THEM!

No. 3. $1.25

Gun metal yoke, screw and handle nickel.

At your Dealers, or Sent Direct.

SPRING LEAF LUBRICATOR CO., Dept. 4, Ann Arbor, Mich.

The MANLEY GARAGE AND SHOP EQUIPMENT

Every garageman and repairman should get our catalog. You'll find in it just the time and labor savers you need, and their prices will astonish you by their moderateness.

Send for your copy of this catalog today

THE UNITED ENGINE & MFG. CO.
Hanover, Pa.

Your Prospective Customers

are listed in our Catalog of 99% guaranteed Mailing Lists. It also contains vital suggestions how to advertise and sell profitably by mail. Counts and prices given on 9000 different national Lists, covering all classes; for instance, Farmers, Noodle Mfrs., Hardware Dlrs., Zinc Mines, etc. *This valuable reference book free.* Write for it.

50¢ Saves Dollars on Your Purchases

Get several quotations on what you buy. It will save many dollars. For 50c (coin or stamps) we will send a few names of manufacturers, jobbers, dealers, or individuals who sell what you want to buy.

Ross-Gould Mailing Lists St. Louis

For sale by accessory and hardware dealers or by MAIL POST-PAID 50c EACH

RAIN-SNO CLEAR VIEW WINDSHIELD CLOTH

PREVENTS ACCIDENTS

Just RUB IT OVER THE GLASS and RAIN or SNOW cannot collect to obstruct the vision.

INSIST UPON THE "RED CLOTH"

Which is guaranteed to give continuous use for one year or money refunded. Made only by

SUFFOLK MANUFACTURING CO., INC., DEPT. D.
60 LONG WHARF BOSTON, MASS.

UNIVERSAL BATTERY CLIPS

Offer a quick and ready means of connecting storage batteries for charging. Simply fit your connecting cords with these clips and snap them over the battery terminals.

No. 21-A—lead plated—1½" spread of jaws.

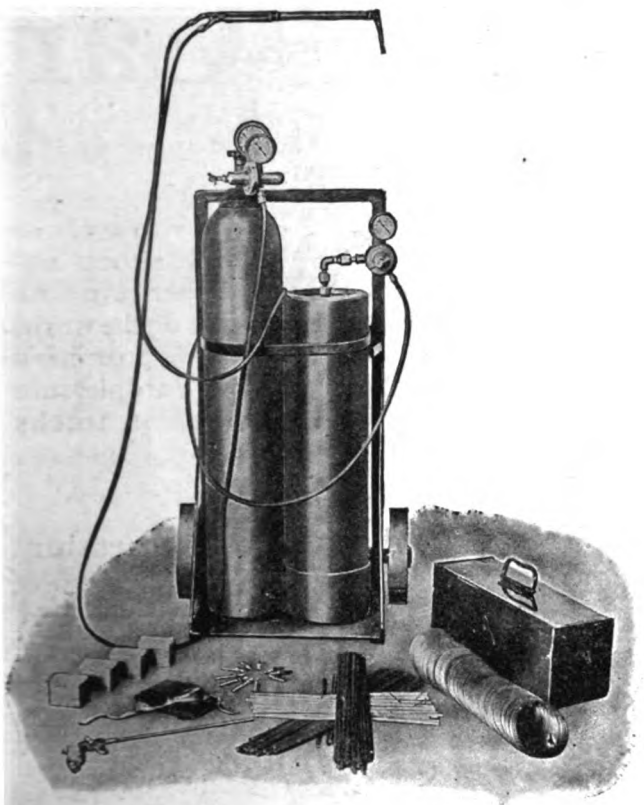
Sample mailed postpaid for 15c in stamps.

Single Lots, Each 20c. Lots of 10, Each 15c.
Lots of 100, Each 12½c.

R. S. MUELLER & CO., 431 High Avenue, Cleveland, O.

Digitized by Google

Dyer welding, cutting, carbon removing, lead burning and brazing-soldering apparatus has yearly increased 100% in popularity with garage and repair men because:—



Style A, Welding and Carbon Removing Outfit

The style A outfit which includes all the items shown in the cut except the cylinders, was especially designed for the garage or small repair shop. The welding torch is standard, covering a wide range of work. The regulators and gauges are the same as used on the large outfit. Carbon gun is of the popular pistol grip, trigger control type. The outfit is light and may be easily packed and used in emergency work.

Style B outfit includes all the items shown in the cut except the cylinders and will easily handle a wide range of welding and cutting. This outfit is complete in every detail, meeting most exact requirements.

Oxy-acetylene apparatus is very efficient for frame straightening, for heating and for brazing. Your jobber stocks, catalogues or can immediately get Dyer Apparatus.

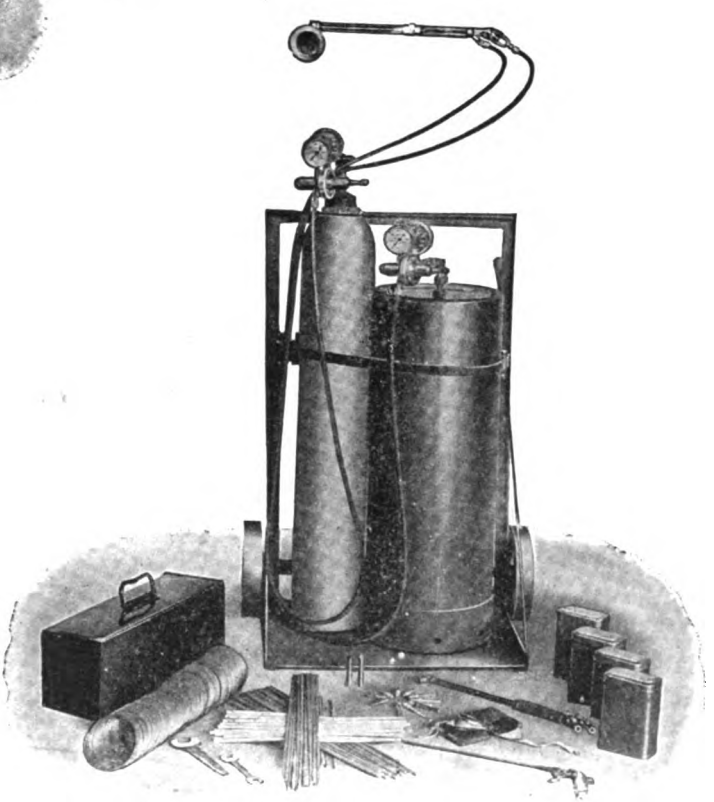
Prices Very Attractive

It is lightly and simply designed to give the highest efficiency during long hard service. We guarantee the best quality of materials and workmanship.

Dyer Apparatus is approved by the Factory Mutual Fire Insurance Company and expert knowledge is not required to operate it successfully.

Dyer torches are of the non-flashing, semi-injector type. They practically empty the cylinders and are economical in gas consumption.

Regulators are accurate at all pressures and strongly built. Best grades of gauges.



Style B, Welding, Cutting and Carbon Removing Outfit

THE G. H. DYER CO. 155 BROOKLINE STREET Cambridge, Mass.

(When Writing to Advertisers, Please Mention the Accessory and Garage Journal.)

Digitized by Google

Makes Any Ford A Perfect Riding Car

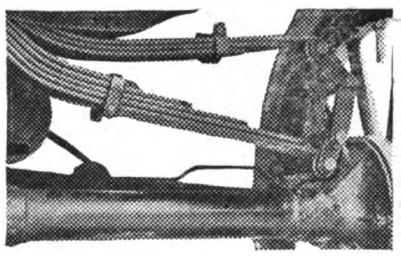
Completely absorbs all shocks. Controls the rebound, side sway and all chance of springs breaking

Easy to apply as any shock absorber. Anyone can do the work. 100% protection for Ford pleasure cars or trucks

The double action of springs is controlled by the opposite arch and suspension. Practical equipment that is guaranteed to afford full satisfaction in any service, not to break and made of the best alloy spring steel.

It greatly improves the appearance and makes the Ford look like a high priced car. For comfort, safety and efficiency it adds 100% to the service value and life of any passenger car or truck.

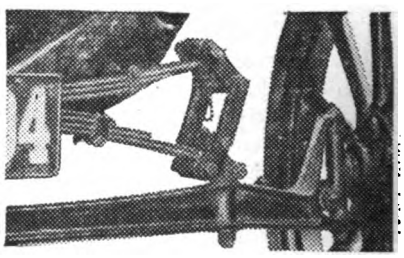
It Absorbs the Rebound or Upthrow



Rear View

By installing Beckman Springs the original spring on a Ford is lowered 2½ inches automatically. This action reduces the equivalent amount of spread on each side of the lower spring as well as the play in the steering. In other words, it improves the steering.

Approved by the leading spring manufacturers



Front View

YOUR FORD NEEDS IT

It stops the squeaks and rattles. These springs cannot dent or bump the body. Easy to clean and will last longer than the car. Our trial offer money back iron clad guarantee goes with every sale.

JOBBERS AND DEALERS:

This is car equipment of the highest quality, efficiency and service. Sells right and will prove to be a leader with you. Write for details and trade discounts.

BECKMAN METAL PRODUCT CO
409 SUPERIOR AVE. NORTH WEST
BECKMAN BLDG
CLEVELAND, O.

FORD OWNERS:

Save your springs and ride in comfort. Price $16.50 per set. Our guarantee protects you. Order from your dealer or direct. Catalogue at request.

Digitized by Google

Introducing the new

Duracord Portable Hand Lamp

A lamp with an extraordinary cable

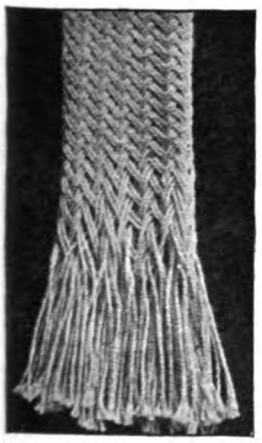
THE weakest part of most hand lamps is the cord—the part that gets the most wear and should be the strongest.

Here's a new lamp with an entirely different kind of cord. A cord that you can pull round corners and over sharp edges, walk on it, drop tools on it, drag it through oil and water—with no more injury than ordinary wear and tear. It will outlast ordinary cords 4, 5 and 6 times.

This cord is Duracord. The same cable that is used by the Cadillac, Hudson, Dodge and Ford automobile factories, big ship building corporations and other great industrial plants, for their portable tools.

DURACORD EXTENSION LAMP

Duracord will not break open as a steel armored cable will when kinked or crushed. There is no sharp metal edge to cut through to the wires, causing a short circuit or a dangerous stream of electricity on the outside of the cable. It will not scratch painted or enameled surfaces.

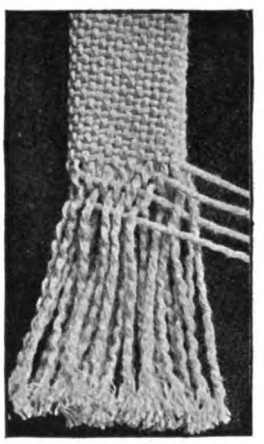


Here is the ordinary braided cable covering. Note the open and porous construction, easily cut, stretched or unravelled. Compare it with Duracord.

The 20 foot cord is gripped in the lamp by a patented "hold fast" fitting which positively prevents the wires pulling away from the terminals.

Remember, the Duracord lamp is *complete*—wired up, packed in an individual box. Everything except the bulb. The illustration on this page is an exact photographic reproduction. See the actual lamp at your dealer's.

Made in 3 designs.
Light weight . $5
Heavy duty . $6
(as illustrated)
Vapor proof . $8



*This is Duracord. Thick, heavy strands, **woven** like a piece of fire hose, not braided. Picture shows outside covering only with impregnating compound removed.*

DEALERS

This complete extension lamp means more business and less trouble for you. It is easy to stock and handle (all wired up) packed in individual boxes ready to hand over the counter to your customer.

Send for descriptive folders, price sheets and samples of Duracord and ordinary cable.

TUBULAR WOVEN FABRIC COMPANY
Pawtucket, R. I.

Digitized by Google

It Whistles When it's had enough AIR

Here is the Automatic Pressure Regulator

The "Automatic Pressure Regulator" absolutely prevents over-inflation—the cause of most blow-outs and give-outs.

Here it is—
Just screw it on

It is easy and simple to set the "Automatic Pressure Regulator" for just the right amount of air for a tire. When you get that much, a cheery little whistle announces "enough"! *You can't put any more in!*

Think how much this saves: It lengthens the life of tires 50% to 75%; it cuts down gasoline 15% to 20%; it saves time and mess, for you don't have to fool with a pressure gauge; and it makes a much easier riding car with repair bills cut way down.

Isn't that a real, inspiring proposition? Every motorist ought to have four Automatic Pressure Regulators—one on each tire. Our dealers will get a volume of business that they hardly dared expect.

We're backing them strong with concentrated advertising and handsome dealer helps. *You can't afford to let this opportunity slip by.* Ask your jobber or write us for details *today—don't delay!*

THE AUTOMATIC SAFETY TIRE VALVE CORP.
1765 Broadway, New York City

Digitized by Google

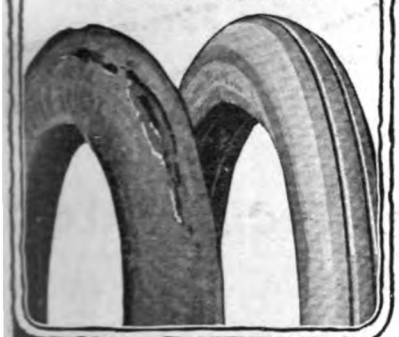
HAYWOOD'S LATEST INVENTION

Here It Is:

A new machine that will earn from $100.00 to $150.00 per week in any well established tire repair shop. More than one year of constant experimenting and development work was required to complete it.

Statistics say there will be **One Billion Dollars** worth of tires worn out this year. The insistent demand for re-treaded tires that would add 3,000 to 4,000 more miles of wear is growing. A new and better machine than had so far been produced was needed.

Two actual photographs of One Tire
BEFORE and AFTER
being repaired and retreaded on a silvur-lined mold.



HAYWOOD'S Silvur Lined MOLD

meets the need. Made of white metal—die cast—absolutely free from blemishes and smooth as glass. It is truly a wonderful machine.

Old tires retreaded on this machine closely imitate the runner, **cord type,** and are smooth, classy, bright. All 4,000 owners of Haywood Tire Repair plants will **want** this new Haywood invention. Owners of other plants should have one.

Pays for Itself in a Week

Will earn from $100.00 to $150.00 weekly. Are you an auto tire repairman? If you are not, why not enter this profitable business? Tire Repairmen earn **$2,500** to **$4,000 Per Year.** Many are doing better; some up to $6,000 and $7,000 per year. If you have a tire repair shop, you need this Haywood Silvur-Lined Retread Mold. You should write us at once and get the details. It will pay for itself in a week. Every week thereafter you should make $100.00 or more extra profit.

FREE BOOK I have an interesting book to send you that tells about tire repairmen and the Haywood method. It tells about automobile tires—it gives inside facts that you should know about profits. When you write tell me if you have a tire repair shop, or, if you want facts about the tire repair business. Address

M. HAYWOOD,
Haywood Tire & Equipment Co.
955 No. Capitol Ave., Indianapolis, Ind.

WRITE ME!

I will tell you how to start in business as an expert tire repairman and earn $2,500 to $4,000 per year. Sounds too good to be true. But it is true, every word of it.

SILVUR LINED RE-TREAD MOLD

M. HAYWOOD,
Haywood Tire and Equipment Co.
955 No. Capitol Ave., Indianapolis, Ind.
(Mark an X for interest in either or both subjects)
☐ Send facts about the Silvur-Lined Mold
☐ Send facts about the Tire Repair business.
Name.....
Address.....
.....

N. E. Gibbard, Charlotte, Mich., owner of a Haywood plant, last year did a business of $15,000. Charlotte is a town of 7500 population.

Digitized by Google

EXCEL AUTO JACK

PATENTED JANUARY 14, 1913—PATENTED SEPTEMBER 8, 1914

RANFAC
BOSTON—U.S.A.

The Quickest and Strongest Garage Jack Made—as well as the Handiest

Main Jack lifts from 10½ inches to 24½ inches. Toe Extension lifts from 4½ inches to 15 inches. A Time-Saver and a Back-Saver in Garages, Service Stations, Paint Shops and wherever there is need for a Jack that will do heavy duty and stand up under it. Will lift under Springs, Axle or Hub. Will reach under Bumpers, Low Gasoline tanks, trunk racks and other hard-to-get-at places. One sweep of the 5-foot handle does the trick.

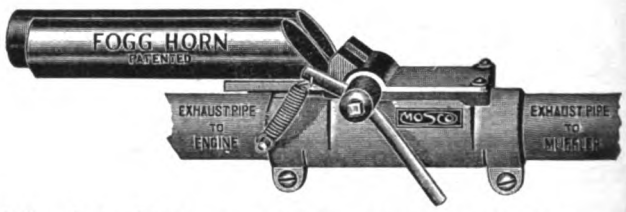
Excel Jacks, ready to ship, List Price $25.00

Liberal Discounts to the Trade.

Consumers will confer a favor by ordering through their Jobbers.

Jericho-Fogg Horn

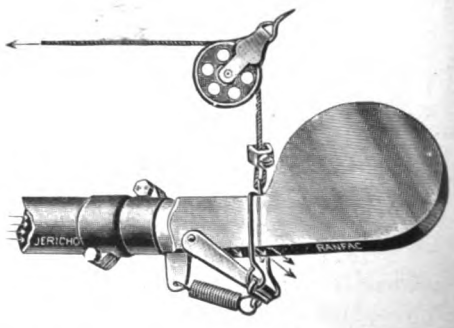
The BEST SIGNAL FOR FORD CARS



It does away with the Tail Pipe Problem because it is attached between the Engine and the Muffler. And so it makes no difference whether the FORD is of the Vintage of 1912 with **long tail pipe**—or a 1919 model with **no tail pipe.** The JERICHO-FOGG HORN blows loudly even when motor is running slowly. It throws the Sound **ahead of the car**—where its warning is most needed and where it can do the **most good.**

One size only—List Price $5.00—complete with all attaching accessories

Jerichos and Jubilees for Trucks



The Regulation JERICHO (Single Tone) and the JUBILEE Chime have the indorsement of careful drivers—because of dependability and performance.
Attached to Rear of Muffler. Operated by the Exhaust.

All sizes—List Price $5.00

Complete with attaching accessories

THE RANDALL-FAICHNEY COMPANY, Inc.

JAMAICA PLAIN, BOSTON, MASS.

Manufacturers of EXCEL JACKS, JERICHO and JUBILEE SIGNALS, BOSTON COMBINATION OIL AND GREASE GUNS, and other RELIABLE AUTOMOBILE ACCESSORIES.

Send for Catalog A-5

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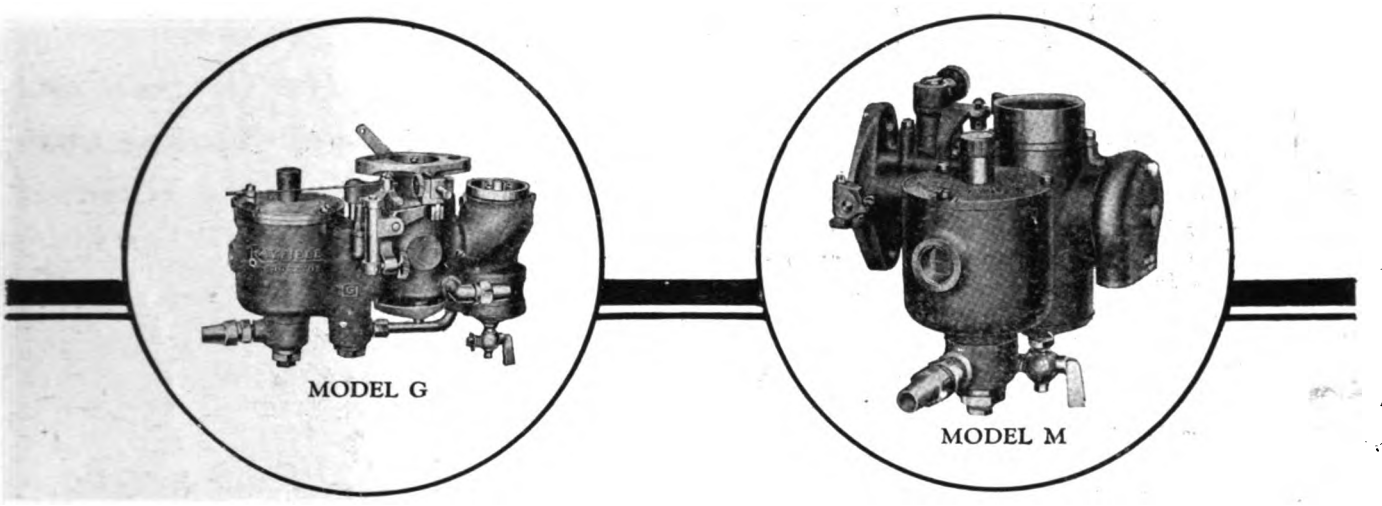
Rayfield Leadership Acknowledged by Engineers for Ten Years



Rayfield Carburetors have always been considered by the motoring public as representing the highest standards in carburetor performance.

There are sound reasons for this Rayfield supremacy.

Motorists have found that a car equipped with a Rayfield not only performs better but operates more economically over a period of months.

The big underlying reason for this performance is that in design the Rayfield is mechanically correct. It is this perfection which gives you more miles per gallon. It sends your car to the front in crowded traffic and carries it over hills and through sand without hesitation.

The Rayfield Carburetor at its price represents an unusual carburetor value. Dealers and car owners everywhere who have experienced a new satisfaction in motoring with a decrease in expense, constantly testify to the fact that Rayfield represents greater economy in the long run.

Distributors and Service Stations everywhere.

BENEKE & KROPF MANUFACTURING CO.
Successors to Findeisen & Kropf Manufacturing Co.
21st and Rockwell Streets, Chicago, Illinois

RAYFIELD CARBURETORS

Digitized by Google

AIR COMPRESSOR FITTINGS

Take Valves for Instance:

Ordinary valves will not hold compressed air. Special design, selected materials and extreme care in perfecting a ground fit are necessary in making a satisfactory air valve. Hand operated or automatic—each type is an individual engineering problem. Brunner engineers have perfected air valves and other fittings, that Brunner outfits might not at any time give unsatisfactory service because of some apparently unimportant part.

Take Air Hose as Another Example:

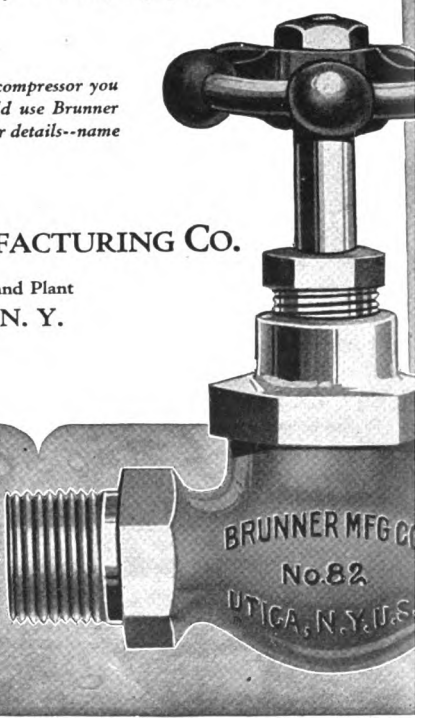
Think of the trouble you have had with poor hose. Brunner "Resistoil" Air Hose has been designed and made to avoid even this trouble with Brunner outfits. And, so on down through the list,—Reducing Valves, Controllers, and all compressor accessories; each item is a perfect unit to make a perfect assembly.

A compressor outfit is no better than its component parts. One poor fitting anywhere in the system will prevent good service. For safety and convenience to yourself and for service to your trade, equip your outfit with Brunner fittings.

Regardless of what compressor you are using, you should use Brunner fittings. Write us for details--name your jobber.

BRUNNER MANUFACTURING CO.

Main Office and Plant
UTICA, N. Y.



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Sales-Creating Advertisements

NOW is the time to sell SHALER 5-Minute Vulcanizers in a big way!

The big SHALER advertising campaign is running with large, forceful, full-page advertisements in all of the important national and motorists magazines. These ads are creating a big demand.

NOW is the time for *you* to help "push" *your* sales by displaying SHALER 5-Minute Vulcanizers—and by demonstrating them to your customers.

Big "Repeat-Sale" Profits

Dealers are enthusiastic about the SHALER 5-Minute Vulcanizer. Its easy to sell—a quick demonstration to the motorist quickly sells it—then you have a steady customer who comes back to you regularly to buy more Patch-and-Heat Units to use with this vulcanizer.

This gives you *Quicker Sales*—and *Double Profits.*

Order from Your Jobber NOW

Get the full benefit of our advertising. Replenish your stock—order 1 dozen or more SHALER 5-Minute Vulcanizers, packed in an attractive counter case. Put this case on your counter—or in your window—and watch it sell SHALER 5-Minute Vulcanizers for you.

C. A. Shaler Co., 256 Fourth St., Waupun, Wis.

Oldest and Largest Manufacturers of Vulcanizers in the World

SHALER

5 Minute Vulcanizer

Digitized by Google

Would you like this money, Mr. Garage Man?

Of course, you want to make more money by increasing your business.

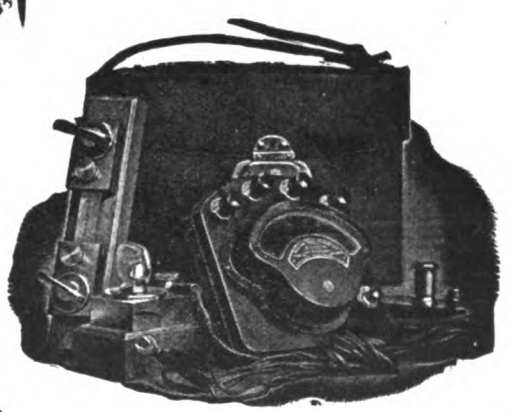
A source of big revenue for garages is rapidly developing in the steadily increasing use of Electrical Starting and Lighting Equipment. This equipment requires installation, repairs, adjustments, renewals, etc.

The demand for this service has grown so that you must now prepare to meet it, or lose your trade to your more enterprising competitor. Practically all first-class garages now are fully equipped to handle this trade.

Here is a complete Electrical Testing Equipment which you can install at small cost and which will furnish you a full and permanent equipment. It will enable you to meet all competition in the electrical line, and more than hold your own.

Weston Model 280

GARAGE TESTING INSTRUMENT



In reality, this Instrument is the equivalent of six separate Measuring Instruments of different ranges It provides a means of making any tests that are necessary on electrical starting and lighting systems It enables you to locate electrical troubles quickly and apply the proper treatment to remedy them

This Instrument is extremely accurate, durable and serviceable. Its possession will place you a long way ahead of your competitor not so equipped.

Prompt Deliveries from Stock—

Order at Once.

Weston Electrical Instrument Co.

103 Weston Avenue, Newark, N. J.

New York	Philadelphia	Denver	Toronto
Buffalo	Pittsburgh	San Francisco	Montreal
Cleveland	Richmond	Detroit	Vancouver
Cincinnati	Chicago	Seattle	Halifax
Boston	St. Louis	Miami, Fla.	Havana
New Orleans	Minneapolis	Winnipeg	Mexico City

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Masters

AUTOMOTIVE ACCESSORIES

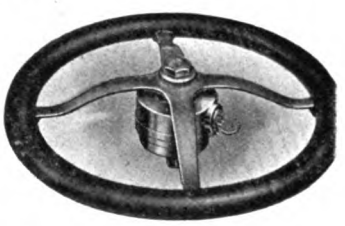
Absolutely Prevents the Theft of Your Ford

You don't need to be told that the Ford is the most easily stolen car in America. Every time you leave it for a few minutes it is at the mercy of thieves and joy-riders.

You try to protect it with insurance; but the policy won't buy the car back if it is stolen.

Foil the thieves! Lock your Ford so that it can't be stolen! Put on a

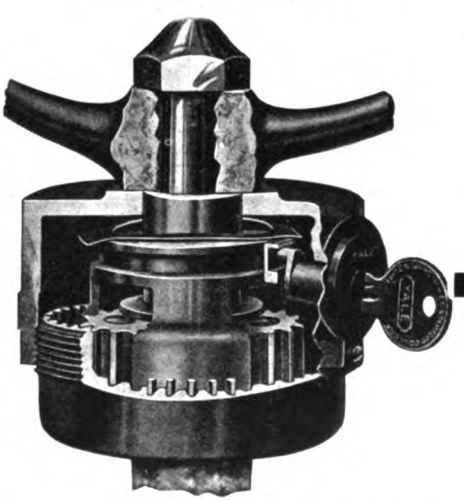
MASTERS STEAL-PROOF LOCK



This lock is easily put in place on the steering post; it clamps the gears so that the front wheels cannot be used for steering. It cannot be picked—it's a Yale—it cannot be broken; it cannot lock the car accidentally for the locking bolt rises into mesh.

You cannot remove the key except when the car is locked, so that when the key is in your pocket you have that satisfactory feeling of security—it's locked.

DEALERS—Write for descriptive circulars, terms, etc.



Masters Manufacturing Company

68 Woolsey Square, Jamaica Plain, Boston, Mass.

(When Writing to Advertisers, Please Mention the Accessory and Garage Journal.)

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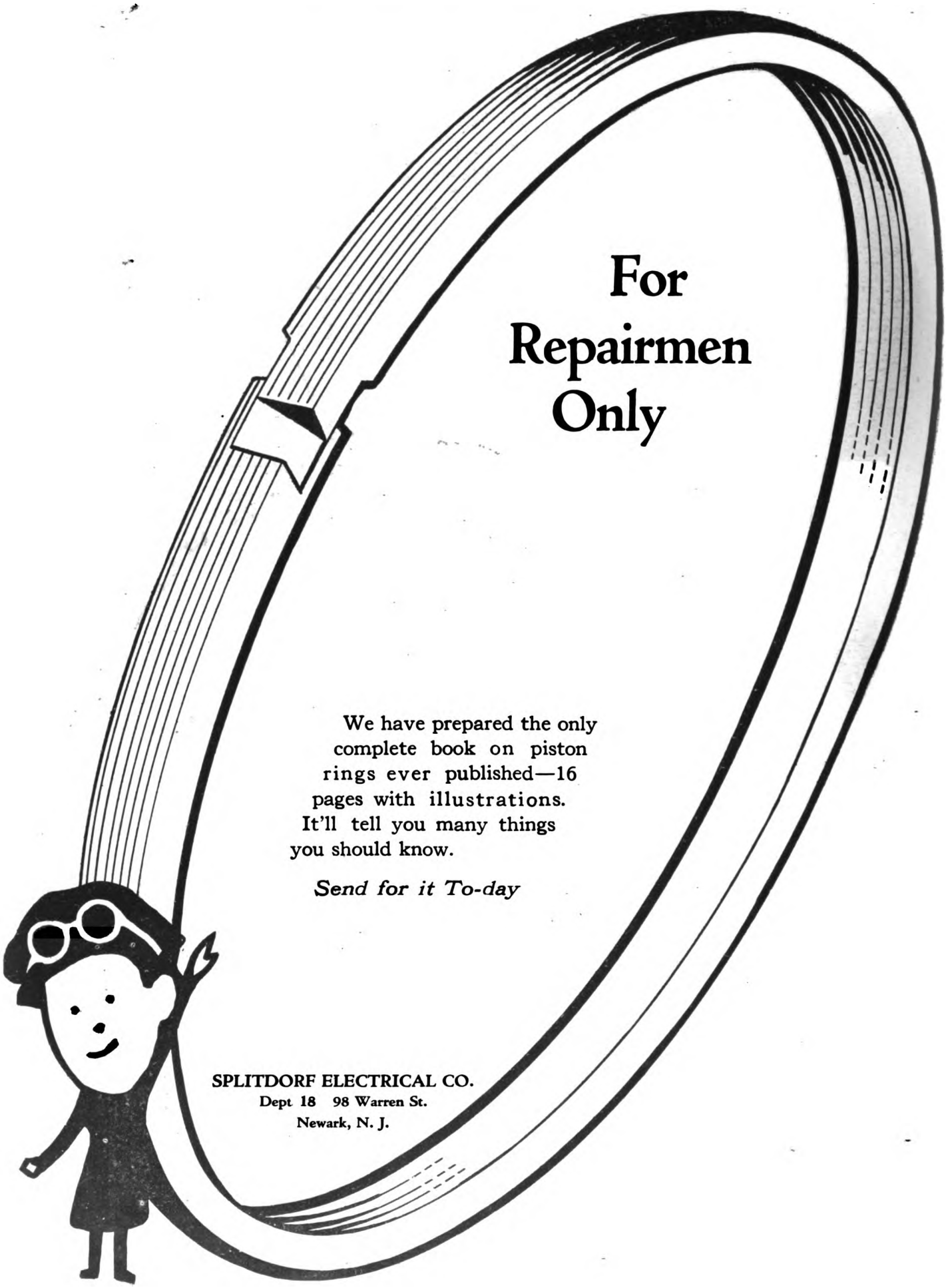

For Repairmen Only

We have prepared the only complete book on piston rings ever published—16 pages with illustrations. It'll tell you many things you should know.

Send for it To-day

SPLITDORF ELECTRICAL CO.
Dept 18 98 Warren St.
Newark, N. J.

Digitized by Google

Send for

a copy of this latest and most comprehensive piston ring size directory, if you have not already received one by mail. It is just off the press. We flatter ourselves that every automotive products dealer will realize the value of this book when he sees a copy. It is handy, full of information and the listing of the piston ring sizes is arranged in such a simple way that there is no difficulty in immediately locating the data on any ring desired. The book is FREE to automobile and accessory dealers and garage owners. To the public it is priced at 25 cents.

Remember that the Gill is the PERFECT ONE-PIECE PISTON RING, the ring with the double-step interlocking joint, a real attainment in piston ring construction.

The Gill Manufacturing Company
351 West 59th Street
CHICAGO, ILLINOIS

(When Writing to Advertisers, Please Mention the Accessory and Garage Journal.)

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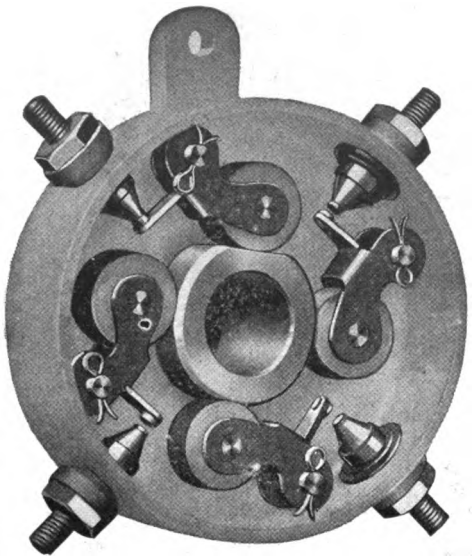

DUNTLEY
MAGNETO BREAK
TIMER

FOR ALL FORD CARS

Overcomes Every Timer Trouble

This timer is designed and built so it can't go wrong. Mechanically, it is perfect. The durable Duntley outlasts the Ford car.

Its fiber rollers, in addition to their superior wearing qualities, eliminate the necessity for oil. They are a feature with which all timers should be equipped.

There are no sliding contacts to become insulated with oil; the positive contact overcomes starting troubles; the tungsten points will not pit or burn; positive timing on all cylinders; interchangeable on regular Ford fittings. Tests show remarkable savings in fuel.

FOR FORDSON TRACTORS

The following letter tells the experience of a Fordson Tractor owner, who uses a Duntley Magneto Break Timer. *"The timer you sent . . . . is all you claim for it. It certainly gives the tractor twice the power it had before and also is a saver of fuel." Name on request.*

SOLD ON AN ABSOLUTE MONEY BACK GUARANTEE

Dealers—Write for our Sales Proposition

J. W. DUNTLEY
1004 Michigan Ave. **CHICAGO, U. S.**

Security Auto Lock

Affords every protection to Ford car owners that a perfectly designed and extremely well made lock can give. While neat and attractive it is built very strong. In operation it is positive and the car can be left with a feeling of confidence that no one but the owner can use it.

It is the original loose wheel lock for Fords.

It is approved by underwriters.

It will reduce insurance premiums 15%.

When locked the car cannot be towed.

List Price, $6.00

It makes the Ford thief-proof

Anyone can easily install the Security in ten minutes. No drilling, filing, sawing or chiseling necessary. It is made of solid brass. Nickel plated finish.

TO DISTRIBUTORS

When this lock is shown no other will satisfy Ford car owners. It sells at sight. Our trade discounts are liberal and our proposition will interest any one that can sell high grade car protection at a moderate price. ***Write for details today.***

Security Auto Lock Co.
414 N. PAULINA ST., CHICAGO, ILL.

FIGURE THIS OUT!

The GREB Arbor Press Base and Bench Plate

with two V Blocks and V Cap

is equipment that every garage and repair shop urgently needs for road work as well as in the shop.

It lists for only $12.50

Taken in conjunction with the

GREB AUTOMATIC GRIP PULLER
BEACH PATENT

No. 1 Senior size, it makes desirable equipment for pressing off gears, bushings, bending pipes, straightening shapes, etc. For an added list price of only $25.00 you have a most powerful wheel and gear puller. Capacity 1 to 18". Total combined price $37.50. You know the cost of an arbor press—but do you know our Dealers' Discounts? Write for proposition.

10 Days' Trial—If your jobber does not have them, we will send you them. Try them for 10 days. If not satisfactory, return the equipment to us and we will refund the money. Could anyone do more?

THE GREB COMPANY
202 STATE STREET **BOSTON, MASS.**

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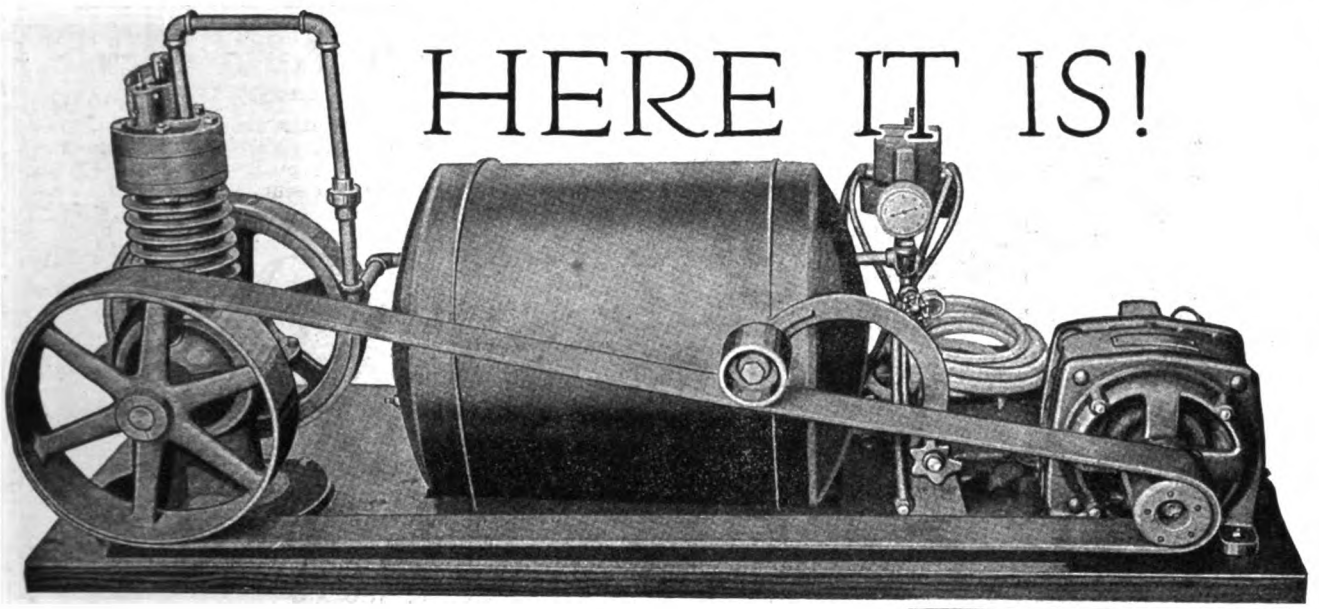

HERE IT IS!

A Compressor of Real Capacity.

BIG capacity at high pressure is what you must have in a garage compressor these days. Big Cord Tires used on trucks demand it.

This No. 6 Au-To Air Compressor will stand the gaff of long working under full load.

All Au-To Air Compressors make good—we see that they do.

There are thousands in use in every part of the country—and we have never charged a cent for repairs on any of them.

The outfit has an unloader for easy starting and an automatic cut-out that keeps the pressure at a constant level.

Every unit is made of material of the highest grade. The workmanship is accurate.

The compressor outfit is reliable—always running. It compresses 6½ feet of free air per minute and is cut out at 150 pounds pressure.

Ask your Jobber or write us.

THE AU-TO COMPRESSOR COMPANY
WILMINGTON, OHIO

Oro
GOOD as GOLD

Oro Steering Wheels for Ford Cars are seventeen inches in diameter instead of 15 which is the size of the wheel with which the car is originally equipped. They may be had either with or without the tilting feature, the latter making it possible to push the steering wheel up into the plane of the steering column so it is easier for a large driver to leave the car. The rim of the wheel is genuine high quality walnut wood; also furnished in imitation at a less price, highly finished. Spiders in malleable iron baked enamel finish or solid aluminum highly polished. Each one packed in individual carton.

Oro Combination Spark Plug and Cylinder Head Bolt Wrenches for Ford Cars fit the Champion X plugs with which the car is equipped. The socket at the other end fits the cap screws in the cylinder head of the Ford Motor. This wrench is made of the best quality high carbon drop forged steel, hardened, and is practically unbreakable. The Ford Motor Company makes a similar wrench known as No. 2335.

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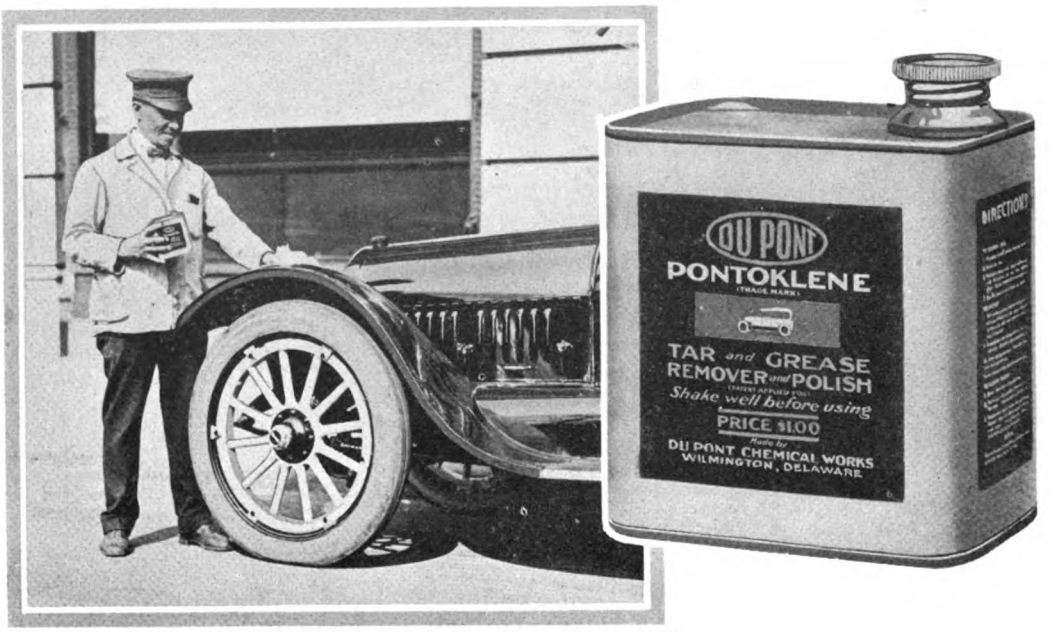

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One man discovered it. He told another. The news spread and now thousands of people are clamoring for this wonderful tar and grease remover.

Pontoklene

is fast building a nation-wide reputation. We can't handle the business direct—what we want are dealers—the best hardware and auto supply dealers in each town to represent us—to take care of the demand.

Will You Sell It?

Here is a piece of goods that is actually—honestly selling itself, a real remover of road tar and grease that opens the eyes of every motorist who tries it. Get in touch with us today, let us send you a sample and our attractive dealer's proposition, including free samples, display cards, circulars, road signs and electros.

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WILMINGTON, DELAWARE

Visit the Du Pont Products Store when in Atlantic City.

The Principal Du Pont Products Are:

Explosives: Industrial, Agricultural and Sporting. **Chemicals:** Pyroxylin Solutions, Ethers, Bronzing Liquids, Coal Tar Distillates, Acids, Heavy Chemicals, Alums, Etc. **Leather Substitutes:** Fabrikoid Upholstery, Rayntite Top Material, Du Pont Rubber Cloth. **Pyroxylin Plastics:** Ivory, Shell and Transparent Py-ra-lin, Py-ra-lin Specialties, Challenge Cleanable Collars and Cuffs. **Paints and Varnishes:** For Industrial and Home Uses. **Pigments and Colors:** For Industrial Uses. **Lithopone:** For Industrial Uses. **Stains, Fillers, Lacquers and Enamels:** For Industrial and Home Uses. **Dyestuffs:** Coal Tar Dyestuffs and Intermediates.

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DU PONT

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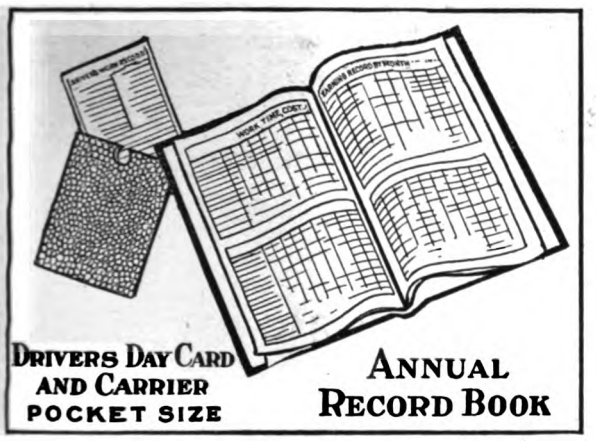
Know what it costs to Run your Truck
Learn what your Truck Earns
Know your Truck Profit and Loss

UNIVERSAL MOTOR TRUCK ACCOUNTING SYSTEM



The system includes an annual record book, 350 drivers' day cards, a day card carrier and full instructions.

Any owner can start this system at any time with an old or new truck of any make or type.

Any boy or girl clerk can maintain all records for one or a hundred trucks.

Each system is good for one year, nothing more is needed or necessary.

The records show at a glance any and all items entering into the earnings and cost of operation.

It is extremely simple. 100% complete and full working instructions are supplied with each system.

It is almost self-operating.

Price $10 — Delivered

Address Record Department

MOTOR TRUCK

Pawtucket, Rhode Island.

THE ACCESSORY AND GARAGE JOURNAL
Index to Contents

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AUTOMOBILE JOURNAL PUB. CO.
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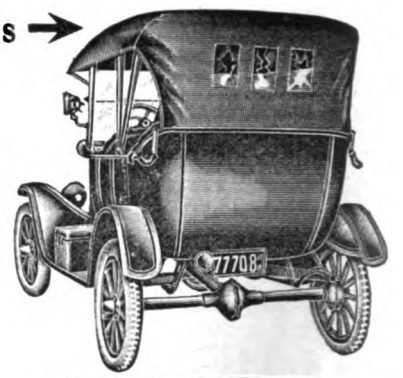
TWO FORDS THERE WERE

ONE of them looked like this → It was a good little old Ford, too, built to stand wear and tear, and to eat up the mileage day after day, at mighty low cost for "gas" and upkeep. But, bless you! How it looked! Dingy, sagging, old, back-curtain, with three dim, yellow, torn patches of celluloid to look through at the road behind.

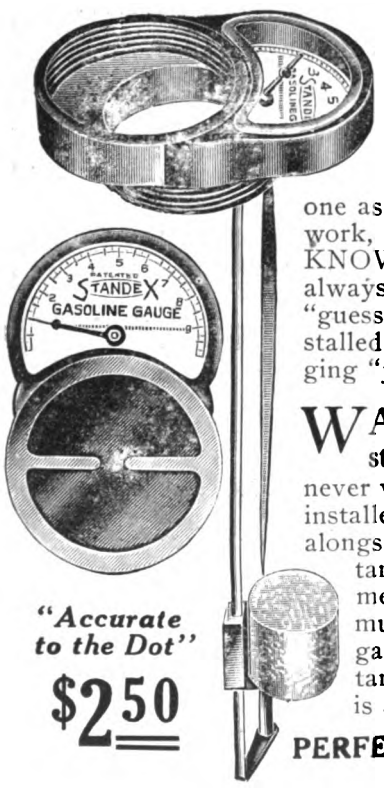


THE OTHER FORD was no better car, for all its fine clothes; but which of these Fords would YOU rather ride in? Which of them shows CLASS in its appearance? Which of them shows best the owner's respect for himself and for his good, reliable car? All the difference is in the Rear Curtain, made of better fabric (Mohair or Rubber) than standard equipment, with a big, generous oval window-light of clear, brilliant, beveled crystal glass, set in a patented interlocking frame of polished, untarnishable aluminum. No sagging; no rattle!

STANDEX **Rear Curtain for FORD Cars**

Rear Curtain for Ford Cars is a better curtain than any regular top maker sells for $16.00 or more! Try one for 30 days: Perfect Satisfaction Guaranteed or Money Back!

STANDEX Gasoline Gauge STANDEX



"Accurate to the Dot"

$2.50

THERE were two Ford owners, their cars bought at the same time—one as good as the other. Yet one owner, Mr. Guesswork, was always in trouble, always sure (without KNOWING) that he was being cheated on gasoline—always a gallon or two less than he paid for—always "guessing" he had enough "gas" for a trip, then—stalled and in for a long hike over country roads, begging "just a quart or so" from the farmers.

TWO FORD OWNERS ALSO

WAS Mr. Surething ever in such a stew? Not a bit of it! And never will be! His STANDEX Gauge, installed in one minute, in plain sight alongside filling-hole on the gasoline tank, assures him always of honest measure—tells him always how much "gas" he has to run on. Inasmuch as this is the only gauge made that is graduated to the contour of a cylindrical tank, it is the only mechanically-actuated gauge made that is absolutely accurate.

PERFECT SATISFACTION OR YOUR MONEY BACK!

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BLACK & DECKER

Electric Valve Grinder

"With the Pistol Grip and Trigger Switch"

4 HOURS BY HAND
35 Minutes with a Black & Decker Electric Valve Grinder

This is the experience of a large Hudson Service Station in which this picture was taken. The complete job of grinding in all the valves of a Hudson Supersix formerly required four hours' work. The same job is now done in 35 minutes with a Black & Decker Electric Valve Grinder.

May we send you complete information?

THE BLACK & DECKER MFG. CO.

120 S. CALVERT STREET, BALTIMORE, MD., U. S. A.

Portable Electric Drills — Electric Valve Grinders — Electric Air Compressors

BRANCH OFFICES:

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Sold only in this package.
$3 per set of three—Rockies West $3.25 — Canada $4.50.

Ford Owners wrote this ad — it's worth reading

Sure Brake

In the emergency my Cork Insert lining was there with a grip that held. W. G. Yeager, Lexington, N.C.

Advance Cork Insert

We have a sure brake at all times wherein the other ones were always worn out. Victor Baker, Hoosick Falls, N. Y.

Advance Cork Insert

You can stop so gradually that you can't tell when you're stopped if you don't watch something. But before using Cork Insert people would get up ready to get out and then the brake would take hold and nearly throw them against the windshield. Wm. Douthett, Jr., Jamestown, Pa.

Advance Cork Insert

I never had such good brake service before and am recommending them to all my friends who own Fords. Alfred Moger, Gaastra, Mich.

Advance Cork Insert

Smooth Action

Since using Cork Inserts I have none of that stuttering and shivering and I can even stop on a steep grade and start again by the pull of the motor alone. John James, Newtonville, Ala.

Advance Cork Insert

In starting off there is not that jerky motion as with the old linings when at their best. Also the brake and reverse take hold much better. A. F. Richmond, Williamsburg, Mass.

Advance Cork Insert

They are far ahead of the original linings that come with the car as they put a stop to all chattering in the transmission and differential and cause the engine to give more power on low gear. Harold B. Robinson, Elizabeth, W.Va.

Advance Cork Insert

We have grades up to 25% but since installing Cork Insert our Ford runs 100% smoother than when using old style linings. Jno. R. Randolph, Claremore, Okla.

Advance Cork Insert

Long Wear

Have used Cork Insert 8 months and they are working better than when they were first put in. C. H. Robinson, Peru, Me.

Advance Cork Insert

Before using your Inserts I had to line my truck on an average of five or six times a season. I did not have to line the transmission at all last season and the Inserts were working just as good last fall as they were when I first put them in. Ray A. Kingman, Ferrisburg, Vt.

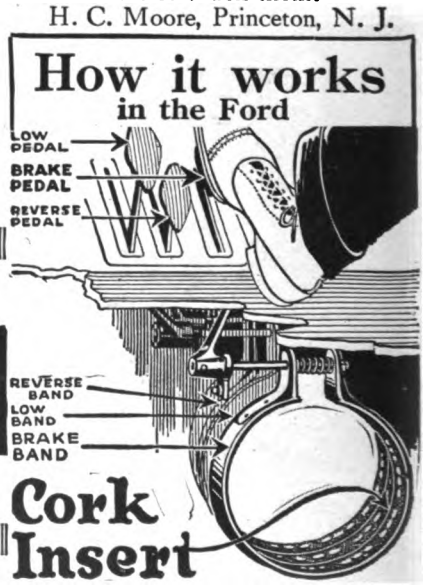
Advance Cork Insert

I have had Cork Inserts on my car for the last 8000 or 9000 miles, and like them very much. Fred R. Stamm, Los Angeles, Cal.

Advance Cork Insert

Put Cork Inserts in last July and have run them about 6000 miles and they are working fine. I have always had to replace my bands at least once during the summer, but from the way these are working will not have to touch them. H. C. Moore, Princeton, N. J.

Advance Automobile Accessories Corporation
Dept. G-3 56 E. Randolph St., Chicago



CORK ADVANCE INSERT

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The ACCESSORY and GARAGE JOURNAL

VOL. IX. PAWTUCKET, R. I., JULY, 1919 No. 3

Motor Vehicles May Replace Trolley Car Service

Increasing Fares Likely to Make Street Railways Quit Business

RECENT trolley car strikes have served to demonstrate the efficacy of the motor vehicle as a common carrier of passengers to such an extent that prediction is freely made that it will eventually supplant the trolley car. During these strikes the motor vehicles used for the transportation of the public have given such good service that it is doubtful if this form of service has not gained a foothold that will be permanent.

By filling the breach in the crisis the so-called jitney has won the support of the public and municipal authorities, who have been inclined to support the vested interests of the trolley companies against competition. Up to the present, in the face of such possibilities as the motor vehicles possess, very little foresight has been displayed by the authorities in making provision for the development that is certain to come.

Street railway officials and even state transportation officials have smugly asserted that the "jitney" could never take the place of the street railway systems. Yet, as a matter of fact motor vehicles are very rapidly taking the place of the trolley cars and will continue to do so with increasing rapidity as the trolleys, by reason of their financial difficulties, are obliged to increase fares and diminish service.

Today street railways are being discontinued or are being operated at a loss and the "jitneys" are running full of passengers and at a profit.

No Chance of Swindling Foxy Old John D. When He Purchases Gasoline

JOHN D. ROCKEFELLER questioned the accuracy of a gasoline filling machine at Portsmouth, N. H., and he was not satisfied that full measure was given him until the proprietor of the garage measured a sample gallon at his request.

Mr. Rockefeller ordered five gallons of gasoline put into the tank of each of his party's four machines. When told the price was 30 cents a gallon he summoned the woman proprietor.

"Madam, are you sure your pump delivers a full gallon to the stroke?"

"Absolutely," she told him.

"It does not look so to me," insisted the oil magnate. "Would you mind having it tested for me?"

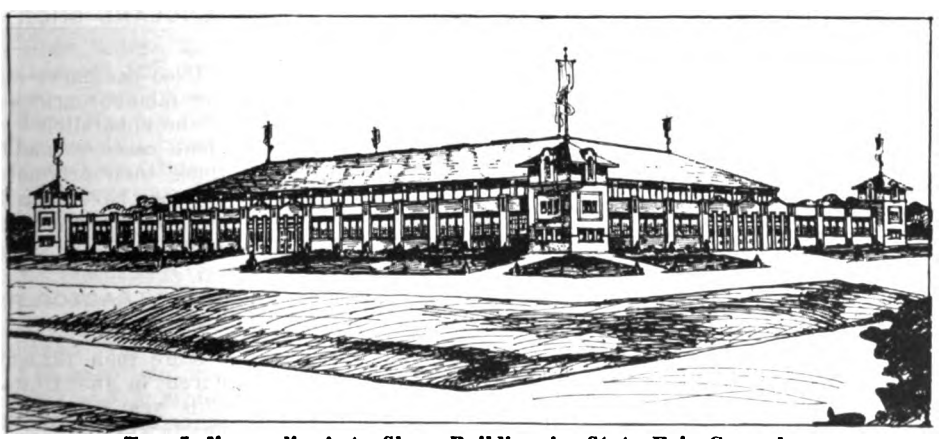
When the test proved the pump was accurate, Rockefeller said:

"It's the first pump I've seen in several days which is accurate. Thank you for measuring it for me."

INDIANAPOLIS SHOW BUILDING.

The new Indianapolis Automobile Show building, in which will be staged the 19th automobile show of the Indianapolis Automobile Trade Association during State Fair week, Sept. 1-6, will be completed about Aug. 23. It covers two acres and is being built at a cost of $120,000.

At the four corners will be massive pylons, in which will be situated offices, telephones and public rooms.



New Indianapolis Auto Show Building in State Fair Grounds.

Prices Take Jump As Car Shortage Continues

Failure of New Models to Show Radical Changes Due to War

NEW models of automobiles coming on the market fail to embody any radical changes. Improvements in detail have been added that make the cars better than their predecessors, just as the cars of 1919 were improvements of the cars of 1918, but those who expected that the extensive use of motor vehicles in the war would bring about radical changes will be disappointed, if they examine the specifications that so far have been announced.

Prices, it is believed in the industry, must inevitably go down, but not right away. Although the industry is getting back into full swing and big production, the materials and labor situation are such that prices instead of turning downward have taken a distinctly upward swing. This condition, it is believed, will continue throughout the year, because the market for cars cannot possibly be satisfied in the next six months. What will happen next spring is entirely a matter of speculation.

Distributors throughout the country estimate that there is a demand for not less than 500,000 closed cars for delivery to consumers not later than Jan. 1. The closed car builders report that they cannot build more than 230,000 in time for the car makers to mount them and make delivery to their distributors by January.

As a result of this condition the price of closed cars is increasing. Very few dealers are even now able to give customers any.

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promise of delivery on the stock models, and special closed bodies of all types are already beyond the reach of the average buyer.

If materials can be obtained at reasonable prices and the labor market becomes settled, the competitive state of the motor vehicle industry will surely cause a scaling down of prices by spring. But close observers of conditions are inclined to believe that another year at least must elapse before the great deficit in the supply of motor vehicles is overcome, and that not until then will there be mucb revision downward.

War Great Educator.

While the war did not cause any discoveries of tremendous moment that will revolutionize the methods of construction that have been followed in recent years in producing cars for the general public, it was a great educator. Such a test that was given the cars and trucks that took part in the long struggle on the various fronts revealed opportunities for improvement in almost every part of the structure of the vehicle, in frame, wheels, spring, motor, transmission, final drive, axles, bodies and control. It is this information that is being applied to the new models.

There is no widespread leap to the multi-cylinder field, as some expected would result from the development of the airplane motor. The companies that have been producing multi-cylinder cars will continue to build them and there will be about the same relative number of eights and twelves on the market as there are at present. Some of the new concerns that are preparing to enter the business in the 1920 season will undoubtedly produce multi-cylinder cars, as the smoothness of operation of this type of power plant has a strong appeal to the motorist.

Indications, however, are that the trend that was apparent in this year's product will be continued. That is distinctly toward the improvement of the six and four with the aim of giving them the flexibility of control that is the great appeal of the eight and twelve. The employment of double sets of valves is a means to this end that is being extended and improved carburetion is another step in the same direction.

New manufacturers are entering the field, for the most part with the idea of going after the vast market for low and medium priced cars. Another six months, when the shows are in progress, the public may see a large number of cars of this type, mostly of the four and six-cylinder types.

However, producers of the expensive, luxurious cars have yet seen nothing to induce them to change their policy of building the best that can be built, and they feel certain that their market will increase rather than diminish. Even in the face of rising costs they have not changed their policy. New models of these cars are refined to the last detail in every part of their mechanism and body work, but they introduce no departure from former practises in the essential features.

There continues a constant demand from the sales departments for novelties in bodies, and it is practically certain that they will be forthcoming. Straight lines gave way to curves and curves to straight lines again, and with each succeeding change the grace of the bodies advanced. It is probable that the turn for the curves will soon come again; indeed, a trend in that direction is evident in some of the newest models of enclosed cars that have been produced for the fall trade.

Advances in Prices.

Touring car price advances ranged from $50 to more than $1000. Locomobile has announced a greater price jump than any, advancing $1100 on open cars and $1400 on closed models, with still greater increase on special body jobs, necessary, as explained by the company, to maintain and develop production up to customary standard under present costs. The new schedule of Locomobile prices brings the touring car from $7000 to $8100, the special four-passenger touring from $7100 to $8200, the limousine and landaulet from $8200 to $9600, the chassis alone jumping from $6000 to $7100, and with custom bodies coming as high as $11,000. The company will continue its policy of limited production.

Chalmers prices are $120 ahead on five-passenger models and $150 on seven-passenger, all effective at once.

The Maxwell touring car has been raised $90 to $985.

Cadillac is up on six out of 13 of its models, open touring models remaining the same and will probably continue so, but closed cars are increased from $100 to $300.

Studebaker has gone up $100 on touring and open models and $150 on closed cars, and Hudson inaugurated an advance of $125 on all models, with a $200 rise in the Essex phaeton, from $1395 to $1595, the five-passenger sedan remaining $2250.

The price of the Oldsmobile eight has been increased from $1795 to $1895. Although the price of other models remains unchanged, every indication points to extension of the increase in the immediate future.

The Chevrolet Motor Co., it is rumored, will inaugurate a new and higher price schedule on all models in August.

The Paige-Detroit Motor Car Co. will bring out its new series very shortly and it is altogether probable that the price will go up within 30 days. The Hupp Motor Car Corporation prices have been guaranteed until Aug. 1.

Buick has advanced $100 on closed cars, the touring model remaining as in the spring, but deliveries are far behind orders and the company does not expect to be able to produce more than half the closed cars demanded by its dealers.

Pierce-Arrow prices have been up since June 24. The five-passenger touring is $7650; seven-passenger touring, $7750; closed cars range from $9050 to $9450.

Mitchell cars in the improved model, "E-40," were raised $100 July 1, the new price being $1575. The new Liberty closed models, a four-passenger coupe and a five-passenger car, are offered at lowered prices, the former at $2370 and the latter at $2470.

Tire Makers Decide Not To Cut Prices

It is understood that the big tire companies have abandoned the plan of making a further reduction in tire prices this midsummer. Late in April when the 15 per cent. May cut was definitely agreed upon, it was tentatively decided to make another cut in August in order to keep the industry on a healthy basis with respect to margin of profit and give the consumer the benefit of lower rubber prices.

Of late, however, the cost of cotton fabric has advanced to such an extent as to preclude a big reduction in the price of finished tires. Consequently the big Akron companies will maintain the standard price policy.

TRUCK MARKET.

The passing of the Pierce-Arrow common dividend is regarded as a reflection of the unsatisfactory business prevailing in the motor truck industry. Sales of leading truck producers, particularly those who turn out the heavy types like Pierce-Arrow, have for months been disappointing. In fact, the truck business as a whole has been indifferent ever since the signing of the armistice ended the government contracts.

Earnings for the fiscal year for Pierce-Arrow have been at the rate of more than $5 a share per annum on common, but it is planned to conserve the cash for contemplated capital expenditures to maintain the high standard of quality and meeting competition. The company's war orders have been completed.

Sales of the White Motor are holding up well. Production at the Cleveland plant have been averaging 37 trucks a day for some time.

The chassis price of the 97-inch wheelbase Autocar motor truck will be advanced $150 Aug. 1 to $2300 and the 120-inch wheelbase chassis from $2150 to $2400.

ENGLAND SHORT OF USED CARS.

Used passenger automobiles are bringing fabulous prices in England because of the unparalleled car famine there. In some cases second-hand cars are three times their original prices. No passenger cars have been built in England, except for war purposes, for over four years.

TRACTOR PRODUCTION.

More than 132,000 tractors were produced in the United States last year. This year's production is estimated at nearly 315,000.

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Ford Motor Co. Has Become $100,000,000 Firm

FOLLOWING the announcement that Edsel B. Ford had purchased the stock of the minority holders of the Ford Motor Co., with the exception of the 2180 shares owned by James Couzens, a certificate was filed at Dover, Del., whereby the Eastern Holding Co. changed its name to the Ford Motor Co. and increased its capital from $100,000 to $100,000,000.

It is understood that the new Ford company will take over the shares of the present Ford company and issue its own shares to the stockholders. Directors of the Ford company some years ago voted to increase the capital to $100,000,000 because the investment in the business was much greater than its capital. It was found, however, that the Michigan laws do not permit corporations to capitalize for more than $25,000,000.

After Edsel Ford bought the minority stock, J. P. Morgan & Co. managed a syndicate to provide a one-year credit of $75,000,000 for the purchase. The credit has been over-subscribed. Minority stockholders will receive about $12,500 a share for their stock of $100 par value. Couzens was the largest stockholder aside from the Fords, his shares being valued at $29,250,000. Other stockholders, the amount of stock they held before selling and the value follows:

John F. Dodge, 1000, $12,500,000; Horace E. Dodge, 1000, $12,500,000; J. W. Anderson, 1000, $12,500,000; H. H. Rackham, 999, $12,487,500; David Gray, 525, $6,562,500; Philip H. Gray, 525, $6,562,500; Paul R. Gray, 525, $6,562,500; Alice Gray Kales, 525, $6,562,500; Mrs. A. P. Hauss, 20, $250,000.

Before the purchase, Henry Ford owned 11,400 shares, Edsel B. Ford 300 shares and Frank L. Klingensmith, treasurer of the company, one share. Edsel has been president of the company.

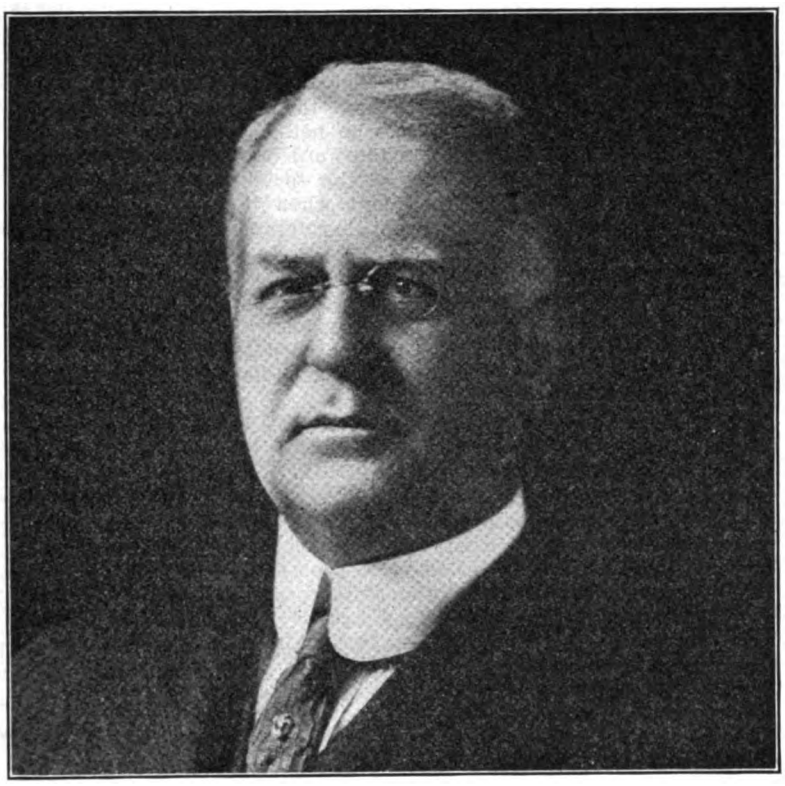
This Year's Profits.

W. C. Durant, president of General Motors Corporation, had an opportunity to buy control of the Ford Motor Co. in 1908 for $6,000,000, but Wall Street would not finance the purchase. The Ford company is understood to have total assets of about $225,000,000 and a profit and loss of about $215,000,000. Profits of the company for nine months of the fiscal year 1919 were placed by Ford's attorney in the libel suit against the Chicago Tribune at $33,982,292. The year after Ford cut the price of touring cars $80 a car the company sold 800,000 cars. It is claimed as many would have been sold had the price not been cut, and that Ford thus voluntarily relinquished a profit of $64,000,0000 to his company, more than half of which would have accrued to him personally.

Edsel Ford said: "Of course, there will be no need of a new company now. We will develop plans for the cheaper car, and will try to be ready to manufacture it just as soon as we can catch up with orders on the present standard models.

"We are overflowing with orders for the standard cars. We are making about 3200 a day, and orders are coming in for more than 4000 a day. Plans for the next fiscal year, beginning Aug. 1, call for a largely increased production. It is probable that some of our plants which are now used for assembling will be equipped to do some of the manufacturing. The completion of these negotiations leaves us free to do as we would like to do in the expansion of business."

A Detroit newspaper states that it is proposed through reorganization of the Ford company to make it possible for employes to share in the dividends. Henry Ford is quoted as saying: "By making it a cooperative company we propose to make it possible in the future to divide with employees the melons that have in the past been cut with minority stockholders."



JAMES COUZENS.
Only Minority Stockholder Retaining Interest in the Ford Motor Co.

History of Company.

The Ford Motor Co. was 16 years old last month. Twelve years before its inception Henry Ford, an employee of the Edison company, began his experimental work on gasoline driven motor cars. Because no parts for gasoline engines were available he built the first car with his hands. The building took two years, but the car ran. Five years more were spent in further experiment and the building of a second car.

The Henry Ford Automobile Co. and the Detroit Automobile Co. successfully organized to market the "horseless carriage," awakened little interest and died of inanition. In 1902 Henry Ford formed a partnership with A. Y. Malcomson, a coal dealer, and out of that partnership finally emerged, after many vicissitudes, the Ford Motor Co., now the world's biggest automobile manufactory.

Mr. Malcomson agreed to pay all expenses up to $3000. A small structure in Detroit was rented as a factory and production began. The $3000 was soon spent and Malcomson had invested $4000 in addition before satisfactory results were obtained.

The partners began looking about for more capital, but the investing public was not enthusiastic. Finally a few pioneers were found and the company was formed, Ford and Malcomson turning in their invention and rights for 51 per cent. of the stock. The Dodge brothers, John F. and Horace E., who were then operating a machine shop in Detroit, subscribed for $5000 of stock each, the money to be paid out of the profits on 650 chassis, for whose manufacture they were given the contract.

John W. Anderson and Horace H. Rackham, law partners, who drew up the papers when the company was organized, invested, against the advice of their banking acquaintances, $5000 each. John S. Gray, a conservative banker, was induced to invest $10,000 and become the

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president, after Malcomson guaranteed him against pecuniary loss.

James Couzens, then a clerk in the employ of Malcomson at $1800 a year, took his entire savings, $400, placed it with $500 presented to him by Malcomson, and $100 lent him by his sister, now Mrs. A. P. Hauss, and with this and his note for $1500, subscribed for $2500 of the company's stock and was thereupon made secretary and business manager. He was likewise its bookkeeper and cashier, his entire office force consisting of a one-armed stenographer.

Malcomson Quits.

The venture was a success from the start and by the end of the year the stockholders, because of the dividends declared, had received back every dollar they had invested. Despite the financial success the original partners did not work well in harness and in 1906 Malcomson sold his interests to Ford for $100 in cash and $75,000 in a note.

Albert Strelow, who had invested $5000, sold his stock to Couzens for $25,000. He had become interested in a gold mine, in which he eventually dropped all of his money while other Ford stockholders were becoming millonaires. New buildings were erected, until finally the company came into possession of its present plant, where every process is done in a thoroughly efficient manner.

The Selden patent was one of the first stumbling blocks for the Ford company. After seven years of litigation Ford proved that his own first car was running in the streets under its own motive power before the Selden patent, which was claimed to cover every kind of gasoline driven vehicle was granted.

Early in 1914 the industrial world was astonished by the announcement that the Ford Motor Co. would share $10,000,000 in the way of profits with its employees. Following this, 10,000 men in search of jobs besieged the door of the employment office, whence they had to be turned away by the expedient of a fire hose. The plan was put into effect. Later that year the company published a balance sheet, which showed a surplus of $50,000,000 and $27,000,000 in cash on hand or in banks.

The Ford company opened an English school for its employees and took other steps to aid their welfare. But while the company was making its astonishing progress, all was not happy within its official family. Finally James Couzens, vice president, announced his retirement from the company. No convincing reason was given, but it was rumored that Couzens had objected to Ford's objection to military preparedness and his "peace ship" project.

Dodge-Ford Suit.

There had also been developing a wider breach between Ford and the Dodge brothers, and this matter came to a head in 1916 when the Dodge brothers in their position as minority stockholders began suit against Ford as the majority stockholder to compel a larger division of earnings among the stockholders. Previously Ford had announced the intention of the company to integrate itself further through the establishment of its own blast furnaces and that it was also planned to double the size of the plant.

As part of their suit, the Dodge brothers sought to prevent Ford from carrying out his designs. The Dodge brothers also assailed the policy of reducing the price of the car as production increased. The suit was vigorously waged and contested. In court Ford testified that the Dodge brothers offered to sell him their stock for $35,000,000. The contest dragged its way up to the Supreme Court and the final decision gave comfort to both sides. The right of the company to expand was upheld, its right to build blast furnaces was confirmed, and the company was ordered to disburse from its surplus $19,000,000 in dividends.

Early this year Norval A. Hawkins, the general sales manager, retired from the company. He had been sales manager from the time the company produced a small number of cars. Then came the resignation of C. Harold Wills, looked upon as the mechanical genius of the organization. He had become associated with Ford at the beginning of the company, having previously been a draughtsman. Next came the resignation of John R. Lee, who had been an outstanding figure in the Ford organization. He was head of the sociological department of the plant when it first put into effect its profit-sharing and educational systems.

Ford himself severed the close ties that bound him to the company when in the early part of the year he resigned the presidency, to be succeeded by his son, Edsel, who at 24 became head of the great comporation.

SPECIFICATIONS FOR NEXT YEAR AT INDIANAPOLIS.

Specifications announced for the 1920 500-mile race on the Indianapolis Motor Speedway foreshadow sweeping changes in the field of automobile racing. The detailed specifications are as follows: Piston displacement, 183 cubic inches; minimum weight, 1700 pounds, with no ballast allowed; standard tread, 56 inches; seats may be staggered eight inches; right hand drive; qualifying speed, average of 80 miles an hour for four laps of the track, 10 miles.

The speedway's announcement precludes all chance of converted light cars now in existence being entered for the 1920 classic, cars of this type being considered incapable of producing anything of profit to the advancement of automobile design, and being effectually barred by the restrictions governing speed and minimum weight. A fresh infusion of inventive discovery into the field of engineering knowledge is what the Indianapolis speedway seeks to stimulate, and its 1920 specifications have been carefully drawn with this in view.

P. C. Chrysler, formerly manager of the Philadelphia branch of the Hurlburt Motor Truck Co., has been appointed director of the wholesale department of Hurlburt Motors, Inc.

BRIGGS & STRATTON TAKE OVER SMITH MOTOR WHEEL.

The Briggs & Stratton Co., Milwaukee, maker of electrical apparatus and ignition systems, recently acquired all rights, titles and manufacturing privileges of the Smith motor wheel, formerly owned by the A. O. Smith Corporation, Milwaukee. The sales and manufacturing staff of the Briggs & Stratton Co. has been augmented by several former members of the Smith organization.

J. A. Benson, former sales manager of the motor wheel division of the Smith corporation, is now affiliated with Briggs & Stratton in a similar capacity, and with him are L. Kohn, service manager, and P. Mack, designer and superintendent of motor wheel production.

Additions are being made to the already large and well equipped Briggs & Stratton plant. Additional machinery of the latest improved type is being installed to facilitate an increased output of Smith motor wheels.

Production of a new model has been begun and this will be ready for delivery about Aug. 15. This new model includes several new improvements that will make it much more substantial than the old models. A national advertising campaign to increase and maintain the demand for this popular bicycle attachment is planned.

WALDEN-WORCESTER WESTERN BRANCH IS MOVED.

The western branch office of Walden-Worcester, Inc., Worcester, Mass., pioneer in the socket wrench game, has been moved to larger and more centrally located quarters at 487-91 Monadnock building, San Francisco. The object of the branch was to form a closer link between the factory and its many friends in the West.

Rapid strides have been made in this direction, as is shown by the great increase in sales due to closer work with the jobber, together with other intensive sales work carried on through this office. L. A. Raasch is branch manager. Associated with him is R. K. Flanagan.

NEW GMC OFFICERS.

H. H. Rice has been elected vice president of the General Motors Corporation. Other officers elected are: M. L. Prensky, treasurer in place of Mr. Rice; Frank Turner, comptroller in place of Mr. Prensky; E. W. Proctor, assistant comptroller, in place of Mr. Turner; W. W. Bacon, assistant treasurer in place of Mr. Proctor; J. H. Noble, assistant treasurer; A. Bradley, assistant treasurer and J. F. Porter, assistant comptroller in place of Mr. Kimmee, who has been made assistant to the manager of the division.

EDISON STORAGE BATTERY OFFICE.

The Edison Storage Battery Co., announces the removal of its district office in Pittsburgh to room 431, Union Arcade building.

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How Advertising Creates Demand for Cars

ADVERTISING created the demand for automobiles which made possible tremendous production and the accompanying lessening of the overhead costs, enabling the manufacturer to turn out a wonderful machine at a comparatively low price. Without advertising the automobile industry could never have attained the lofty position it now holds in the industrial world.

Automobile men are confirmed believers in advertising. They never ask, "Does advertising pay?" They know it pays, and pays big, and their only question is, "Just how much will we appropriate for advertising?" Like theatrical men, they would not think of attempting to conduct their business without the aid of liberal advertising.

In the old days, before national advertising became such a wonderful factor in distribution, persons depended largely upon the recommendations of their local dealers. Now, however, their minds are to a great extent influenced by the national advertising of a product and they often decide just what they are to buy before they go to a store.

The fact that national influences, such as advertising, are responsible for the majority of the sales of automobiles is shown by the records of the sales of cars in various cities. The 10 most popular cars in Philadelphia are probably of the same makes as the 10 cars that sell the best in Providence, R. I., or any other city. If local influences determined the popularity of an automobile, one car would be the most popular in one city and another car the leading seller in some other place.

Must Create Demand.

Local dealers are important. They get prospects, close contracts, render service, etc., but what they actually do is small compared with the national influences set to work by the manufacturer. Therefore, it is highly essential that the local dealer shall make his advertising campaigns fit in exactly with those of the manufacturer.

The local dealer looks to the manufacturer not only to create the goods, but also to create a demand for them. The manufacturer in turn has the right to expect the dealer to co-operate with him in every way possible in bringing about this demand. It is this combination of powerful national advertising on the part of the manufacturer and the strong retailer's support that has produced the spectacular success in the automobile field.

The automobile industry excels in modern manufacturing and selling efficiency. In the manufacture of a car everything moves at a scientifically determined speed. Each task has been minutely analyzed, a factory transportation system installed and there is made possible the piecemeal fitting together of the thousands of parts with clock-like precision so that there are no waste moments.

The manufacturer, having made possible great production, insists upon intensive selling methods so that his cars will be sold as rapidly as they are made. His scheme of operations does not permit any loss for over-production. There must be a market for every car his factory turns out.

In selecting his local dealers he picks out alert business men, who will live up to his fundamentals of representation. He selects men who will see that the car attains every degree of popularity it deserves. The manufacturer examines into the possibilities of the locality and determines just how many of his cars should be sold there in the course of a given time, and his local representative must contract for this number.

Cooperation Essential.

If the dealer is to sell his quota he must combine his selling force to that of the manufacturer's advertising. He must realize that advertising is printed salesmanship—the connecting link between the supply and the demand. He must follow the lead of other dealers in intensive and effective advertising that will keep the public fully informed regarding the car he represents. But he should not overlook the fact that the function of advertising is to perform the educational work, and not to carry the entire burden of selling the product.

Advertising Creates Demand and It Is the Connecting Link.

The advertising campaign must be planned carefully. Any change after the campaign is started is bound to prove a costly one. Usually the manufacturer furnishes an advertising service which will guide the dealer. Knowledge of how the national advertiser plans his campaign is valuable.

First of all, he decides upon a protected name or trade mark. If the product is to be an automobile accessory small in size, he will usually select a distinctive package or container. He chooses a slogan or catch phrase. His next step is to analyze the field for selling his goods. He arranges for the distribution and forms his sales force. He is now ready for the advertising schedule.

Advertising creates a demand that can be estimated, so that production can be governed accordingly, without any waste in over-production. Advertising is the connecting link, the shortest line, between the advertiser and the consumer. It carries a message anywhere and everywhere.

Preparation of Copy.

Careful consideration must be given

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to the preparation of advertising copy. Simply "filling up the space" with an uninteresting announcement cannot be expected to bring results. Advertising is news, just as the stories and articles in newspapers are news matter. If one is to expect the reader to read his advertisement, he must make it interesting and newsy.

If the same message is run continually in an advertisement, the chances are that it will be read only once. There is no reason why the reader should keep reading it every time it is published. Give him fresh copy and he will be interested, provided you have an interesting message for him.

The advertising should be prepared by one expert in advertising matters. The person preparing the copy should have in mind just what results the particular advertisement is expected to bring. It is too often the practise of many automobile dealers to forget all about their advertising copy until the last minute, and then have something scribbled off hastily to occupy the space for which he has contracted.

The manufacturer, fully appreciating what a potent factor advertising is in his business, has his advertising work done by skilled specialists, who give the utmost consideration to every bit of copy turned out. They usually prepare suitable advertising matter for the local dealers, who should not hesitate to avail themselves of this service.

Some automobile manufacturers employ press representatives to write interviews and other articles for the news columns of newspapers and trade magazines. As most newspapers conduct automobile pages or columns, they are glad to get these write-ups and give them considerable prominence. The same opportunity is offered to dealers to avail themselves of this free advertising. If they see to it that the material is supplied to the papers, the editors will do the rest. All such material should have a distinctive news value.

The local dealer is often supplied with prepared interviews, which he can furnish to the newspapers as coming from himself. As he receives all the latest news from the factory he represents he is in a position to prepare good newsy articles that the newspapers will be glad to get. All articles offered to newspapers should be typewritten, in simple English and in conformity with the style of the publication to which they are to be sent.

GMC PROVIDING SHELTER FOR ITS WORKERS.

The General Motors Corporation, which through the General Motors Truck Co., tractor division, builds GMC-Samson tractors at Pontiac, Mich., is forced to extremes to provide houses for its workers. It has leased a hotel in that city, the Wellington, exclusively for their accommodation, is erecting a large apartment building and is equipping a part of the old Munroe plant for rooms that may be rented. These rooms are to be rented to single men.

Property Owners and Garage Men Form Association

The Garage and Property Owners' Association, 63 Park Row, New York, was organized recently. The objects are to apply for and obtain permits from the fire department; to give any and all technical advice in regard to building zones, garage and property matters; to protect and promote the mutual interests of its members; to promote and encourage the enactment of laws beneficial to and take united action upon legislative and municipal matters; to oppose and take necessary measures to prevent the enactment of enforcement of unjust legislation in so far as it affects building zones, garages and property matters.

This association, the first and only one of its character in Greater New York, was organized at the request of numerous business interests who have had considerable difficulty on account of the building zone resolution, adopted by the Board of Estimate and Apportionment, affecting private garages. All public and private garage owners, as well as property owners, now can be saved the necessity of personally applying and obtaining permits. In addition, the association will place at the disposal of members technical and practical knowledge of construction maintenance, alteration and equipment of buildings for fire prevention and fire protection.

NEW BRITISH MOTOR SUPPLY COMPANY IS FORMED.

Trade Commissioner H. G. Brock, London, reports that a gigantic project that will furnish improved facilities for the supply and repair of automobiles was made public recently, when the Times announced the formation of the British Motor Trading Corporation, nominal capital $10,000,000. The company will be controlled by several officers who have gained prominence on account of their organizing ability; and its first step will be to open in the principal cities large depots which will carry immense stocks of spares for every make of car and be equipped with machinery capable of handling the most difficult repair work. It is stated that the "B. M. T. C. Ltd." has recently placed an order amounting to $5,000,000 for Crossley cars alone, and has entered into an agreement by which it secures the selling rights for the greater part of England and all of Scotland for the Straker-Squire cars.

NEW ERA HAS UNIQUE SPRING TEMPERING DEVICE.

New Era "better" springs are heated in an oven, whose temperature is maintained at exactly the right degree by an electric pyrometer. When the steel shows the right color to the expert oven operator the spring leaves are withdrawn and laid in that wonderful machine, exclusively a piece of New Era mechanism, and shaped and tempered at the same time, in such a manner that every fraction of every inch of the surface gets the same temperature and will touch in a close fit over its whole length, with its sister leaf in the spring, when complete.

It is customary for spring makers to bend the springs into shape, section by section, until the leaves approximately take on the shape required, but because the New Era spring is forced into shape, much as a half of a lemon conforms to the shape of a lemon squeezer, the New Era spring is shaped correctly and tempered uniformly.

The wonderful shaping and tempering machine consists of an endless chain, interspersed at equal distances with spring leaf shapers, which move progressively from the top of a 1500-gallon oil tank down to and across the bottom and up the other side. Each spring former starts with a white hot spring leaf and continues through 1500 gallons of tempered oil, gradually cooling the leaf, giving its temper as well as its shape. When the leaf rises to the top of the fluid it is uniformly shaped and uniformly tempered. The oil in the tempering tank is maintained at a uniform temperature, no matter how many springs are immersed, by a circulating device, whereby cold water comes in contact with the exterior of the oil tank, keeping it cool.

A single machine in the New Era Spring and Specialty Co. has a capacity of tempering and shaping 240,000 complete springs every year. After New Era "better" springs are removed from this shaping and tempering device they are annealed in an annealing furnace to further assure that the springs are properly tempered and will be tough as well as hard. In this annealing furnace, close watch is kept over the process and again the electric pyrometer plays its important part in making "better" springs.

Shape, temper and toughness are the qualities that determine a spring's life, resilience and value. The New Era shaping and tempering machine enables the manufacturer to produce quality springs in a quantity that in turn makes possible a low selling cost and price to the consumer.

MILLER CREDIT TO THE INDUSTRY.

Charles E. Miller, the big accessory jobber, has a 100 per cent. record on every war campaign since the beginning of the conflict. Mr. Miller's various stores contributed 18 men to the fighting forces of the United States. Although his sales force was greatly crippled, Mr. Miller sent the men away with a smile, also with a substantial present. In order to keep his force enthused in regard to the war Mr. Miller put up cash prizes for the best efforts shown in each of the various drives through the war. As vice chairman of the auto division of the Liberty Loan Committee, Mr. Miller was tireless in his efforts to put each loan over the top and, incidentally, he holds the jobbing record for individual bond purchases.

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Production of Cheap Autos Stumps British

ENGLAND is discussing the cheap motor car and its possibilities. In recent years the contention has been that the English manufacturers should be able to compete with the Americans. Many persons familiar with the methods of production on both sides of the Atlantic and the peculiarities of both markets have regarded this as impracticable. The public has been led to believe that soon an English car would be on the market which would make unprofitable imports from the United States.

But a change is noticeable. Several motor experts have acknowledged that the cheap American car cannot be reproduced in England and that a wise policy would be to build a car to sell for about $2500 which would be so good that it would sell readily. It is thought it will not be long before it is acknowledged that American cars should be admitted at perhaps 25 per cent. duty in a belief that the demand for the higher priced cars will increase.

Enthusiasts have never suggested that more than 50,000 cheap cars could be sold in England in a year even if they were produced in England at the American price. When it is realized that American production reaches several hundred thousand annually, the hopelessness of an attempt at competition from England is seen.

The British and even the government take the stand that privately owned cars are a luxury and should be taxed to the limit. When this point of view changes a common sense policy will prevail. There is no country which would benefit more by motor transport than England. A horse and vehicle cost as much as a cheap car. The roads are ideal; no part of England is much beyond the reach of an auto in a day's journey.

Little or no effort is made by railroads to handle small lots of produce and delivery systems are few. The farmer has a fine road from his door to market. Since traffic makes traffic, the more cars used the more will the market expand in increasing ratio.

The English auto manufacturer gets his order before he builds, so the market loses the impetus of selling departments. The cheapest car that can be produced advantageously in England is one that will sell for about $2500. This leaves an open market for cheap American cars. "Once an auto user always one," is a trade axiom. In the end the English manufacturers would sell more machines than they would if they barred the cheap cars is the best opinion.

An idea of the abnormal demand for cars is obtained at the government auction of second hand cars. A few days ago 100 Ford cars that had seen several years of war service sold at an average of $1150 each. With the exception of two or three standard makes of high priced cars, the second hand cheap car brings a much higher price in proportion than the better type of second hand car.

"'ERE'S JUST THE BIT OF A STIMULANT H'I NEED"

Motor Transport Cheaper.

It is not difficult to foresee that most of this country's traffic will be by motor transport. That method is cheaper, quicker, more convenient and pleasanter for passenger travel. London lends itself to auto travel and motor truck traffic. Before the war there were several motor delivery services covering a radius of 50 miles.

Trade Commissioner H. G. Brock, London, has made the following report regarding post-war developments in the British motor industry:

"Automobile makers of the United Kingdom are now incorporating in their new models all that has been learned in the way of improvements during the past five years. In this way they hope to produce, despite high wages and restricted output, salable motor cars to compete in the same markets as American and other foreign built cars.

"British manufacturers appear to have realized that the first necessity is for them to treat chassis work and accessories in a totally different manner from that which was general before the war if British made cars are to be marketed at competitive prices. Factory capacities for producing standard chassis work have been greatly enlarged, and the problems of cutting down weight, reducing production costs, and securing economical domestic and foreign transport have all received a great deal of attention. It is now realized that it is necessary to treat the chassis and accessories of a car as strictly engineering propositions which must be settled more or less directly by the chassis designer and builder.

"The experience of the war appears to have taught the British motor industry, in common with others, the need for combination of effort and unity of control, and a tendency in this direction is to be seen in a movement for amalgamations in the motor trade, though, up to the present, the British motoring organizations have not achieved complete combination. They have moved in this direction, however, by forming themselves into two main groups, each of which is made up of a large number of organizations.

"This tendency to combine has been recently illustrated in Great Britain by the drawing together of the motor interests of such armament firms as Vickers (Ltd.) and Armstrong, Whitworth & Co., the latter of which has still further enlarged its motor interests by the acquisition of the Siddeley-Deasy Co. of Coventry. The engineering firm of Beardmore and of Thorneycroft are also among the steel manufacturers and shipbuilders in Great Britain who have long been interested in the automobile industry."

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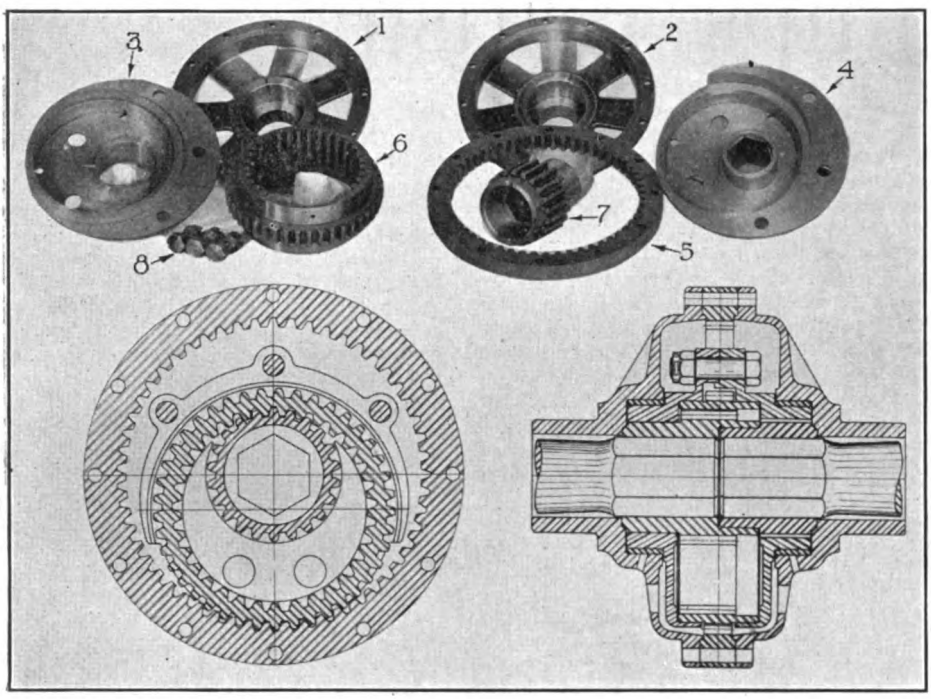
ELBERTZ DIFFERENTIAL GEARSET WELL TESTED



The Elberts Differential Gearset: Above, a Unit Disassembled After Use for 9000 Miles in a Truck; Below, a Cross Section of the Assembly.

A DIFFERENTIAL gearset for which broad claims for efficiency are made is the Elbertz, now being produced by the B. F. Everitt Co., Detroit, the licensee under the patent, and which has licensed several of the largest axle builders of the country to build these gearsets in such numbers as are necessary for their requirements.

Statement is made that the Elbertz gearset has been exhaustively tested by several concerns, builders of axles and trucks, during the last 18 months. The gearset is claimed to be fully compensating and that it will differentiate as will the ordinary type of gearset when turning. When driven straight forward it applies power to each driving wheel in the exact ratio to the tractive effort required; at least to the limit of the combined traction of both driving wheels under all conditions, instead of delivering all the power or torque of the engine to the wheel with the least resistance or traction.

The differential consists of seven main members, which are shown in the accompanying illustration. Of these those indicated as No. 1 and No. 2 are the differential cases, which are respectively left and right, No. 3 and No. 4, which are the crank members; No. 5, which is the internal case gear; No. 6, which is the intermediate gear; No. 7, which is the shaft gear, with three sets of bolts and nuts, which retain the two crank members as one unit when assembled.

The gearset is described as an ingenious arrangement of an epicyclic train of gears, consisting of the internal case gear, which is secured to the differential housing, and which in turn meshes with the intermediate gear member, which can revolve about a bearing on the crank arm or eccentric member. The eccentric member engages with one axle shaft and turns with it, and the other axle shaft engages with the shaft gear which engages with the internal teeth of the intermediate gear member.

The gearset is said to be adapted for all sizes of vehicles and may be constructed for any machine or work. Its practicality is maintained to be undoubtedly established by service. The illustration was made from parts taken from a 3½-ton truck of well known make after it had been driven 9000 miles, which was much of the time considerably overloaded. The photograph was made without retouching and the gearset is as was seen when removed. Showing no evidences of wear.

GMC EARNS $45,000,000 FIRST HALF OF YEAR.

General Motors Co. earnings for the first six months of this year, before taxes are estimated in excess of $45,000,000. Actual cash position on June 14 was as follows: Cash on hand and in bank, $74,567,449; sight drafts attached to bills of lading, $7,430,208; Liberty bonds valued on books at $23,242,025; total, $105,239,682. This represents $131.25 in cash or equivalent for every $100 of debenture stock or preferred that will be outstanding when present debenture syndicate is concluded.

The syndicate reports that the 300,000 share issue is well over 90 per cent. sold. The number of purchasers, it is announced, will exceed 6000.

Spark Plug Types For the Tractor

By O. C. ROHDE.

AN AUTOMOBILE engine runs at full load and speed during only a very small part of its term of service. A tractor engine is running at full load practically all the time. Because of this and the fact that low grade fuels are largely used in tractor engines, the problem of spark plugs for tractors differs to some extent from that of spark plugs for automobiles.

As a rule the use of low grade fuel means higher compression, higher temperature and more dirt and carbon. The last item is made still worse by dust taken in while working during the dry seasons.

It is impossible at the present time to recommend any one type of plug for tractor work. High temperature engines require a plug with an insulator which is exceptionally good electrically, can stand the repeated applications of high heat and at the same time not have enough of the central electrode exposed to cause overheating, which may induce preignition. An oily engine requires a plug having an insulator with unusually long shorting surface at the firing end.

Only Two Types.

In spite of the great number of different plugs on the market there are in reality just two types, those with petticoat or open insulators, and those with conical or closed insulators.

The former can be recommended for the engines which show a tendency to foul up rapidly, while the latter are recommended only in case the extra extension of wire in the petticoat type shows a tendency to cause preignition.

As a rule the tractor owner and operator is safe in using the plug furnished with the machine by the manufacturer. Failure of one or two plugs on any particular machine should not be considered enough cause for a change to another type of plug.

A few defective plugs do get out into service from time to time in spite of the utmost vigilance on the part of the plug manufacturer.

Troubles due to spark plugs may be divided into two classes—first, cutout or missing; second, preignition.

A missing plug can usually be detected by shorting from the upper terminal of the plug to the engine with a screw driver. The miss may be caused by a broken insulator. If this is the case the plug will miss fire pretty steadily both under load and while running idle. The only remedy in case of a two-piece plug is a new insulator and in case of a one-piece plug, a new plug.

Cause of Miss.

The miss may be caused by an insulator which is weak electrically. If this is the case it will miss when under load, but will recover when running idle. The remedy in this case is a new plug with a better grade of porcelain. In a case

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of this kind it is not always necessary to get another make of plug, but to specify to the dealer that the very latest insulator is desired. In case of Champion Toledo plugs, "3450" insulator will usually solve this trouble.

The miss may be caused by fouling or surface short. By this we mean that a continuous layer of carbon or other conducting material has been deposited on the lower end of the insulator and the spark is traveling through this instead of across the gap. A miss of this kind is usually intermittent for a while and finally the plug stops firing altogether. The immediate remedy is to clean the insulator either with a Champion "Minute" Cleaner or in case of a two-piece plug by taking it out of the shell and cleaning with gasoline and by scraping if necessary.

Where plugs show a tendency to foul up in this way very rapidly, especially where a wet, shiny coating of oil is deposited, it is advisable to change to another brand of oil which in many cases will get rid of most of this trouble.

Pre-Ignition.

Pre-ignition may be caused by other things than the plugs. If it is severe, it sometimes manifests itself by a spitting back through the intake, but it is always accompanied by a loss of power. What actually happens is this: Some part of the material inside the combustion chamber valves, carbon, plugs, etc., has become hot enough to fire the mixture before time for the spark. The piston is not yet at the top of its compression stroke when the force of this premature explosion tries to drive it back down. The momentum of the flywheel carries it over for a while, but power is of course lost. In case of pre-ignition the engine should first be examined to see whether there is an excessive accumulation of carbon and whether there are any particles hanging loose on valves or spark plugs.

The plugs should be looked over for rough edges on either wire or shell. If a petticoat plug is being used and no indications of this kind are to be found, it may be advisable to try a conical plug, which very often will overcome the trouble, though it may need more frequent cleaning.

Always bear in mind that the tractor engineers have run thorough tests before deciding which plug to use. The spark plug they finally decide upon is the one they believe to be the best suited for their engine. When a new plug is needed the tractor user should insist upon the same plug his engine was originally equipped with at the factory.

In general, the spark plug manufacturer is prepared to cope with the tractor plug problem and can furnish plugs to meet all present requirements. However, present day development in engines and fuels is so rapid that the material on the market is not always the latest obtainable. The dealers are learning to classify plugs for the various conditions of service and if the tractor owner will specify clearly just what the plug is to be used on he should have no trouble getting just the plug he needs.

DEALER PROVIDES FOR FREE TRUCK INSPECTION

System of Care Established More Than Three Years by the J. W. Maguire Co., Boston, Independent of Manufacturer.

TRUCK manufacturers have made provision for inspection of machines at the service stations of branches or dealers, and have developed organizations that are intended to do this with regularity, but these have been only reasonably successful because owners frequently believe that such examinations are proposed because the manufacturers are suspicious of the use made of machines and seek evidence that will justify evasion of responsibility for guarantee made in the sales contract, or the owners assume that the degree of care recommended is not necessary.

It is a fact, however, that some manufacturers have inspection plans that have been proven very economical, and when these are understood and are made use of by owners the operation and maintenance cost of the trucks have been considerably reduced and the efficiency more or less increased. There is nothing mysterious of these inspection systems. They are simply periodic examinations of the machines by men who are expert in their knowledge and who determine whether the condition of the trucks is up to the standard that will be most productive and valuable to the owners. They do not establish responsibility. The reports are made impartially and submitted to the owner, who can do whatever may seem necessary to obtain care that will afford the degree of care desirable.

In some instances the organizations are maintained by manufacturers and in others by branches or sales representatives, and occasionally the manufacturer and dealer may operate independently or unitedly, dependent upon the policies and the contracts existing.

Manufacturer's and Dealer's Service.

The J. W. Maguire Co., Boston, agent for New Hampshire and Eastern Massachusetts for Pierce-Arrow trucks, is now operating a system inaugurated more than three years ago, and which, while independent of, is coordinated with the service of the Pierce-Arrow Motor Car Co. The Pierce-Arrow company's service

J. W. MAGUIRE COMPANY
SERVICE DEPARTMENT

Estimated Miles per Week	Instrument Reading	Total Mileage

TRUCK NO. _____

DATE _____

INSPECTOR .....

OWNER .....

ITEMS MARKED (X) Required Attention and were Adjusted.
ITEMS MARKED (O) Required Attention but were unable to Adjust.

ITEMS	1	2	3	ITEMS	1	2	3
MOTOR				Universals			
Suspension				Case, Supports, Bearings			
Bearings				Gear Shift			
Valves				Shafts,-Intermediate, Flexible			
Push Rods				Rods,-Torque, Radius			
GOVERNOR				**STEERING ARRGT.**			
OILING				Pivot axles,—Levers			
Tank—Pipes				Rods,—Cross, Side			
Pump				Column,—Lever			
RADIATOR				**REAR AXLE**			
Water Pump				Oil Level			
Fan Belt				Worm Thrust			
CARBURETOR				Drive,—Plates, Shafts			
Gas Level				**CHASSIS**			
Float Needle				Foot Brake			
Air Valve				Hand Brake			
Tank,—Feed Pipe				Front Springs & Supports			
Primer, Pipes				Rear Springs & Supports			
IGNITION				Wheels,—Bearings			
Magneto				Frame, Sub-Frame			
Coil,—Battery				Cab			
Plugs,—Wiring				Dash, Guards			
CLUTCH				**BODY & HOIST**			
Throw Out				Hyd.—Cyl., Pump			
Spring Thrust				Oil			
TRANSMISSION				Chains, Clutch			
Lubrication				Body			

IMMEDIATTENTION

The Inspection Record of the J. W. Maguire Co., Filled in Triplicate, a Copy of Which, with Recommendation, Is Sent to the Owners Monthly.

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is general the country over, but that of the Maguire company is localized in the territory specified, and its dealings are direct with the owners and not through the factory organization.

There are upwards of 700 Pierce-Arrow trucks in the Maguire company's territory and all of these are inspected save the large fleets that are under the supervision of distinct organizations. In other words, the system benefits all owners who have not their own service stations and expert mechanics. The inspecting is done by two men, one who covers Boston and its suburbs and the other the outlying territory within a radius of 60 miles, they examining the trucks approximately once a month, and those at greater distances are inspected from four to six times a year. The men have no regular schedule for their work, but arrange their daily itineraries so that they will meet the trucks in service and drive and examine them so far as may be necessary to learn every detail required in the record.

System Is Very Thorough.

The accompanying illustration of a report form shows that the examination covers the engine, governor, oiling system, radiator, carburetor, ignition system, clutch, transmission system, steering gear and linkage, rear axle, chassis and body and hoist. Each of these covers different items and collectively they include practically every construction unit and part. The inspector examines the machines systematically and careful attention is given to adjustment and to lubrication.

Emphasis is made that the chassis must be oiled and greased to what is known as the Pierce-Arrow standard and that unless this care is given there will be destructive wear that will be reflected in expensive upkeep and increased cost of operation and greatly lessened service life. The report indicates the units and parts that required attention and were adjusted, and those which were not adjusted, this applying to work that could not be done with hand tools and which must be done in a shop or garage with more complete facilities. These are shown in the first and second columns of the report form. In the event that work is imperatively necessary this is noted in the third column. This, however, is seldom done.

Report Made in Triplicate.

The report is made in triplicate on two white and one salmon color sheets. The inspector sends one white and the salmon sheet to the office of the company and retains the second white sheet in his record book. In the event that small replacements are made by the inspector from a stock he carries with his tool kit, these are noted on the report and from these notes charges are made the owner. Unless the inspector makes replacements there is no cost attached, and then only the prices of the parts.

The reports are carefully analyzed and copies are sent the owners, and when necessary they are accompanied by such recommendation as will insure the care and maintenance as will insure the average service life of the vehicles. In the event that a condition is such that a change in care is desirable the reports are noted each month and the owners are informed whether or not there is improvement. The owner is advised that he can make a change. No responsibility is placed, that being left to the owner to determine. But he is informed that he will be the loser if the truck is not kept adjusted and lubricated.

Neglect of Truck Is Shown.

The inspection reports also establish whether or not the trucks have been neglected, and should there be claim made relative to a condition for which the manufacturer is maintained by the owner to be responsible the reports will be the basis of judgment. The other report is filed, the one for comparison by months or periods and the inspectors' books are kept for reference.

The inspectors do emergency work in the sense that the one may be assigned to the other's territory to do what may be imperatively necessary, and frequently what may be begun by one man is completed by the other, so there is the judgment of two men instead of one to be applied to the condition of the truck or trucks on which they work. The reports are made impartially and there is no reason for the drivers to feel that they are not fairly dealt with. In fact, they are made to understand that if they are guided by the advice of the inspectors their work will be made easier and they will be more efficient employees.

Inspectors Ride on Trucks.

The inspectors necessarily have to drive the trucks to learn their condition and considerable of their traveling is on the machines. For this reason they cannot use cars to good advantage, for they would have to leave the machines whenever a truck was inspected and return considerable distances to them. This would reduce the time they now give to work, and by their knowledge of the owners' service they can arrange to meet and leave trucks so that practically no time is lost.

The Maguire company has at times found owners indifferent and rare instances antagonistic to accepting inspection. They are informed that his service is what they have paid for and entitled to when a truck is delivered and that the purpose is to insure to them continued utility of the machines at the lowest possible cost. They learn by practical experience that they substantially benefit and that there is varying economy obtainable if they will follow advice that is based on careful study of the reports. The inspection is continued without regard to the period of service.

The inspection service of the Pierce-Arrow company is also a check that can be studied to advantage. The main object is to follow the manner of lubrication, for statement is made if this is done systematically there will be without doubt a good knowledge of the mechanical condition and adjustment and restoration whenever needed.

Charges Against Gasoline Dealers

"EVERY day New York motorists lose thousands of dollars because of inaccurate devices for measuring gasoline," states the New York Evening World. "No check is made of the pumps officially, the Department of Weights and Measures regarding garages as an incidental. For the 320 square miles of New York City there are only 19 field inspectors and one car with a testing tank. Yet government tests show four out of five pumps to be inaccurate, always 'short.'

"An Evening World reporter asked Joseph J. Holwell, commissioner of weights and measures, what was being done by the city to protect the thousands of motor truck owners, automobilists, motorcyclists and motor boat enthusiasts from unscrupulous dealers in oil and gas. The commissioner admitted his office has few figures, has done little and is not equipped to begin a campaign against the garage and service station owners to secure honest measurement. The city has provided no funds to handle this important work, the department at present lacking even funds to buy gasoline and test the pumps when complaints are received. The one truck it possesses is used for other work principally.

"Commissioner Holwell explained about the 19 inspectors for the five boroughs. They check up scales in grocery stores, for ice and coal dealers, in fact every device used for the sale of commodities by weight. On 'rainy days' when not busy at other work they visit garages to see that dealers are giving full measure. He admitted 19 men could not go far in keeping track of the 3000 or more gasoline sellers in the city, but said that funds were not provided for any more help.

"The only way a gasoline dealer is checked up is when an irate motorist, feeling he is being delivered 'short' gallons of gas, at 29 cents per gallon, makes a complaint. Commissioner Holwell immediately sends an inspector to the garage.

"The pump is tested, and if it measures short the pump is condemned. But the dealer has only to adjust it, ask for a reinspection and obtain an O. K. He could easily adjust the outfit to measure short a few hours later and escape punishment until another kick was made."

MOTOR FIRMS PLAN VEHICLE TO REPLACE TROLLEY CAR.

The steadily increasing costs of traction service throughout the country have prompted efforts in many quarters to bring about a reduction, both in operation and in fares. In connection with this it is reported that interests identified with the Gray & Davis Co., Inc., the American Bosch Magneto Co., the Stanley Motor Car Co. and the Laconia Car Co. are developing a car which can be run on street railways.

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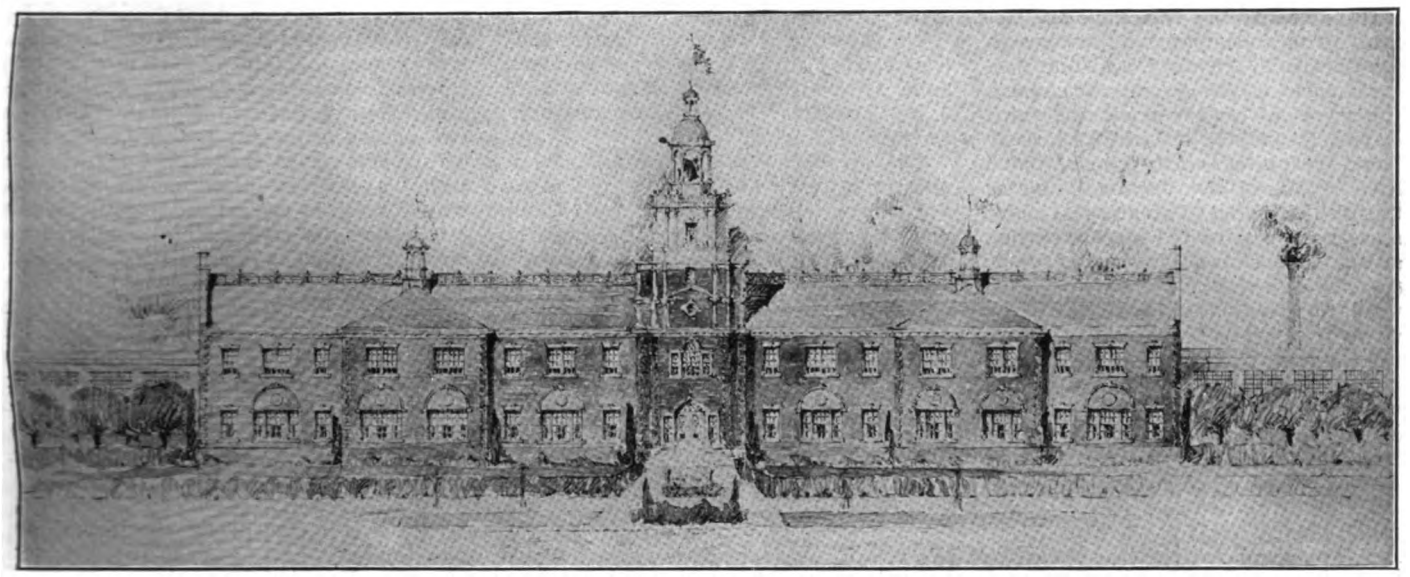
NEW AUTO ADMINISTRATION BUILDING

Attractive Structure Now Being Erected by Liberty Motor Car Co., Detroit, is of Colonial Type of Architecture.



ONE of the distinctive features of the new factory that is now being erected by the Liberty Motor Car Co. at Detroit is an administration building, which will be one of the most sightly structures ever designed for commercial use.

It will be of the colonial type of architecture, a style that is in singular accord with the ideals of the company and the name of its product, and in appearance will resemble some of the famous old buildings of colonial days rather than a regulation office buliding. As a famous architect remarked, it might be easily mistaken for an exclusive club.

Of course the building will be thoroughly modern, being as up-to-date and complete as money and brains can make it. It will front on Charlevoix avenue, which is to be converted into a handsome boulevard. The building proper will be 50 by 200 feet in size, constructed of colonial brick and steel. There will be two floors, the first housing all the production offices and a splendid display room for all the latest car models, and the second will be occupied by the executive and sales offices.

A comfortably furnished rest room of unusual size is provided for the women employees of the office force, and there is also the unusual feature of a smoking room for the men.

But one of the most novel ideas to be embodied in this unusual structure is a tower, modeled after that of Independence Hall, in which will be hung a replica of the famous Liberty Bell. It is planned to make this bell serve in the place of the conventional factory whistle. A flag pole, crowned with the typical Liberty cap, is another reminder of the colonial air which the building is to adopt.

Together with the plant buildings, which are to represent the highest type of modern factory construction, and to be replete with every provision for the improvement of manufacturing methods and for the welfare of employees, this will constitute one of the finest automobile factories in the world.

TESTIMONIALS TELL HOW GASTINE ELIMINATES CARBON.

The Gastine Co., Bridgeton, N. J., has received a great number of testimonials as to the efficacy of Gastine. A letter from W. B. Cody, chief of the Atlanta fire department, states:

"We are pleased to state that Gastine is being used by the fire department and does all you claim for it.

"In our 13,000-pound pumper we have cut down the carburetor five notches, and find it removes the carbon from the motor and gives more power and a quicker get away.

"My car shows more power, mileage and speed than ever before. I recommend the use of Gastine to truck and auto owners."

The following was received from R. S. Freeman, superintendent of the Gilmer Street Garage of the Georgia Railway and Power Co., Atlanta:

"I have tested Gastine in several makes of cars—test running for two weeks—and found a decided increase in mileage, ranging from 16 6/10 to 45% test being made from actual speedometer readings.

"Beginning test I measured the quantity of gasoline and placed one Gastine tablet to each gallon of gas. Before filling tank with gas and tablets I adjusted each carburetor to the finest adjustment that could be made. After Gastine tablets had dissolved I again readjusted carburetor, cutting down the fuel about one-half revolution of the needle valve, or 25%.

"After running test for two weeks I examined motor for carbon and found very little carbon, which was very soft. I would judge that in a couple days running with the continued use of Gastine the carbon would have been entirely removed. When starting this test the above motor was very badly carbonized.

"It is impossible for me to estimate the increase in power.

"I have a Tower truck which is overloaded and since using Gastine the car is pulling up grades and inclines in high gear, which has never before been accomplished. The drivers, themselves, did not know that the test was being made by the garage and quite a number made remarks to me about the cars pulling so well. I have recommended to the company my approval for the future use of Gastine."

COUNCIL OF NATIONAL DEFENSE STUDIES SHORT HAULS.

The Council of National Defense through its Highways Transport Committee is endeavoring to work out the short haul problem for the benefit of all concerned. It desires the following information concerning motor truck concerns now in operation: Name and address of operators, number and capacity of trucks in use, routes and schedules and rates (with copy of tariff wherever possible). These cities have been selected for the survey: Boston, New York, Philadelphia, Pittsburgh, Baltimore, Washington, Atlanta, New Orleans, St. Louis, Chicago, Detroit, Cleveland, Omaha, Denver, Dallas, San Francisco, Los Angeles, Portland and St. Paul. The information should be sent to the Council of National Defense at Washington.

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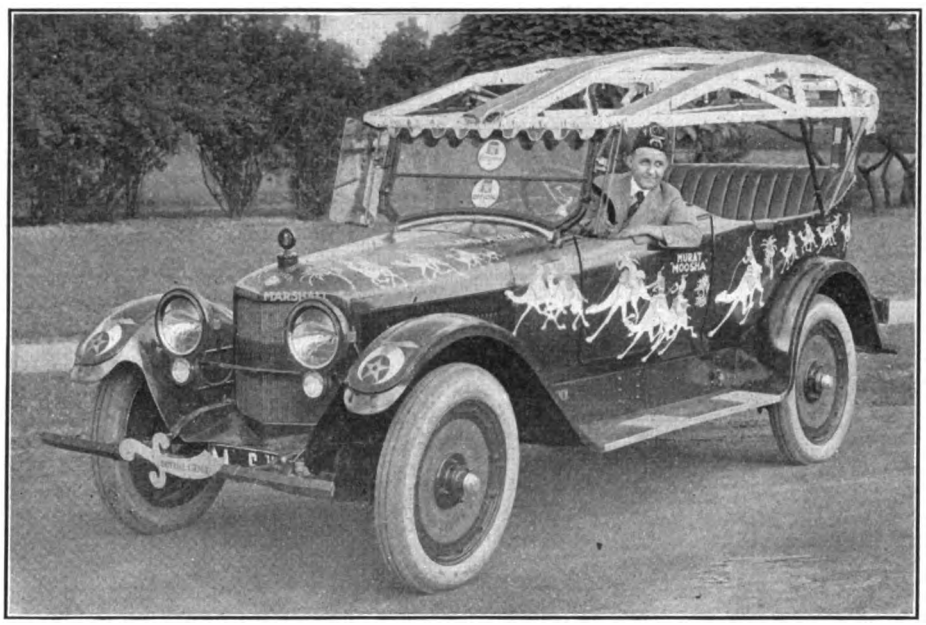
Personals and Notes of the Auto World

The Premier Motor Corporation and Indianapolis firms in general aided in the reception of the Imperial Council of Shriners of North America at the 45th annual session in Indianapolis last month. The accompanying photograph shows Charles S. Crawford, assistant general manager of the Premier company, at the wheel of his personal car, which was specially painted in lurid Shrine colors and decorated with camels, hand painted by Miss Helen Jacoby, daughter of retiring Imperial Potentate Jacoby. The automobile attracted more attention than anything shown during the week. Crawford drove it every day. Heading the two spectacular parades he was accompanied in the car by Police Commissioner George B. Coffin, Fire Chief J. C. Loucks, Capt. G. A. Haller, grand marshal, and Dr. Paul F. Robinson.



Charles S. Crawford, Assistant General Manager of Premier Motor Corporation, Drives Car, Painted in Lurid Shrine Colors, in Shriners' Parade at Indianapolis.

The M. B. D. Garage Corporation has opened its headquarters at Pacific street and Flatbush avenue, Brooklyn, N. Y., with a storage capacity of 200 cars. William O'Brien is president.

The Bolton Wechtel Co., Inc., distributor in Brooklyn, N. Y., for Exide batteries and Bosch magnetos, has opened a Flatbush branch, with W. C. Bolton in charge.

The Commodore Garage was recently opened by Charles McCabe Ford at 607 Sackett street, Brooklyn, N. Y.

Olin Finney & Co., Inc., automobile banker, Philadelphia, is now under control of the creditors. Mr. Finney was for a time the dancing partner of Mrs. Vernon Castle and later married Mrs. C. Theodore Wernwag, whose husband left an estate estimated at $1,000.000. It is hoped that the creditors will be paid in full.

Lipshitz & Zimmer, Inc., Brooklyn, N. Y., has been chartered to do an automobile supply business, with $10,000 capitalization. David Lipshitz, William Zimmer and Nathan Rodner are the directors.

The Gulf Refining Co. is building a brick filling station to cost $5000 in Brenham, Tex. The garage business in Brenham is increasing. E. P. Davis, proprietor of the City Garages, has leased the Julia R. Simon building and will spend $10,000 in arranging it as a garage. R. W. Wells will remodel the Giddings building as a garage.

The Climber Motor Co., Little Rock, Ark., recently gave its first chassis a tryout. This chassis is the first complete one ever built in Arkansas. About $150,000 worth of material for car manufacture has been bought.

The Weir & Ash Co., Scranton, Pa., has taken on the Autocar.

The Sterling Sales Co., Auburn, Ind., has elected these officers: President, John A. Rendle; vice president, Richard J. Schweitzer; secretary-treasurer, Charles W. Ruchel.

The Stephens-Williams Auto Co., Manchester, Conn., has incorporated with $10,000 capitalization. Harding A. Stephens, Margaret I. Stephens and George H. Williams are the incorporators.

Henry Ford has asked Secretary Glass to send an expert to examine the books of the Ford Motor Co. to determine the amount of Mr. Ford's share of the profits on war contracts, which he desires to return to the government. Commissioner Roper instructed the Detroit branch of the Internal Revenue Bureau to supply Mr. Ford with expert assistance.

The H. A. White Auto Co., Memphis, Tenn., has been issued a permit for a brick and concrete garage and show room to cost $65,000.

F. M. and Dabney Crump, Memphis, Tenn., have secured a permit for a garage and show room to cost $35,000.

Austin B. Benner, Doylestown, Pa., a member of the McLaughlin, Benner Motor Co., died recently after an illness of several months.

The Howard Automobile Co., Pacific coast distributor for Buick cars, has secured an injunction restraining F. R. Cyriacks from using the name Buick in the form of the Buick scroll. Cyriaks, after being relieved as Hollywood, Cal., agent for the Buick, removed the word agency from the Buick sign on his garage and substituted the words "used cars" in small letters under the Buick scroll.

Victor E. Hurley, junior member of the firm of John E. Hurley & Sons, automobile dealer, Wilmington, Del., was recently married to Miss Annabel Jarman.

William London, Dorchester, Mass., has bought 9763 feet of land on the westerly side of Fordham road, Brighton, Mass., for the site of a modern reenforced concrete automobile service station, to cover the entire lot. It will be two stories in height, the lower floor to be six feet below the street level, from which a reenforced concrete driveway will lead. The second floor will be five feet above the street level and will be made accessible by means of a similar driveway.

The Farrell Auto Supply Co., Brooklyn, N. Y., employees recently enjoyed an outing at Bayville, Long Island. Various sports, with a shore dinner, made a delightful program. "Doc" Watson, Charley Brown, M. P. Farrell and Billy Laudendorfer sang. Jimmy Webb won the swimming race.

The Lexington Motor Co., Connersville, Ind., recently entertained its distributors from every state in the Union and from a few foreign countries at Connersville. The entire city joined the company in entertaining the guests.

John M. Robbins is vice president of the Fulton Truck Co. of Nebraska, formed recently to distribute the Fulton truck in Nebraska. For 15 years he has devoted his entire attention to the passenger car.

Ralph F. Schneider is head of the Ralph F. Schneider Auto Sales Co., which has acquired the distribution for Detroit and surrounding territory for the Bethlehem trucks.

Lieut. F. W. Ramey, who was observation officer in the U. S. Artillery in France, has been placed in charge of the sales at the Cotta Transmission Co., Rockford, Ill.

M. V. Smith is now general superintendent of the Supreme Motors Corporation, Warren, O.

Edward A. Heffernan has assumed charge of the recently opened office of the Ahlberg Bearing Co. in Kansas City, Mo.

W. S. Stevenson, general sales manager of the Bethlehem Motors Corporation, has resigned, owing to ill health. Roy S. Davey is his successor.

C. R. Collins has resigned as advertising manager of the Ajax Rubber Co., Inc., and of the Racine Rubber Co.

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Harris N. Pickett, recently appointed advertising manager of the Ohio Trailer Co., Cleveland, has served the advertising needs of prominent automotive material manufacturers over a period of several years. He was formerly advertising and assistant sales manager of the General Asbestos and Rubber Co. In his new connection he will be particularly interested in the service bureau formed to co-operate with Ohio trailer dealers.

The Militor Motor Co. in its operation of the Knox Motors Co. at Springfield, Mass., will supply 1500 persons. The new company is headed by H. G. Fisk. The Knox company has been engaged in government work during the war.

Birkett L. Williams, truck sales manager of the Grant Motor Car Corporation, announces the appointment of Homer L. Schneider as a member of the Grant truck sales organization, covering western territory. Mr. Schneider is well known as a truck distributor in northern Ohio. For the last four years he has been general manager of the Republic Motor Sales Co. of Cleveland. Prior to entering the motor truck field he was for several years connected with the Van Dorn Electric Co. and was instrumental in introducing to the trade the electric drill, which at that time was a new departure in manufacturing lines.

The Northway Motors Co., Natick, Mass., sales force recently had a convention, with lunch at the Boston City Club at noon, a banquet at the Copley-Plaza in the evening and an outing the next day at Riverside, with wives and other women guests in attendance. J. C. Reilly, general manager, was in charge.

O. Brunauer has resigned as director of sales and engineering for the United States Ball Bearing Co., Chicago. He was formerly with the Detroit office of the Gurney Ball Bearing Co.

George B. Chapman has become Boston branch manager for the Garford Motor Truck Co. He was for the past three years with the Federal Motor Truck Co.

W. D. Thompson has joined the sales force of the O. Armleder Co. as western representative, with headquarters in Denver. Jack Parker is also associated with the Armleder Co. C. B. Harvey will have charge of the middle west with headquarters in Chicago. Charles F. Ward will cover Massachusetts and Connecticut for the company.

The Progressive Motor Sales Co., New Haven, Conn., has increased its capitalization from $6000 to $100,000.

HANCH GENERAL MANAGER FOR MAXWELL-CHALMERS.

C. C. HANCH.

C. C Hanch is now general manager of the Maxwell-Chalmers plants in Detroit. During the war he was chief of the automobile products section of the War Industries Board. Hanch became such a factor in the automobile world that after he was president of the Indianapolis Automobile Board of Trade, he was elected secretary of the National Automobile Chamber of Commerce, of which he is now a director. Carl H. Pelton, secretary of the Maxwell Motor Co., and who was assistant to Walter E. Flanders, has resigned.

The Julian Motor Car Co., which is now being formed in Detroit, will bring out a six-cylinder car designed by Julian S. Brown. The engine will consist of twin threes made into a six, weighing only approximately 300 pounds.

E. H. Beacham, assistant to A. C. Barley, president of the Barley Motor Car Co., has resigned to go to the Waldon W. Shaw Co., operating the Shaw Taxicab Co. and the Yellow Taxicab Co. He has been general sales manager during the past six months.

The Pontiac Body Co. announces the resignation of A. W. King, vice president and plant superintendent.

The Swinehart Tire and Rubber Co., Akron, O., salesmen in New England recently held a conference at the Hotel Lenox, Boston. President Thomas F. Walsh spoke on the subject, "It Pays to Advertise." William Clendenin of the Dooley, Brennan Advertising Co., Chicago, told of the company's advertising plans. F. L. Black, New England manager, was among the other speakers.

The S. & M. Levy Co., with headquarters at 35 Grant square, is a new firm that has entered the tire distributing field in Brooklyn, N. Y. It will distribute all makes of tires, tubes, rims and rim parts. The firm consists of Mortimer S. Levy, Samuel S. Levy and William A. Brewer.

Capt. William Sparks is back as vice president of the Sparks-Withington Co., Jackson, Mich.

The Lightning Change Rim Corporation, Berrien Springs, has been formally organized, with these officers: President, J. L. Mitchell; first vice president, W. S. Mitchell; second vice president, Harold Myers; secretary, Fred S. Bynon; assistant secretary, D. S. Heim; treasurer, G. L. Valentine.

Lake Bower, a Des Moines, Ia., automobile salesman, heads the honor roll for Mothers' Day, not only of Des Moines and Iowa, but the nation, it is believed. Bower has been away from home for 30 years. In all that time he has never missed a Sunday in writing to his mother or the folks at home.

The Ohio Trailer Co., Cleveland, announces two new models. In the two-wheel trailer line the 800-1000-pound model is offered at $110, the 1250-1500-pound model at $140. The new model rated at 1500-2000 pounds sells for $185 with stake panel body, and at $200 with cattle rack body.

The Stewart Wire Wheel Corporation, Frankfort, Ind., announces the beginning of quantity production of Stewart wheels for passenger cars. At present only the department devoted to making wheels for Ford cars is in normal production, but plans are nearing completion for manufacturing a complete line for every make of passenger car. R. A. Tyree, Frankfort, Ind., is general manager of the company. During the war the entire facilities of the Stewart factory were turned over to government work.

The Conner Standex Sales Co., Richmond, Va., is now distributor for Virginia and North Carolina for Standex products.

Salesmen of the Champion Spark Plug Co., Toledo, O., Who Recently Met in Convention.

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The American Motor Truck and Tractor Co., with executive offices at 110 West 40th street, New York, has bought the factory and land formerly owned by the Portland Manufacturing Co. in Portland, Conn., and will at once convert it into a plant for its own use, turning out trucks and tractors. The property includes a factory 85 by 350 feet, with railway siding extending the entire length of the building.

The Tri-State Accessories Corporation, El Paso, Tex., began business this month with a complete stock of automobile truck and tractor accessories. The corporation has purchased the entire stock and business of the wholesale departments of the Tri-State Motor Co., the Western Motor Supply Co. and the Yonge Auto Supply Co. of El Paso. The corporation has headquarters at 425 W. San Antonio street. It will operate at wholesale exclusively. Barry Cool, who had 14 years experience in the automobile and accessory line in California, is president and general manager.

The Jordan Motor Car Co., Cleveland, has distributed $25,000 in premiums among employees, as follows: Those serving two years or more, 15 per cent. on their previous year's compensation; one year or more, but less than two years, 12 per cent.; less than one year, 10 per cent. The company began business less than three years ago.

Bellanger Brothers of Paris, members of the firm of Bellanger Freres, have reached America with their chief engineer, John Faure. The noted trio will tour America and will spend some time studying American automobile methods. In Detroit they will be the guests of Briscoe and Stahl, which firm has been for many months designing a car to be manufactured in France by Bellanger Freres. American factories will turn out the parts, which will be shipped to France for assembly there.

The Apperson Bros. Automobile Co., Kokomo, Ind., announced it has just booked one of the largest single orders ever received for automobiles by a manufacturing company. The Bruening Brothers, Kansas City, placed with Elmer and Edgar Apperson an order which represents a total of $15,600,000 worth of automobiles.

The Chicago Die and Specialty Co., Chicago, announces that it has placed on the market the Kobzy Signal, which, the company states, is the combination of more than a dozen patents and resulted from more than a year's experimental work on the Moore Signal.

The Joseph Dixon Crucible Co., Jersey City, N. J., calls attention to an electric apparatus perfected by C. M. Allen, professor of hydraulic engineering at the Worcester Polytechnic Institute, for detecting small power losses and determining the efficiency of gears. Many tests were made with this apparatus to determine the best sort of gear lubricant, and the company announced that the best results were obtained with a mixture of heavy oil and flake graphite. "With a perfect blending of the oil and graphite there was a minimum loss through friction," states the announcement. "The test proved what the Joseph Dixon Crucible Co. has always claimed, that flake graphite properly combined with oils and greases, as in Dixon's Graphite Lubricants, is unexcelled. That is because of its ability to build up microscopic irregularities in gear surfaces, forming a tough film of graphite and so preventing metal-to-metal contact"

The Reliable Tractor and Engine Co., Portsmouth, O., has been incorporated with $2,000,000 capitalization by C. Heer, F. E. Adams, George W. Platt, F. N. Tynes and M. Herr. The company is now making the Reliable 10-20 farm tractor, which uses kerosene, and the Reliable Heer two-cylinder opposed stationary and portable engines for all kinds of power purposes. Alterations and extensions to the plant will be made as soon as possible.

The General Automotive Co. has opened a store at 177 Central avenue, Newark, N. J., with a complete line of automotive equipment, supplies, tools, etc. The company handles Fisk tires, tubes and accessories. In the rear of the store and opening on Sussex avenue, there is a well equipped service station, where service will be given on Stromberg carburetors, Gabriel snubbers and Sparton horns. The establishment has been designated by three prominent manufacturers as their official service station in the Newark district. Carl James is secretary and treasurer. John M. Clarke, formerly with the Motor Equipment Co. in New York and Boston and later sales manager for A. J. Picard & Co., is president and general manager.

The Briggs & Stratton Co., Milwaukee, is investing $400,000 in new buildings and equipment.

The Vesta Accumulator Co. announces the purchase of land at the southwest corner of Michigan avenue and 29th street, Chicago, now occupied by the Chicago Motor Club. The company will start immediately to tear down the present building and erect a service station which, it is expected, will be the best equipped and most elaborate of its kind in the world. General Manager W. S. Perry says that the structure will be "a model for our more than a thousand service stations throughout the country to live up to." The new building is made necessary by the large increase in business during the past year. The company had to have more room at its factory, 2100 Indiana avenue, and the entire service department will be moved to the new location. There will be 23,100 square feet of floor space devoted entirely to battery service. It is planned to accommodate more than 100 cars at once. There will be rest rooms for autoists.

The New Era Spring and Specialty Co., Grand Rapids, Mich., announces that O. A. Loew, who was for several years superintendent of the Globe Machine and Banding Co., and of the Gabriel Manufacturing Co., Cleveland, and later with the Hayes Manufacturing Co., Detroit, has become production engineer with the New Era company, whose business, according to President Smalley Daniels, is forcing it to plan a new, enlarged factory for next year. Three eight-hour shifts per day are now being run in some departments.

The Electric Auto-Lite Corporation has bought the Poughkeepsie, N. Y., plant of the Fiat Co., from which it will handle its rapidly growing eastern and export business. The first equipment will be installed by August and production should begin shortly thereafter.

The Briscoe Carburetor Co., Pontiac, Mich., announces that work on the new plant is nearing completion and that manufacturing operations will probably be under way in about a month.

The Chelsea Steel Ball Co., Chelsea, Mich., announces that the entire production has been sold for the next three months. Twelve new grinding machines are to be installed.

The Port Huron Engine and Thresher Co., Port Huron, Mich., has put on the market a small threshing machine, designed to operate in connection with the Fordson tractor.

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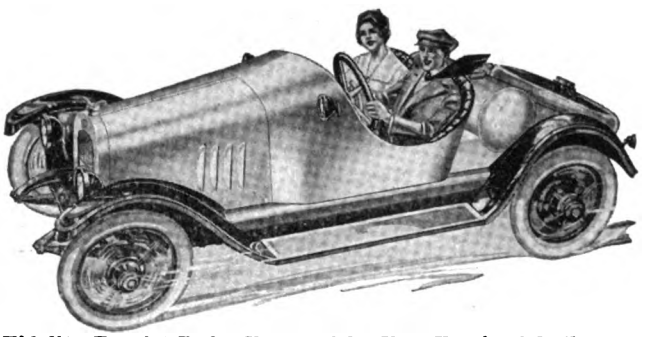
The New England Mills Co., 1219-21 S. Michigan avenue, Chicago, is offering to the trade its latest automobile body, the "Fidelity" Tourist, which is a five-passenger body, handsome, of high quality and durable. This is designed to fill the demand for a roomy, stylish body at a moderate price. It is a three-door touring body, mechanically correct and artistic. The company believes the body will be a record seller for the Ford chassis. It is easily attached, simply replacing the old Ford body, using the fender, running board, radiator and gas tank. The body is made of 20 and 22 gauge steel on substantial wood frame, with one-man top of high grade mohair, including side curtains and large celuloid lights. There is an adjustable two-piece windshield. The radiator shell fits snugly over the Ford radiator, and there is a 1918 style hood with four air vents on each side. The upholstery is of Quineleene, plaited and finished. The body is painted black and highly varnished. The company also makes the "Fidelity" roadster body and "Fidelity" runabout body. It issues every 60 days "The Little Salesman," an automobile accessory catalogue that is well worth having.

The White Products Co., 100 W. Garfield boulevard, Chicago, is adding a number of new items to its line of automobile accessories. All of them will be marked and advertised under the trade name of White Line Automobile Accessories. One of the new items is a jack truck for garage men. This truck slips under the rear axle of a Ford and raises the car for repair work. It also draws the car around the garage. A handsome display card is being sent out to the trade on the "Auto-Scope Windshield Wiper," another White product.

The Michigan State Auto School, Detroit, has placed on the market a new book, "The Auto Electrician's Guide." It is of unusual interest to automobile men, particularly those working in a garage or service station, as it answers everyday questions. The book has 850 wiring diagrams, covering every system of wiring in use on all standard cars, including the new 1919 Ford systems. There are 286 internal wiring circuits, which give complete information on internal wiring of generators, controllers, coils, starters, switches and other electrical parts. The diagrams cover all the wiring systems used on cars from 1912 to 1919 and some even back to 1906. There are also wiring diagrams for Detroit and Baker R & L electrics, also pipe connections for Stanley Steamers. The book is made up in loose leaf form, making it easy and convenient to insert additional diagrams as issued. All diagrams are printed in black on plain white paper, which makes them more easily distinguished and read than if printed in colors. The book sells for $7.50, under guarantee of satisfaction or money refunded.

The Beneke & Kropf Manufacturing Co., Chicago, as successor to the Findeisen & Kropf Manufacturing Co., Chicago, will hereafter manufacture Rayfield carburetors. Coincident with the announcement of the reorganization of the company comes news of plans for the material expansion of the Rayfield manufacturing program, including important improvements and perfections in production processes. Henry Beneke, having purchased the entire interests of Frederick Findeisen, becomes vice president and treasurer of the reorganized company. He comes to the organization from the vice presidency of Hibbard, Spencer, Bartlett & Co., one of the leading wholesale hardware concerns of the country, with which he was associated for 27 years. O. F. Kropf, whose record as a producer of high grade carburetors is well known to the trade, remains with the reorganized company as its active president. E. A. Bates continues as director of sales and advertising in the new organization. Reinforced with new capital the present manufacturer of Rayfield will enlarge both plant and equipment. Manufacturing processes will be completely rerouted. Each Rayfield carburetor is now given three tests before it leaves the factory. There is a test for gasoline leaks, a test for vacuum and the final test in which the carburetor is bolted to a gasoline motor and tried out for performance. The new company desires it to be known that it is now in a position to meet more nearly the heavy demand which has always existed for the Rayfield, and that its new facilities will enable it to serve a greater number of car manufacturers than has ever been possible.



Fidelity Tourist Body, Featured by New England Mills Co.

The Hill Pump and Valve Co., Chicago, announces that Eugene Heller, president of the company, has purchased 205,402 square feet of land at Belmont and Knox avenues, Chicago, and that the company will build on this site a new plant, with an initial expenditure of $100,000 in connection with the construction of the first unit and an ultimate expenditure of approximately $500,000. The first building will be one story high, of saw tooth construction, and will contain 50,000 square feet of floor space. Landscape gardening and the utilization of trees and shrubs will be employed to add to the attractiveness of the grounds. The new factory will be the result of the rapid growth of the company during the last few years.

The Hill Pump and Valve Co. announces that it has placed on the market an indestructible demountable rim wrench, which is made entirely of steel. The brace handle and knob at the end are heavy steel stampings attached in such a way that they cannot be broken off. The brace itself consists of a heavy steel rod, while the tube which holds the reinforced, case-hardened, drop-forged jaws, is seamless steel tubing. The handles and tube are finished in black enamel, while the brace is nickel plated. The wrench takes automatically, without any adjustment, every size of nut used on every make of demountable rim. family.

The Dearborn Truck Co. announces the appointment of the Wm. H. Rankin Co., New York, Washington and Chicago, as its advertising representative. The Dearborn company, in addition to manufacturing the Dearborn two-ton truck, manufacture the Smith Form-a-Truck. It will advertise the original phrase, which was one of the big features of the original advertising, "$350 and your Ford (new or used) will make a one-ton truck." Samuel Porter is president of the company, J. P. Newell is the sales manager and L. W. Coulson is the advertising manager of the truck company. An aggressive campaign to secure new dealers and promote the sales of the company through the regular dealers will be inaugurated at once. From the beginning the company has been a big financial success.

The Tonneau Shield Co., Inc., announces that it has obtained a perpetual injunction against a firm making a windshield that infringed the Tonneau patents, and that it will proceed to prosecute anyone infringing its patents or selling infringements of the same. The company announces that it has obtained several other patents which cover Tonneau Shields and considers its position very strong at present.

The Doble-Detroit Steam Motors Co. announces that large production of Doble-Detroit steam cars will be under way by the end of this summer.

The Ahlberg Bearing Co., which specializes in regrinding worn ball bearings and giving service on new high grade bearings, announces the opening of a new branch in Pittsburgh. This is the third branch opened by this company within the last two months.

The Gill Manufacturing Co., 351 West 59th street, Chicago, has issued what is said to be the most complete and up-to-date piston ring size directory ever published. The directory is sent to dealers free of charge. In order to discriminate between dealer and consumer, a charge of 25 cents a copy is made to those not dealers. A description of the Gill ring is given, with instructions for installation. The price list, location of stocks and distribution centers are listed. Prompt shipping service is advertised.

The Stutz Motor Car Co. announces that at a meeting of the directors W. N. Thompson was appointed general manager.

The American Tire Co. has elected these officers: President, George L. Giller; vice president, Albert Mayers; secretary and treasurer, Louis Fodt; directors, the officers and George A. Giller and Thomas W. Bannon.

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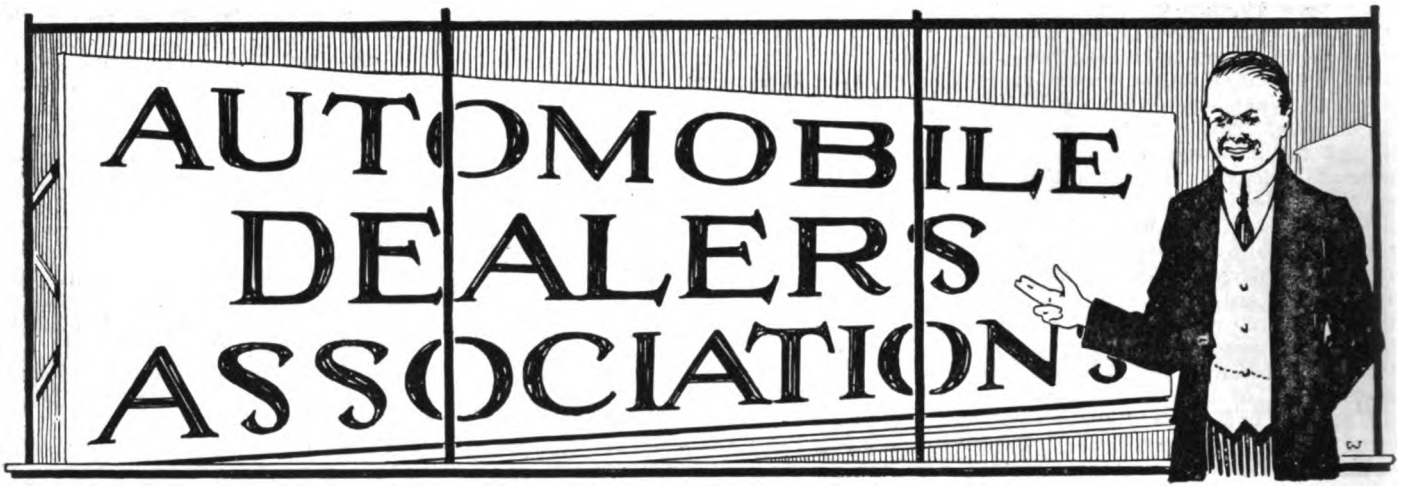

New York

The New York Automobile Dealers' Association has established four classes of membership, the most important being the dealers' membership to which any individual who represents a firm or corporation selling automobiles or motor vehicles in the city is eligible. Each firm or corporation is entitled to one such member. Associate membership is open to any person engaged in business in lines allied to the automobile business. House membership is for persons having business connections with the persons, firms or corporations eligible to either of the proceeding classes. Non-resident membership is open to those engaged in business more than 30 miles from New York City. Dealers pay an entrance fee of $100, but there are no such fees for the other classes. Annual dues are: Dealer, $50; associate, $50; house, $25; non-resident, $10.

The Charlotte Automotive Trade Association is interested in a plan to bring about an organization of automotive men of North and South Carolina into one association. Lee A. Folger, Charlotte, N. C., president of the Charlotte association, is co-operating with Harry G. Moock, business manager of the National Automobile Dealers' Association, to this end. Mr. Folger recently returned from France. The first step taken by Mr. Folger upon his election to the presidency of the Charlotte organization was to appoint a committee on greater organization, and he instructed that committee to get in touch with the dealers in the two states with the intention of effecting a single organization. Manager Moock will attend the first greater organization meeting and explain the plan of organization which is in operation between the National Dealers' Association and the state associations of Texas, Arkansas, Ohio, Louisiana, Georgia, Iowa and the like. There are approximately 2000 automobile dealers in North and South Carolina. At present less than 100 of these are in any sort of a dealers' organization.

The Augusta, Ga., Automobile Dealers' Association recently listened to an address by F. B. Ludwig, traveling field secretary of the National Automobile Dealers' Association, who outlined methods to be followed in obtaining the repeal of the war tax on automobiles. Members of the newly organized Georgia Automotive Dealers' Association were present. G. M. Jones, president of the Augusta association, called the meeting, which was attended by nearly all of the car and truck dealers of the city.

Moock Asks Dealers to Seek Tax Repeal

A new appeal to dealers to interest themselves in obtaining the repeal of the war tax on automobiles, repairs and parts is being made by Harry G. Moock, business manager of the National Automobile Dealers' Association, as a result of letters received recently from congressmen and senators that there will be a stiff battle in Congress to effect a reduction of classification taxes.

The new opposition comes from the fact that when President Wilson asked for the elimination of taxes on manufacturing, every other line of industry also asked for relief from taxes. Senators and congressmen are taking the position that some industries must necessarily share the burden. The industry least organized, the industry that makes the smallest protest usually is the one so burdened. The National Automobile Dealers' Association is contending that there is no justice in making the automobile bear a greater war tax in peace time than it bore in war time and objects particularly to the automobile being classed as a "luxury."

"The automobile is a necessary and if taxed should be taxed only as a necessary and not as a 'luxury,' Moock says. "Dealers everywhere should write and telegraph their congressmen and senators to vote for elimination of the war tax. Local and state automotive associations should do the same. Every person in the automobile industry should interest every motor car owner in obtaining the repeal of the tax."

Detroit

The Detroit Automobile Dealers' Association is considering the advisability of a plan to urge a federal law that would establish motor car thefts as a federal offense. Cyril Arthur Player, editorial writer on the Detroit News, proposes such a law. He suggests a federal statue which would compel the registration of passenger cars and trucks with the federal marshals, attorneys or other officials. He would have the manufacturer cast numbers on his various units. Dealers' organizations and automobile clubs throughout the country will be asked to support the plan. A. L. Zeckendorf, Cole and Chandler dealer in Detroit, and G. Edward Bleil, Republic truck manager and director of the Detroit Automobile Club, are said to favor the proposal.

The Detroit Automobile Dealers' Association is to hold its first exclusively closed car show in the Arena, Oct. 6-11. Only such vehicles will be admitted as come strictly under the definition of closed cars. The 1920 show will be held in March, as was the case this year.

The Brooklyn and Long Island Automobile and Allied Trades enjoyed its seventh annual outing at Glenwood. Despite inclement weather, more than 300 members attended. It was in all respects the largest and best managed affair ever held by the organization. D. D. Martin's baseball team defeated Julius Bindrim's nine, 11 to 8. Arthur Delaney made a home run. Charles Tate, Charles Sperry and "Doc" Watson pitched for the victors, with "Doc" Miller on the mound for the losers. Arthur Delaney won the 100-yard dash. Frank Ainslie won the sack race. Charles J. Potbury was chairman of the outing committee, Charles Tate the manager and John S. Diuguid had charge of the prizes. Paul M. Marko was also an important factor in making the affair a success.

The Richmond, Va., Automobile Dealers' Association and the Richmond Automobile Trade Association seek the repeal of the section of the prohibition law which forfeits the interest of the vendor in an automobile seized with contraband liquor.

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TIRE INDUSTRY AND TRADE

The Haywood Tire and Equipment Co., Indianapolis, Ind., announces a new invention it has put on the market. This is known as "Haywood's Silvur Lined Mold," which is for retreading repaired, rebuilt and reconstructed automobile tires. Mr. Haywood announces that this mold can be used by any tire repair man and enables any tire repair shop to do tire retreading. The mold is made of white metal, die cast, and is said to be free from all blemishes and is as smooth as glass. The company manufactures the Haywood tire repair equipment, of which Mr. Haywood is the inventor. Mr. Haywood is also the originator of "Tire Surgery.' The company maintains a school at Indianapolis where tire surgery is taught. Tire surgery is the art of tire repairing by the Haywood method, and is a course of instruction for those who do tire repairing with the Haywood equipment.

The Ajax Rubber Co., Inc., announces the appointment of Joseph C. Weston to the post of vice president and member of the directorate. For a number of years he has been vice president and director of sales of the United States Tire Co.

The Perfection Tire and Rubber Co. announces that production is being increased at the Fort Madison plant, where new equipment has been installed. When present plans materialize the plant will have facilities for producing 11,800 tires a day.

The Goodyear Tire and Rubber Co., Akron, announces the appointment of H. H. McCloskey to the position of second assistant treasurer. He joined Goodyear only four years after its organization.

The Michelin Tire Co. has arranged to insure all the employees of the company throughout America without cost to them and without the necessity of their undergoing physical examinations. The group life insurance policy was executed in New Jersey. The protection will be graduated, from $200 for employees of more than six months but less than one year's service to $1200 for 10 years service and over.

The United States Tire Co. has appointed A. L. Wendover New York branch manager, with headquarters at 1790 Broadway, under District Manager E. S. Roe.

A. S. HETZELL.
District Manager of Philadelphia Branch of Republic Motor Corporation.

The Republic Rubber Corporation has appointed A. S. Hetzell as district manager of the Philadelphia branch, in recognition of his work as manager of the Cleveland branch for the last two years. Mr. Hetzell will make his headquarters in Philadelphia.

The B. F. Goodrich Co. stockholders have authorized an increase in the capital stock of the company from $84,600,000 to $109,000,000. The increase of $25,000,000 is to be in seven per cent. cumulative preferred stock of the same type as the present preferred. The common and preferred stockholders of record July 1 will be offered $15,000,000 of the new preferred on a pro rata basis. For each share of the old preferred or common a stockholder will be entitled to subscribe to .1773 of a share of the new stock at $102 a share and accrued dividends.

The Goodyear Tire and Rubber Co. began business in 1898 with $12,500 capital, of which only $3500 was in cash and that borrowed, during the days when bicycle tires and carriage tires were the most prominent rubber products. In 1918 the company did a business of $131,000,000.

The Goodyear Tire and Rubber Co., Akron, O., announces that the Goodyear big 10-inch pneumatic truck tires are now ready for general distribution. With the addition of this tire Goodyear is prepared to equip all trucks up to and including 3½ tons.

The Goodyear Tire and Rubber Co., publishes The Tire News, with a circulation of 60,000 monthly and the Family Newspaper with 20,000 circulation. Both publications are well worth reading. The June issue of the Goodyear Tire News is a racing special, and Goodyear points with pride to its tires' triumphs at Indianapolis and Uniontown. The publications are liberally illustrated and have highy capable editorial direction.

The Erie Tire and Rubber Co., Cleveland, has raised its capital from $1,000,000 to $4,000,000.

The Winner Cord Tire and Rubber Co., which was incorporated for only $1000, has increased its capital to $1,000,000.

The Kelly-Springfield Tire Co., Akron, will put up a new plant in Maryland, which will have a production capacity equal at least to the three plants the company now has in operation.

The United States Rubber Co. announces the election of Frank A. Vanderlip as a director.

The Goodyear Tire and Rubber Co. of California, it is reported, will soon be incorporated with a capital of $20,000,000.

The Ray Tire and Rubber Co. will erect a plant in Birmingham, Ala., for the manufacture of the Ray puncture proof interliner for automobile tires, which will represent an expenditure of over $1,000,000. In connection with this plant the company will build its own cotton mill for the manufacture of cotton fabric, which will be rubberized at the plant and shipped from Birmingham to the company's other plants in the United States. The crude rubber for rubberizing the cotton fabric will be brought in cargo lots to Mobile and then transferred to barges up the Warrior river to Birmingham.

The Wilmington Tire and Rubber Co., Wilmington, Del., has moved from King street to 218 West 10th street.

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Uruguay.

The American car was comparatively little known here until a few years ago, but, as a result of the war, a tendency to economize following business depression and the efforts of American manufacturers to develop the export market, our automobiles now dominate the field. The vast majority of these vehicles are passenger cars. The popularity of American cars is attributed to various factors, principally their cheapness, adaptability to local conditions and the facilities for securing repairs. Especially for use in the country districts, where the roads are often impassable for European cars, the American vehicle has had phenomenal success and is gradually replacing the sulky. At the present time importers of American cars are, apparently without exception, disposing of all the vehicles they can obtain and many orders have to be left unfilled.

INDIA.

Within the last two or three years the tendency has been toward the increase of motor trucks. A considerable number have been sold in the Calcutta section and are in daily use, and the outlook for large sales in the immediate future is good. Since December, 1916, there has been an absolute embargo on the importation of motor vehicles. American cars have had a very wide sale throughout India and are very popular.

INDO-CHINA.

The main criticisms of American cars, according to the dealers, are that the body of the car is too high from the ground, the upholstery is not as good as desired and the metal sheets forming the body of the car are too thin and not well set up. Agents have suggested that two types of cars be put on the market by American manufacturers, the first to be an ordinary car, such as is sold in the market today, and the second to cost perhaps $100 more, this money to be put in upholstering and body finish.

JAMAICA.

There should be a considerable market in Jamaica for motor trucks of both the light delivery type and the larger type for heavy hauling. The lack of railway transportation to certain fertile fruit growing sections makes the use of trucks for the purpose of bringing bananas and other produce rapidly to shipping centers a necessity. The import duty is 20 per cent. ad valorem and shipments can be made from New York or New Orleans.

CHINA.

The only good roads in the Nanking district are in the city of Nanking, and they are kept in good repair. However, the total length of roads suitable for automobile traffic is at the most 15 miles. There were only 25 automobiles in Nanking at the end of 1918, and practically all of the cars were small ones. No automobile trucks have as yet been introduced in the Nanking district for transporting goods, with the exception of a single small one-ton truck of American make, which has been purchased only recently by the Chinese postoffice. The Chinese postoffice has introduced motor trucks in other cities with great success and as that institution is growing rapidly, it is one of the most promising purchasers of motor trucks. No restrictions are placed upon the importation of motor vehicles and accessories. There is a market in China for rubber tire repairing machinery. In Shanghai there are several thousand automobiles. In addition to the automobiles there are numerous rubber tired rickshaws. A way to introduce tire repairing machinery would be through a local American agent.

CUBA.

Auto trucks are now very largely used for hauling about Habana, rapidly replacing the old-style drays and wagons for this purpose. There are a large number of the heavier American trucks, besides a general use of lighter trucks. It would seem that with the nearness of Habana to New York and to Florida, it would be desirable for concerns planning to enter the field to send some one familiar with the trade to Habana for a brief stay. He could determine whether there is a probable field there and what methods would be best in exploiting it.

FRENCH MONOPOLY OF OILS.

The French government has introduced a monopoly bill covering refined oil and gasoline. Lubricating oil and fuel oil are not included in the monopoly.

Australia.

The government plans to expend large sums for the construction and maintenance of roads, and the better roads should increase the demand for motor vehicles. The chief method of transporting goods from place to place in the cities is by horse drawn wagons, but motor trucks are gradually replacing these. The United States is supplying most of the automobiles imported. The duty on automobiles imported into Australia is not levied on the vehicle as a whole, but on the different parts at different rates, whether the car is imported complete or not.

BRITISH SOUTH AFRICA.

The total mileage of good roads in Cape Town and vicinity has almost doubled in the last eight years. During recent years motor cars have found their way into the remotest corners of the Union, and are doing daily service over roads that only a short time ago were not considered passable by anything but an old ox wagon or donkey cart. A good clearance of at least 10 inches under axles and flywheel is essential for a motor car intended for use in South Africa, and the carburetor and magneto should be placed as high from the ground as possible to allow of fording unbridged streams. Unusually strong springs and a strong engine are also essential features.

BRANCHES IN MEXICO.

The automobile business in Mexico since the first of the year has been exceedingly good, although during the past month there have been fewer sales, except in the case of low priced cars.

There has been considerable activity the last five months in the sale of the more expensive cars, accompanying the scrapping or selling of a large number of second hand cars used during the period when new cars could not be obtained. A large number of sales have been made directly from the United States. Indeed, there are many cars used at present in Mexico City which have no representatives actively at work in the Republic.

In order to extend their sales and to properly serve those who have already purchased cars, it would perhaps be advisable for American manufacturers to

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establish branches in Mexico. At present sales are made by agencies and complaints are frequently made by buyers that all interest on the part of the seller is lost in the car immediately after the consummation of the sale. Doubtless there are other conditions involved in the question of the establishment of branches, but from the point of view of satisfactory service to patrons, the inauguration of this policy would be a vast improvement. It is understood that the establishment of branches is being contemplated by various American car manufacturers.

SWITZERLAND.

Four good trucks are manufactured in Switzerland, but they are high priced and invite American competition. Swiss dealers have applied repeatedly to American manufacturers, knowing that American trucks would find a ready sale in this market owing to their superior quality; but, during the war, shipping conditions prevented such imports; also gasoline for demonstration purposes was unobtainable. The principal drawback of the sale of American trucks, as also of passenger cars, is the absence of supply stations in Switzerland where repair parts may be secured. At present there is a sentiment to accept agencies and import American cars, but unless American manufacturers prepare to enter the market permanently and actively develop its needs, a large portion of the business will return to German concerns, who already offer attractive propositions to dealers.

UNION OF SOUTH AFRICA.

The motor trade of the Union has now reached such a stable basis that it is capable of absorbing annually imports of considerable value. It will, no doubt, grow in volume and importance, because the isolation of certain districts cannot be eliminated altogether by railroads.

PORTUGESE EAST AFRICA.

There are only about 150 motor cars in the vicinity of Lourenco Marques, but the demand is increasing. There are also a few trucks operating in this town having a capacity up to six tons. No discrimination is made against or in favor of motor vehicles imported from the United States.

FRENCH SURTAXES ON IMPORTS.

The complete schedule of ad valorem surtaxes on import duties contained in the French law of June 14, 1919, has been received from Commercial Attache C. D. Snow in Paris. These surtaxes are additional to the regular import duties and are imposed in order to restore in part the same relative weight between values of goods and duties payable which existed at the time the present tariff was adopted. A further object is to protect the domestic industries during the period of readjustment by restricting imports, the prohibitions on importation having been raised for the most part.

Automobiles weighing less than 2500 kilos (5509 pounds) continue to be dutiable at 70 per cent. ad valorem without surtax, but for those of greater weight there is now a surtax of 10 per cent. ad valorem under the minimum tariff, which in this case applies to imports from the United States. Agricultural tractors from the United States are now subject to the minimum surtax of 20 per cent. ad valorem, while for other kinds of tractors the rate is 10 per cent.

The new surtaxes are based upon the value of the goods at the time of importation in the custom house of entry, but not including the import duties. They do not apply to goods shipped directly for France prior to June 18, nor to those in transit at that date directly to Europe with France as the destination. The same provisions apply equally to Algeria.

Foreign Trade Opportunities Offered by the Government

(Reserved Addresses May Be Obtained from the Bureau of Foreign and Domestic Commerce, Washington, D. C., or from District or Co-Operative Offices.)

29,632—A man in Italy desires to represent American manufacturers and exporters in gasoline engines for motor cars, electric generators and other electrical material. References.

29,583—A firm in Brazil desires to purchase on own account agricultural implements and machinery, automobiles, trucks and supplies. Quotations should be given f. o. b. New York. Payment, cash against documents or 90 days, according to terms offered. Correspondence should be in Portuguese, Spanish or French. References.

29,609—An agency for the sale of automobiles and accessories is desired by a man from Australia who is visiting this country and desires to get in touch with manufacturers and exporters. Reference.

29,745—A company in England desires to purchase four to six-cylinder motor cars, 15 horsepower and upward, complete, with lighting set, electric starter, etc. Quotations should be given c. i. f. English port. Payment against documents at destination. References.

29,617—The purchase and agency for electrical machinery, motors and vehicles are required by a firm in Norway. Terms, cash against documents. Reference.

29,743—A firm in Denmark desires to purchase machine tools and other equipment for building a shop to make motorcycles. Correspondence may be in English.

29,660—A company in Italy wishes to receive quotations on 1000 pounds of lubricating oil.

29,681—The purchase and agency for the sale of gasoline and heavy oil engines, 2 to 20 horsepower, are required by a man in Italy. Correspondence should be in Italian. Reference.

29,692—The proprietors of a company in Denmark are in this country and seek exclusive agencies for the sale in their country of rubber goods, including tires. References.

29,604—The proprietor of an import agency in Mexico desires to purchase and secure an agency for the sale of five automobile trucks—one medium large, four small—all with rubber tires, for handling freight. He wishes to demonstrate their use and obtain the sole agency for the special make of truck which he decides upon. Payment, cash with order.

29,753—A firm of manufacturers' agents in England desire to secure agencies for the sale in South Africa of hardware, motors and accessories and agricultural machinery. Quotations should be given c. i. f. port in South Africa. References.

29,731—An agency is desired in Scandinavia by a man from Norway, who is in this country for a short time, for the sale of automobiles, accessories and motorcycles. References.

29,750—A merchant in France desires to secure an agency and to purchase automobiles of 12 and 16 horsepower. Correspondence should be in French. Reference.

29,653—Motor cars, motorcycles, bicycles and all accessories; stationery, kerosene oil and petrol engines and electric light sets and electrical accessories, lamps, fans, etc.; pumping sets and household requisites of a general character are required by a firm in India. General catalogues are requested.

29,699—An agency is desired by a firm in Egypt for the sale of a general line of agricultural implements, including tractors. Correspondence may be in English. References.

29,784—An agency is desired by a manufacturer in Spain for the sale of cranes, elevating apparatus, gasoline, kerosene and crude oil engines; electric motors, dynamos and electrical apparatus and supplies; agricultural machinery and tractors. Correspondence should be in Spanish. References.

29,722—The purchase of any line of manufactured articles sold by the hardware and garage trade is desired by a company in Canada. Quotations should be given f. o. b. destination or factory. References.

29,723—Motor cars are required by a man in India. References.

29,724—An electrical engineer in New Zealand wishes to secure prices and discounts on oil engines and generators for isolated lighting plants. Reference.

29,725—The purchase and agency for the sale of bicycle parts, tires and accessories and automobile parts are required by a wholesale firm doing business in these articles in France. Terms, cash on receipt of merchandise. Correspondence should be in French. References.

29,663—A company in England, having recently established an office in this country, desires to communicate with manufacturers of machinery, electrical goods, motor cars and accessories. Reference.

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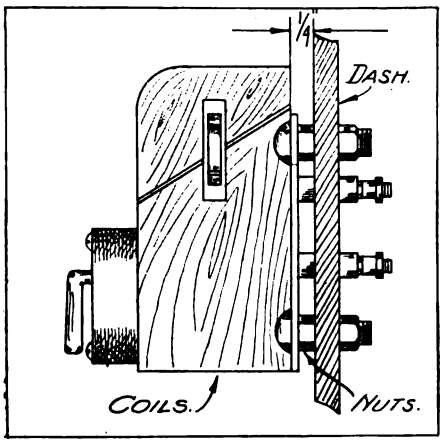
SUGGESTIONS FOR GARAGE MEN



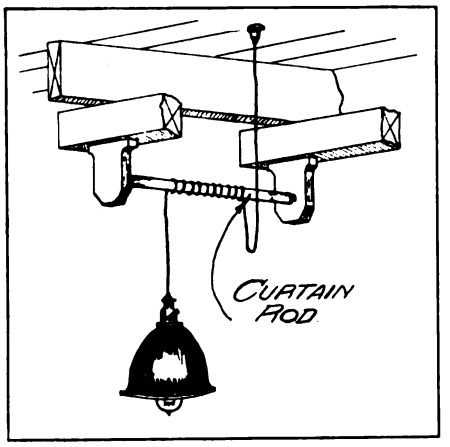
TO WATERPROOF COIL BOX ON FORD CHASSIS.

Ford owners sometimes fit waterproof canvas covers over the dash of their machines to keep the coil boxes from wetting. A far better protection is practical and the writer will pass it on for the benefit of others.

The four bolts which hold the coil box to the dash are loosened and removed. Then the coil box is moved out from the dash about half an inch. Before replacing the four bolts, four nuts are slipped between the flanges of the coil box and the dash and the bolts are placed through the nuts. If the regular bolts are too short use carriage bolts, about a quarter inch longer.

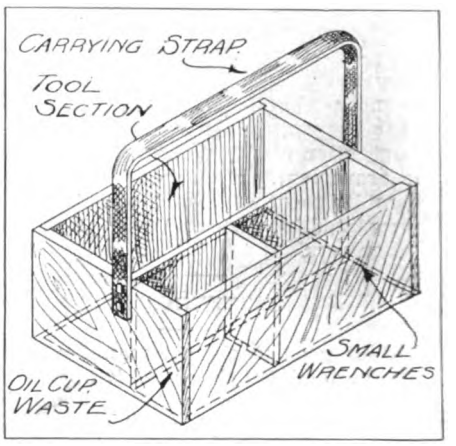
It is not necessary to loosen the wires or to remove the coil box from the dash, for the bolts can be removed one at a time, and replaced in the same order.

This places the coil box about a quarter of an inch from the dash and water that may leak through will drip without soaking the coil box.



ADJUSTABLE LAMP HANGER.

By winding the cord of the bench lamp several times around a curtain rod fastened to the ceiling a hanger is improvised with which the lamp can be suspended at any desired height about the bench. The light may also be used as an inspection lamp and carried to the job, provided the cord is made long enough. The curtain rod should be made extra heavy and is suspended exactly as though it were carrying a curtain.



HOME-MADE TOOL BOX.

A serviceable tool box can be easily made by anyone at all handy with a saw and hammer. Make a box of one by six-inch pine or hemlock boards, two feet long and 12 inches wide and six inches high. Board over the bottom and put a partition through the center. Half way between the ends of this partition and the side of the box place a short cross partition. This will make a three-section box. The long section will take any long handled tools, while one of the shorter sections will carry such small tools as flat wrenches, pliers, etc. The other section can be utilized for an oil can and waste. The general construction of this box is shown in the illustration.

46,000 DEALERS, GARAGES AND REPAIR SHOPS IN U. S.

"Facts and Figures of, by and for the Automotive Industry," published by the National Automobile Chamber of Commerce states that there are 46,000 dealers, garages, repair shops, etc., in the United States. There are 27,800 automobile and truck dealers, 25,500 garages, 13,500 automobile repair shops, 12,000 tire vulcanizers, 2550 automobile supply houses, 282 jobbers of automobile supplies, 1080 body, parts and accessory makers, 6789 concerns making some article used in the automobile trade, 372 commercial vehicle manufacturers and 238 passenger car manufacturers.

Capital invested by dealers, garages, etc., is estimated at $184,000,000, the workers employed number 230,000 and the wages paid total $184,000,000. Body, parts and accessory makers have $336,000,000 invested, employ 320,000 persons, the wages and salaries amounting to $288,000,000.

Automobile manufacturers have $736,000,000 invested, employ 280,000 persons and pay salaries and wages of $275,000,000. These figures are based on the latest available statistics, and are doubtless considerably lower than those that would reveal the present condition of the automobile world.

KISSEL ENGINEERS PERFECT AUTOMATIC OIL CONTROL.

Kissel engineers have perfected an automatic oil control which, it is claimed, accomplishes the following results:

A—When the motor is pulling its maximum load, or using its full horsepower, with the throttle wide open, the new Kissel Automatic Oil Control provides the "maximum oil pressure needed," as well as the necessary "oil supply" to maintain the proper oil film under this full load condition.

B—When the motor load is reduced and the throttle closed the new Kissel Automatic Oil Control automatically reduces the oil pressure as well as the oil supply.

C—It prevents piling up of oil at either end of oil basin, i. e., when going up grade or when going down grade.

D—It distributes the correct amount of oil in the oil pockets for each cylinder, regardless of the grade, load condition or speed. No cylinder is ever starved of oil or gets too much.

TRADE LITERATURE.

The DuPont Fabrikoid Co., Wilmington, Del., has issued a folder describing the "Victory Finish," which is bound to interest top makers, trimmers and auto finishers.

AIRPLANE MOTOR MACHINERY USED AT ALLEN PLANT.

A large special grinding machine designed for use in building Liberty motors for airplanes is among considerable specially constructed machinery recently installed at the new plant of the Allen Motor Co., Columbus, O. This machine was just being completed when the armistice was signed. By quick work on the part of Allen officials it was obtained for use in the new plant. Special adjustments were necessary so that it would fit the Allen motor, but these were soon made and the machine is now in use. It gives a better cylinder surface finish with less labor than any machine of its kind previously used.

Motor castings are thoroughly cleaned out on the inside by a new sand blasting machine which eliminates any possibility of small particles of sand dropping into the oil and injuring the bearings. In addition to this another precaution against sand is taken by painting the inside of each crankcase with a high grade, heat resisting paint that permanently seals all pores.

To facilitate drilling a highly developed multiple spindle drill is used. With this it is possible to drill all holes in a crankcase, including those for the main bearing bolts, to the number of 30 in a half minute.

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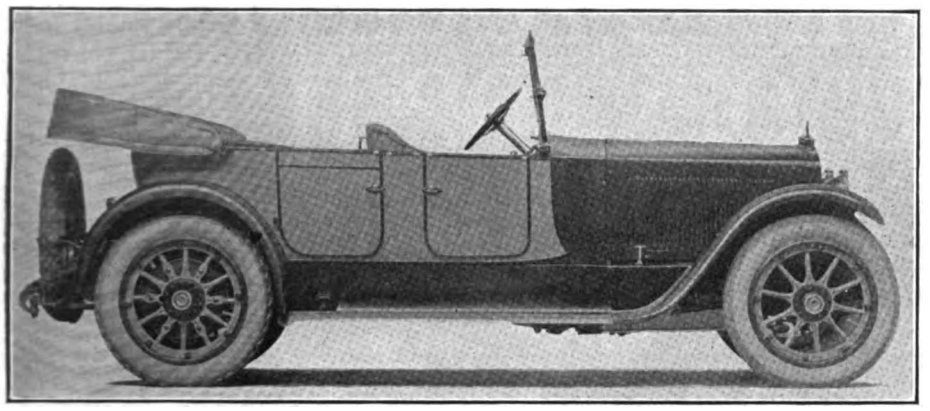
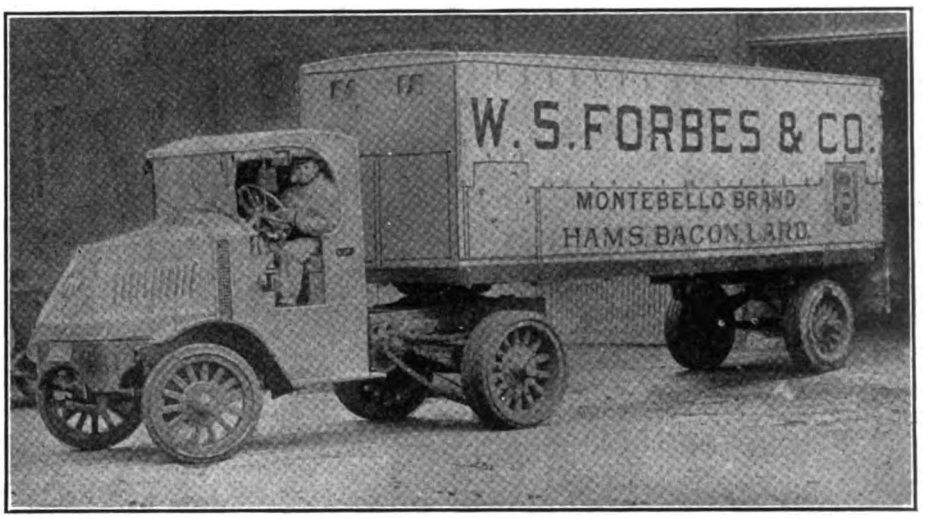
PICTORIAL NEWS OF AUTOMOTIVE INDUSTRY



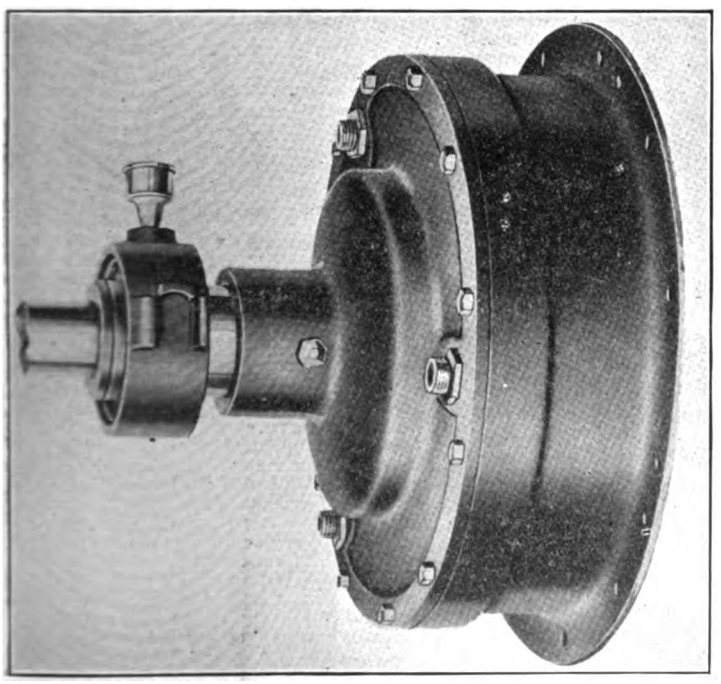
Latest Packard Model Twin-Six, Fitted with Every Up-to-the-Minute Luxury Known to the Motorist. This Car Has Made a Wonderful Appeal.

Newly Perfected Stewart Wire Wheel Which Cannot Come Off Accidentally.

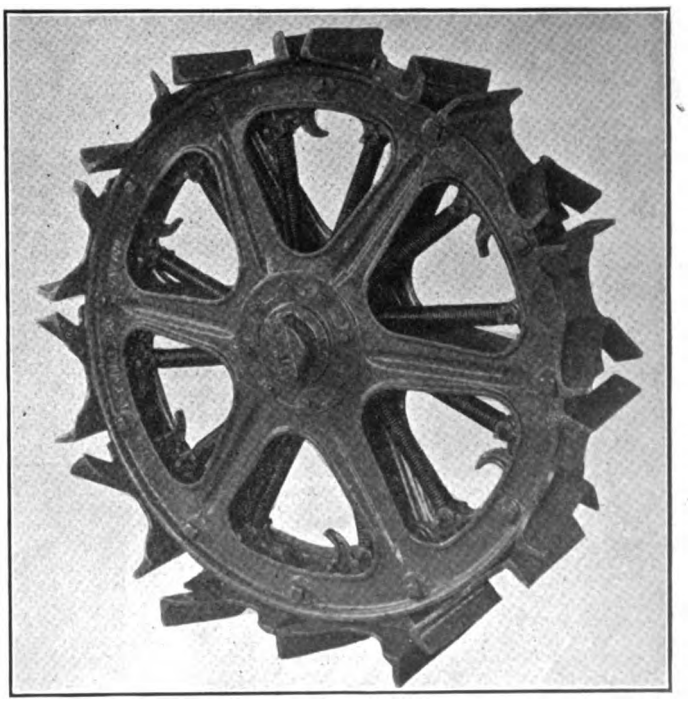
New Universal Radiator Shutter of Metal Products Co., Des Moines, Ia.



Mack Tractor and Semi-Trailer Having 15 Tons Load Capacity, Operated by W. S. Forbes & Co., Provision Dealer, Richmond, Va.



Complete Assembly of New Type Hilliard Multiple Dry Disc Clutch Designed for Heavy Duty in Tractors and Trucks.



The "P-T" Pedal or Tracklaying Wheel, with Which a Drawbar Pull Equal to the Weight of the Vehicle Is Obtainable.

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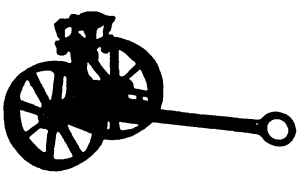
ACCESSORIES, EQUIPMENT AND TOOLS FOR THE GARAGE AND REPAIR SHOP

E & S Towing Truck. The E & S Towing Truck is an equipment for which the manufacturer makes broad claims. It is strongly made of the best of material and is very durable, having no working parts or joints to break or wear. Its simple construction makes it practically indestructible and it covers the entire range of tow-



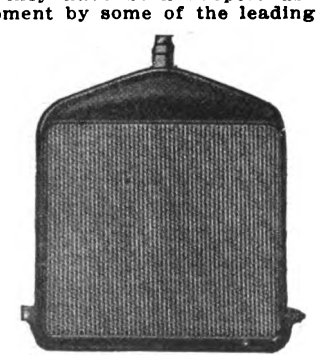
ing truck service for handling all cars, large and small, from the front or rear.

The truck is equipped with 14-inch wheels, large enough to ride over car tracks and other obstructions, and it is made throughout from high grade malleable iron and steel. The wheels have four-inch tires, the tread is 18 inches and the weight is 160 pounds. The length of the handle or towing pole is 120 inches and there is a large ring welded to the towing end. The height adjustment is up to 18 inches.

The E & S Towing Truck is guaranteed to give perfect satisfaction and the jobber is authorized to accept the return of any that do not meet the approval of the purchaser.

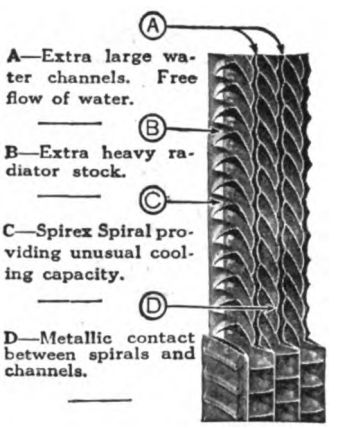
Manufactured by the Ellis-Smith Manufacturing Co., Inc., Buffalo, N. Y. List price, $32.50. Discount to the trade.

Spirex Radiators for Ford Cars. Spirex radiators are the development of careful experimenting and research into the principles of heat diffusion and the correct application of the mechanics of design. After many tests for efficiency and cooling qualities they have been adopted as regular equipment by some of the leading manu-



facturers of cars, trucks and tractors. They are constructed to a design that is half honeycomb and half tube.

The illustration will best explain this construction. Large capacity insures a larger and better cooling system. It is the claim and guarantee of the manufacturer that a Spirex radiator has 42 per cent. more cooling capacity than the regular equipment of Ford cars and that the Spirex special radiators have 67 per cent. more cooling capacity.



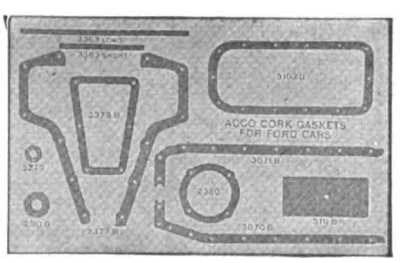
Although each radiator is doubly tested at the factory, should a defect develop, due to workmanship or material, the factory will replace or repair the units provided it shall not have been damaged through misuse or accident.

Manufactured by the Modine Manufacturing Co., Racine, Wis. Radiators may be obtained for 1916 Fords or earlier or for 1917 or later. Prices, Spirex radiators for all Fords, $28; Spirex special, $33; f. o. b. Racine.

Cork Gaskets and Transmission Bands. The manufacturer of Acco Cork Composition makes many claims for this product, the base of which is ground cork, which is used for making gaskets of all kinds and descriptions for pulley covering or facing and for washers of various sizes.

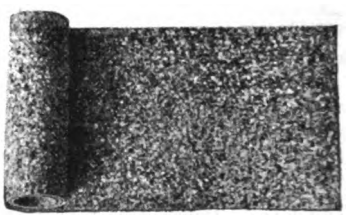
Acco Cork Composition is a satisfactory material for use where the temperature does not exceed 212 degrees Fahrenheit. It is made of selected, clean, ground cork and a special non-hardening binder. This binder not only holds the cork together, but preserves its natural elasticity and prevents shrinkage.

Gaskets made of Acco Composition are not affected by oil, gasoline, grease or water and may be kept in contact with any of these liquids without disintegration. The elasticity of the cork is not only retained, but the process of manufacture tends to increase it. This is especially desirable where the surface is uneven and a gasket is to be used. In applying these gaskets it has been found among repairers that the best practise is



to coat one side with shellac and the other with graphite. By this method the gasket may be removed as often as desirable and will not be damaged.

The manufacturer claims that oil will not seep through cork gaskets. Acco Cork Composition may be purchased either in the finished gaskets, in sections

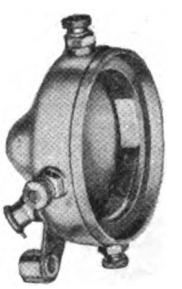


for inserting in transmission and brake bands, or in the roll or sheet form.

Manufactured by the Armstrong Cork Co., Pittsburgh, Pa. Prices and literature on application.

Milwaukee Timer for Ford Cars. The Milwaukee Timer for Ford cars is a very carefully made instrument. The case is a one-piece steel stamping, nickel plated over a coat of copper, making it rust proof.

A wide, deep bone fiber ring is fitted into the shell, providing perfect insulation, the contacts being imbedded in the fiber ring. The contacts are made of high grade cold rolled steel and are welded to screw studs, insuring perfect joints. The grooves are machine cut into the fiber ring, into which the contacts are carefully fitted. The manufacturer claims that by



this method of construction the contacts are practically integral parts of the fiber ring, as it gives a solid backing and support on all sides, and that it is impossible for them to rock, shift or turn.

After fitting the entire surface of the fiber and contacts are carefully machined by boring and finishing operations, providing a perfect surface and a continuous, even bearing of the roller on the contacts. The roller is made of high carbon tool steel, machined, then hardened, ground and polished, making a perfectly smooth face. By this method of finishing and assembly the roller always bears squarely on the contacts.

Manufactured by the Milwaukee Auto Engine and Supply Co., Milwaukee, Wis. Price, $2.

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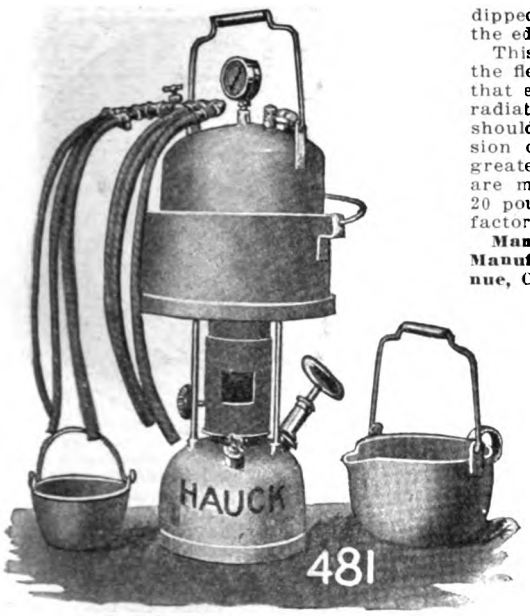


Hauck Storage Battery Outfit. The Hauck Storage Battery Outfit, burning kerosene, is designed to steam open storage batteries. While new it has proven very necessary in service stations handling storage batteries on a large scale. The manufacturer claims that the cost of operation is six cents an hour and that with it one can open 125 batteries a day, the average time required to generate steam being four minutes. A three or six-cell battery may be opened in from two to four minutes without damage to the plates.

The outfit consists of a 1½ gallons kerosene heated furnace with hand pump, a steam generator of 2½ gallons capacity, equipped with a gauge, safety valve, fittings, manifold and six 20-inch lengths of rubber steam hose, one melting kettle of 1½ gallons capacity for heating sealing compound, one lead melting pot of 35 pounds capacity and one mold for lead bars 15 inches long and 5/16 inch diameter.

Manufactured by the Hauck Manufacturing Co., 101-113 11th Street, Brooklyn, N. Y. Price, complete outfit, $40; equipped with gas burner complete, $30; one melting kettle, 1½ gallons capacity, $2; one melting pot, 35 pounds capacity, $1.50; one lead mold, $1.50.

The Zig-Zag Honeycomb Radiators. Zig-Zag Honeycomb Radiators are built for pleasure cars, trucks and tractors, and the manufacturers make broad claims for efficiency. In construction they are a honeycomb type, with the sections arranged so that the flow of water has a zig-zag path from the top to the bottom.

The tubes, after being formed, are assembled in the core by the convex parts, or offset of the tubes, fitting into the concave or grooved parts, and they are then dipped in solder on both sides, sealing the edges of the metal.

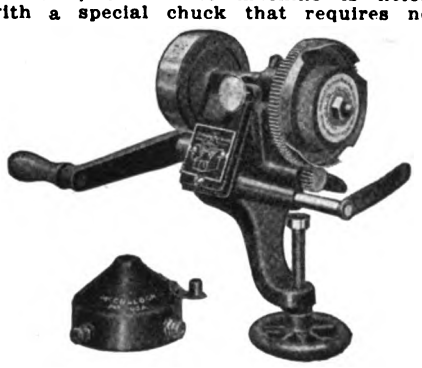
This method of construction increases the flexibility of the tubes or passages so that expansion can take place should the radiator freeze. The same result follows should the radiator overheat, the expansion of the metal allowing the radiator greater cooling capacity. These radiators are made of brass and are tested under 20 pounds air pressure before leaving the factory.

Manufactured by the Auto Radiator Manufacturing Co., 1712-14 Michigan Avenue, Chicago, Ill. Prices on application.

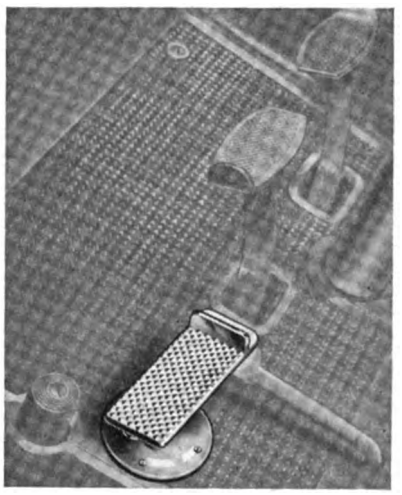
Holton Hood Clips. Holton Hood Clips are manufactured for use on Chevrolet and Briscoe cars in the place of the clips usually fitted on these cars. The manufacturer claims that with these clips all hood rattle is prevented, besides having the added advantage of one being able to lift the hood easily when inspecting the engine. The clips are fitted to the car by removing the wing nuts of the regular fasteners and slipping the Holton fasteners over the bolts and turning them until the proper tension is reached. It is claimed that the fasteners will never slip or rattle.

Manufactured by the Holton Hood Clip Co., 205 10th Avenue, W., Calgary, Alta. Price on request. Finished in nickel and furnished in sets of four.

The McCulloch Timer Grinder. The McCulloch Timer Grinder is a bench machine for grinding the contacts of Ford timers absolutely true. The machine is fitted with a special chuck that requires no skill whatever in centering; the grinding stone revolves inside the timer at high speed and the chuck and timer very slowly revolve around the stone. It is fitted with a very accurate adjustment and the manufacturer claims that the oldest and most worn timer may be ground with a surface like glass and equal to new in from two to three minutes. The whole machine is substantially constructed, all gears being cut from solid steel bar and lubricators fitted to all moving parts. When not in use as a timer grinder the chuck may be instantly removed, a large wheel fitted in its place and the machine can be used for grinding tools, twist drills, etc. It has been well tried out and has proved very satisfactory in every way.



Manufactured by the A. P. McCulloch Machine Co., 216 High Street, Boston, Mass. Prices on application.



The Feaster Foot Accelerator. The Feaster Foot Accelerator consists of a pedal hinged to a standard fastened to the floor of the car, the edge of the pedal resting upon the accelerator. A spring in the standard returns it to position when not in use. In operation a slight pressure sideways on the pedal will operate the accelerator. A lip on the side of the pedal prevents the foot sliding sideways. The manufacturer's claims are substantiated by statements of owners. Leg weariness is not experienced and more even operating of the engine, both on rough roads and pavings, is also realized.

The Feaster Foot Accelerator is made of the best materials and will not rattle or break. It is guaranteed for the life of the car and after trial if the buyer is not satisfied the purchase price will be refunded. It is adapted to practically all makes of cars, but especially those having the accelerator at one side of the brake pedal.

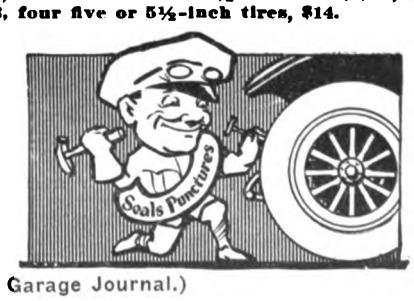
Manufactured by Peter Gray & Sons, Inc., Cambridge "C," Boston, Mass.

Kor-Ker. Kor-Ker is a mineral compound, a clean, dry powder which, when mixed with pure water to about the consistency of an emulsion, is injected into the tire tube through the valve. The water is a binder of the mineral ingredients which form a perfect air-tight plug when forced by air pressure from the tube into a puncture. There is no chemical action.

The manufacturer claims that Kor-Ker will seal punctures or porous openings in a tube while the car is in motion on the road and that this action will take place without the driver of the car knowing it. This particularly applies to punctures up to the size of a tenpenny nail.

It contains a preservative that keeps tubes elastic and prevents the rubber of the tubes from drying. Kor-Ker contains no substance that will eventually fill the valve stem and prevent it operating the manufacturer claims. Tubes filled with Kor-Ker may be as readily vulcanized as tubes that have not been so treated, as there is no adhesion of the compound to the rubber surface, and Kor-Ker falls to the bottom of the tube when not in use.

Manufactured by the Alcemo Manufacturing Co., Newark, N. J. Size No. 1, for four three-inch or 3½-inch tires, $8; No. 2, four four-inch or 4½-inch tires, $10; No. 3, four five or 5½-inch tires, $14.



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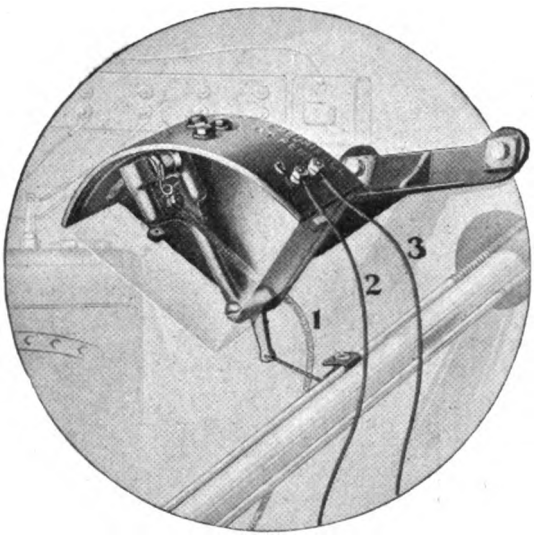
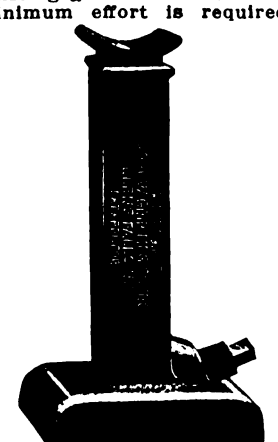


Double-Light for Ford Cars. The double-light is a simple attachment, fastened to the front of the dash, with an arm extending from the bottom that is attached to the throttle rod, turning with the rod when it is opened or closed. As the throttle is opened or closed by this connection an arm swings across the top of the box, making and breaking the circuit, keeping the lights at a constant brilliancy. The manufacturer claims one will get the same brilliancy of light while driving at slow speed as when driving fast. The claim is also made that although one bulb may be broken, the double-light attachment will continue lighting the other lamp without damage to the circuit. The device is strongly made of bronze and fiber and should last as long as the car. It is sold with a money back guarantee.

Manufactured and sold by Double-Lite Sales Co., Peoria, Ill. Price, $9.50.

Arrow Grip Jack. The Arrow Grip Jack is new and is so constructed that it may be rolled under the axle of a vehicle from a standing position, four rolls being recessed in the base. The jack is operated by a screw principle by a large gear in the base and a pinion at the side meshing with it. A folding handle or brace having an extension shaft fits a square on the hub of the pinion and operates the jack. the operator taking a standing position. The rollers in the base are, by action of springs, forced out of the way when pressure is applied at the top of the jack, as in lifting the weight of the car.

The manufacturer claims that with this jack the user need not assume a stooping position, as all of the work for its operation can be done while standing, and that in lifting a load of 50 to 1000 pounds only minimum effort is required. The



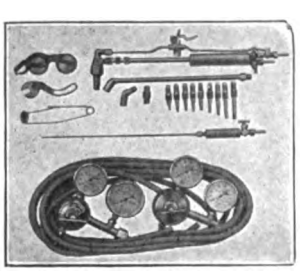
handle can be folded into a very compact form and packed in a small space.

Manufactured by the Arrow Grip Manufacturing Co., Glen Falls, N. Y. Prices on application.

Lockpach for Repairing Tubes. Lockpach is a tube patch made from pure para rubber, vulcanized to khaki cloth with a facing of red unvulcanized rubber that will vulcanize a tube permanently, the manufacturer claims. This material is also manufactured in rubber bags, so it will stretch with the tube. The khaki back material is recommended to the trade, as it will not stick to the casing and serves as a body for the patch. These patches are made of extra thick material and because of the adhesive quality of the red unvulcanized rubber is claimed to be a very superior article. Included with the can of patches is a tube of cement that is chemically pure and particularly adapted for the work done with the patches.

Manufactured by the Lockpach Co., 221 North Gay Street, Baltimore, Md. Prices on application.

Economy Welding Outfit. The Economy welding outfit is manufactured for garage and service station repairers and

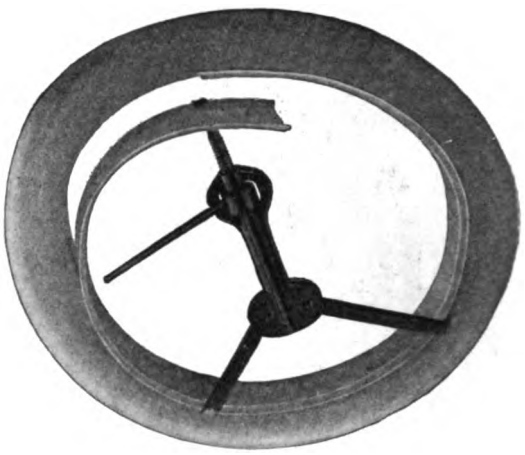


the outfit includes the necessary tools, burners, connections, tips, gauges, etc., for welding, in fact everything is supplied except the oxygen tank and the gas. With an outfit of this nature a repairer can mend broken frames, cracked engine cylinders, burn out carbon in engine cylinders and do all manner of oxy-acetylene welding.

The Economy outfit is the development of many years of successful experimenting with various appliances and types of apparatus, and the manufacturer claims that as offered to the trade it stands in a class by itself.

Manufactured by the Economy Welding Machine Co., Southwest Boulevard and Central St., Kansas City, Mo. Prices on application.

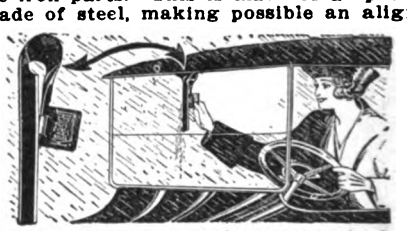
The Million Combination Rim Tool and Emergency Jack. A tool designed for work on demountable rims of the split type is the Million Combination Rim Tool and Emergency Jack, which is constructed to fold into a compact form for storing in the tool box and may be opened and used for the opening and closing of the demountable rims. In emergency it may also be used as a wheel jack for lifting a wheel for a tire change.



As a demountable rim jack it will serve for all makes of rims the manufacturer claims. The screw is three-quarter inch diameter, with a No. 6 square thread, having plenty of power for the most stubborn rim. Claim is made that with the tool rims that are out of round may be trued in a very few moments time, so that they may be applied to wheels. The tool may be attached to a rim very quickly by hooks to the sides of the rim.

Manufactured by the Million Motor Co., Adrian, Mich. Price, $6.

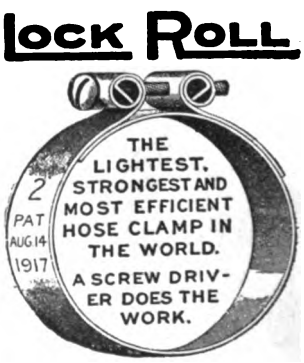
Klear-Sight Windshield Cleaner. The manufacturer claims that the Klear-Sight Cleaner is superior to anything in the market for the purpose. This is largely due to the drawn steel spring welded to the iron parts. This is made of a special grade of steel, making possible an align-



ment that insures a uniform contact of the cleaner with the glass, which is absolutely necessary to get good results. It not only removes rain, mist or snow from the glass, but leaves it clean and clear.

Manufactured by the Alcemo Manufacturing Co., Newark, N. J. Price, $2.

Lock Roll Hose Clamp. Something unique in hose clamps is shown in the accompanying cut. Of all the splendid features of this clamp, one that stands out the strongest is the lock nut arrangement. This device eliminates the nut so com-



monly used on the ordinary clamp, and at the same time is guaranteed by the manufacturer to be non-stripable and vibration proof. Its application is simple and it is adaptable in every case where a tight connection is an absolute necessity.

Manufactured by the Federal Tin Co., Charles and Barre Sts., Baltimore, Md. Prices on application.

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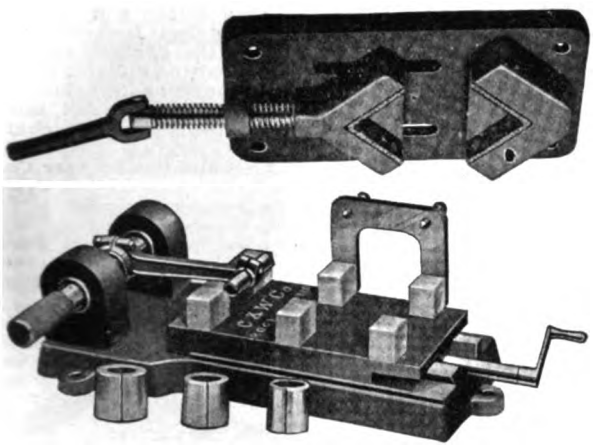


Connecting Rod Aligner and Piston Clamp. Two tools of unusual interest to the service station and garage owners are the connecting rod aligner and piston clamp manufactured by Campbell & Wochner. These are bench tools that may be placed conveniently for work and will earn the investment in them many times over during the course of a year. The aligner not only proves connecting rod alignment, but also the cross diameters of the pistons. With it one can check the positions of the connecting rods, that is, the tops of the rods on the wristpins between the piston bosses. The manufacturer claims that with aligner connecting rods all makes can be aligned quickly and accurately.

The piston vise or clamp is adjustable and will hold any piston from 2⅝ to 4½ inches. It is impossible to crack the skirt of a piston or to damage the rings in any manner. The machine is indestructible and when reaming for oversize pins or installing new bushings in a piston will prove indispensable.

Manufactured by the Campbell & Wochner Co., 1611-15 Third Ave., Rock Island, Ill. Prices: Piston clamp, $8; aligner, $65, f. o. b. These are fully guaranteed.

Rees Double Worm Gear Drive Jacks. The principle of the worm gear is employed in the construction of Rees' Double Worm Gear Jacks, which are claimed to be very powerful in operation. These jacks should be used generally in garages and service stations because of their power for lifting qualities, the ease of

placing them beneath the axles and the fact that they may be operated from a standing position. They are manufactured in a variety of sizes and weights and for all classes of work, both light and heavy The manufacturer claims that a child can lift a two-ton load with ease with one of these jacks and that the jack cannot drop while under load.

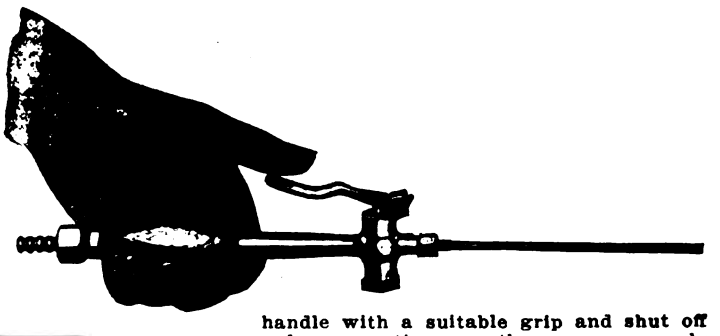
Manufactured by the Iron City Products Co., 7501 Thomas Boulevard, Pittsburgh, Pa. Price, passenger car model, $9.

Atlantic Pneumatic Grease Gun. The Atlantic Pneumatic Grease Gun is designed to move grease by compressed air from a tube by pressing a button. Air is supplied from an engine driven tire pump, foot pump, compressed air system or from an inflated tire on the machine. To operate, attach the hose to the valve connection on the pump. Fill the pump with grease, using filler provided for that purpose.

To use with inflated tire, reverse the hole ends to compress the valve inside of the valve stem. By pressing the button on the pump the grease will be forced through the nozzle. When the pressure on the button is released the grease stops flowing instantly. A small screw is supplied for use with a compressed air system or air from an inflated tire, but it must be removed when used with a power pump, as the opening where the screw is placed is the safety valve for the air when not forcing out grease. The safety valve is provided in the plunger so that when the gun is empty air will pass through the gun and out through the nozzle, preventing the air from backing up and bursting the tire pump. A small opening in the barrel of the gun allows the air behind the piston to escape when the gun is not in operation, so that the grease will not be forced out. Any grade of grease may be used, the flow being determined by the pressure of the air supply. The gun is nearly all brass, is nickel plated and holds 16 ounces of grease. The outfit includes the grease gun, two tips, ⅛ inch and ¼ inch, of iron to be inserted in place of grease cups to clean out a stopped joint, one flexible metal hose for end of cap with union, filler with paddle, one plug for inserting in the nozzle end of gun when carrying it filled in the tool kit. Packed in a wooden box.

Manufactured by the Atlantic Motor Supply Co., 63 Gorham St., West Somerville, Mass. Prices on application.

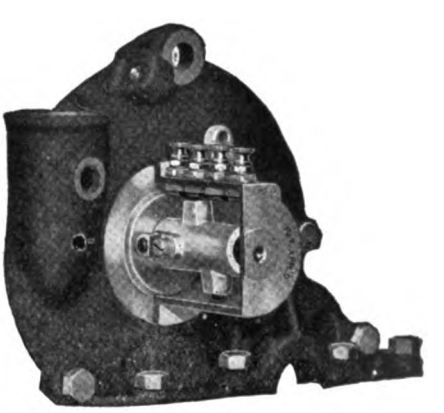
Fidelity "One Hand Torch." The Fidelity "One Hand Torch" No. 19-A is a late model handle for the garage repairer doing decarbonizing work. It consists of a



handle with a suitable grip and shut off valve operating on the oxygen supply within easy reach of the thumb. The tip on the end for insertion into the combustion chamber of the engine is made detachable, as these burn off occasionally and must be replaced. With this 20-inch semi-flexible copper torch head the tool can be extended into every part of the chamber. The "one hand" operation is a big feature. The automatic shut off valve controlling the oxygen supply is located on top of the torch, coming right under thumb of the hand holding it. A slight pressure of the thumb on the valve handle turns on the oxygen and releasing the pressure automatically causes complete shut off. New tips can be obtained quickly and at small cost from the manufacturer.

Manufactured by the Fidelity Brass Manufacturing Co., 1001-1011 West Washington St., Chicago, Ill. Price for the outfit, including torch, 50 pound gauge and six feet highest grade hose with clamps, $17.50.

The Jack Rabbit Distributor for Ford Cars. The Jack Rabbit distributor is designed to take the place of the regular Ford commutator. Unlike the Ford commutator there is nothing about the contacts to wear as its brush units break contact while traveling through space. The terminal contacts are a suspended type, attached to the top of the distributor. The wire connections are from the top of the distributor directly over the brush contacts, insuring against accumulations of oil. Jack Rabbit distributors can be easily attached to any Ford car by installing it in place of the old commutator and connecting the wires to the terminals marked one, two, three and four. Then turn the engine over until the old roller brush points down; remove it and with the engine in this position slip the



Jack Rabbit brush on the camshaft and tighten set screw securely into hole on the camshaft. Use the bolt and bushing furnished for adjusting the Jack Rabbit body to the engine. If the spark is timed too low this may be corrected by shortening the spark rod by bending.

The manufacturer claims that by the use of the Jack Rabbitt distributor the wires will be kept free from oil and ignition troubles will be reduced.

Manufactured by Jack Rabbit Ignition Co., 1062 Palmer Avenue, Detroit, Mich. Price, $5.

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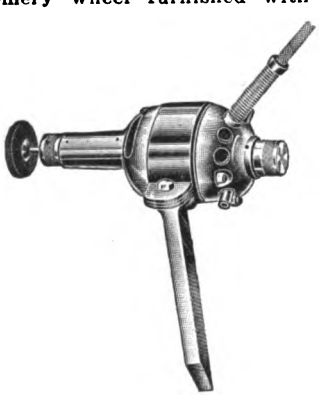
Invisible Curtain Light Repairer. The Invisible Curtain Light Repairer may be purchased from the manufacturer either separately or in quantity and may be placed in the car curtains in a few moments time without the use of special tools or cutting the fabric. The repairers are sold singly in envelopes with the necessary fasteners and full directions for fitting to the curtain. The lights are made in three sizes. No. 101, 10 by 6 inches; No. 102, 18 by 10 inches and No. 103, 25 by 10 inches. No. 101 is for all Ford cars of 1917 or later models and No. 102 is for replacing the rear lights of 1916 or earlier models.

In placing the light in the curtain a sharp knife is used to cut the inner stitch-

ing and picking out the threads. The new light is placed over the opening evenly and fastened with the small patent fasteners to the light and the inner flap of the curtain. The outer flap, covering the fastener, is cemented with glue or a good cement, making the curtain and light water proof.

Manufactured by Russell E. Tupper, Cochituate, Mass. Prices: No. 101, 50 cents each or $6 a dozen; No. 102, $1 each or $12 a dozen; No. 103, $1.50 each or $18 a dozen. Special prices to the trade.

H-B Portable Electric Grinder. The Hamilton-Beach portable electric grinder is designed for garage and service station repairers or mechanics for use with a lathe. The work is held in place in the chuck of the lathe, the grinder being fastened by a short steel arm to the adjustable rest on the bed of the lathe. The grinder may be connected to any convenient electric light socket for current and operates through a short shaft, having an emery wheel attached at the end of the shaft and bearing against the work. The motors are fitted for either direct or alternating current, either 100-120 volts, 25 to 60 cycles. The universal joint is perfectly fitted and is true in operation. The emery wheel furnished with every

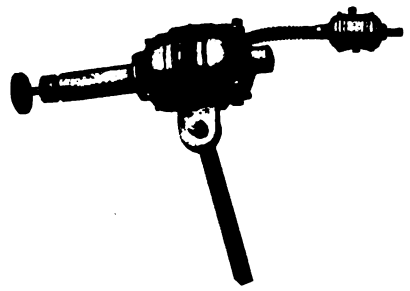


H-B grinder is tried, trued and tested before leaving the factory. All grinders are equipped with a C. H. feed through a switch placed near the grinder so that the current may be instantly cut off without leaving the work.

A special feature of H-B grinders is the dust proof bearing caps. No grit or dirt can come in contact with the high speed nickel babbit bearings. The grinder is perfectly balanced throughout, assuring absolute accuracy and eliminating any possibility of vibration.

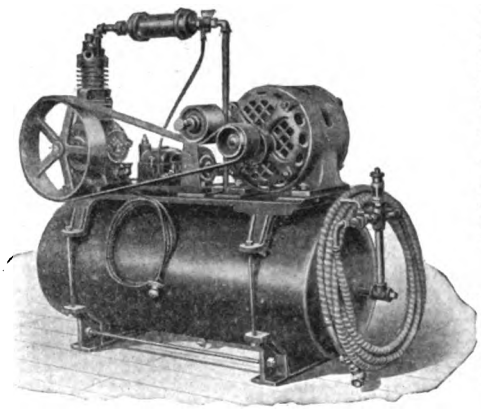
The manufacturer claims that this grinder is the result of many years of careful experimenting and research by the ablest engineers of the country. It is scientifically correct, compact and convenient, and is built of the best material the market affords.

Every H-B Grinder sold at the full advertised list price shall entitle consumer to a guarantee against defective material and workmanship, provided transportation to and from the factory is paid. Natural wear and tear does not constitute a defect. Parts worn out through lack of oiling will be furnished at cost. This guarantee does not apply to any device from which the Hamilton-Beach name plate has been removed.



Manufactured by the Hamilton-Beach Manufacturing Co., Inc., Racine, Wis. Price, $25; guaranteed for life.

Service Station and Garage Air Compressor. This service station and garage air compressor consists of a motor driven outfit mounted on a sub-base and includes the tank, with suitable gauges, and an air compressor of the single cylinder vertical type mounted on the tank and belt driven by an electric motor mounted on the opposite end of the tank. The compressor is connected to the tank by piping, check valves and fittings and a gauge, making the outfit very compact and occupying a small space in the service station. These outfits may also be purchased mounted so that they may be



wheeled to any point in a garage and used for inflating tires, or the stationary types may be connected to piping systems in service stations and by suitable valves and hose connecting them, can be used for tire inflation or other purposes. They are made throughout of the best of material and are guaranteed by the manufacturer against defective material and workmanship.

Manufactured by the Gardner Governor Co., Quincy, Ill. Prices and literature on application.

Kester Acid-Core Wire Solder. Kester acid-core wire solder is a self-fluxing wire solder. The solder (strictly tin and lead) is a hollow wire filled with a soldering flux. No additional soldering flux, paste or salts is required. The manufacturer claims it will solder any metal except aluminum and is especially suited for

Kester Acid-Core Wire Solder

automotive repair work. It is said to be cheaper to use than solder wire or bar solder as no time is lost in preparing, hunting or applying the flux. It is specially adapted for repairing radiator leaks, attaching spark plug terminals, soldering cracked fenders, gasoline pipe and tank connections, speedometer flexible shaft tubing and general garage use.

Manufactured by the Chicago Solder Co., 218 North Union Ave., Chicago, Ill. Price on application.

Lazear Auto Lock Wheels for Ford Cars. The Lazear Auto Lock is a new lock for Ford cars for which the manufacturer makes many claims.

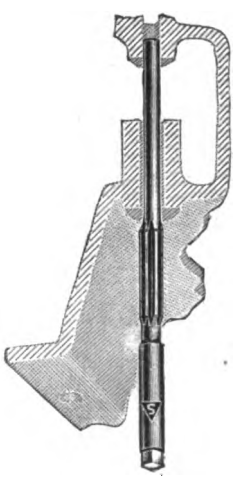
The Lazear Auto Lock is simple in construction and can be easily installed in

about 10 minutes time by anyone. It is approved by the Underwriters Laboratories and is the only lock wheel which locks without the use of a key. It has no lost motion or play even after being used a long time. It is fitted with a Corbin locking cylinder that is supplied with two keys which are designed for each particular car, no two locks having keys alike. The wheel is constructed with a polished aluminum spider and a walnut finished, corrugated rim, which adds greatly to the finish of the car. The rim is 17 inches diameter and affords the driver more comfort and convenience in driving, as it has greater leverage, which lessens the steering strain. Ball bearings are used in the construction of the lock wheel, which reduce the friction to a minimum.

Manufactured by the Lazear Auto Lock Wheel Co., 4101-13 Irving Park Blvd., Chicago, Ill. Prices, Ford model, 17-inch corrugated rim, each $12.50. Lazear Auto Lock Wheels for all large cars and trucks, 18 inch corrugated rim, each, $15.

Pilot Reamer for Ford Oversize Push-rod. The new Stevens Pilot Reamer for Ford engines is unique in construction and the manufacturer claims that with it oversize push rods can be quickly and easily installed in the Ford engine.

The reamer is used from the under side of the top half of the base and is passed through the push rod bore, the upper end of the reamer carrying a long pilot, fitting



the valve stem guide above and being held in alignment by the valve guide. This insures a true reamed guide for the push rod and the fitting of an oversize push rod. The reamer is 1/64 inch oversize and like all Stevens reamers, is made of highest grade crucible steel, guaranteed for accuracy.

Manufactured by Stevens & Co., 375 Broadway, New York City.

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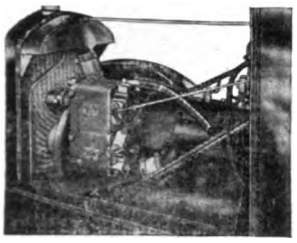
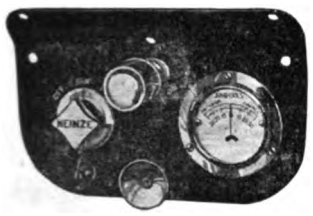


Heinze-Springfield Electric Starting and Lighting System for Ford Cars. The Heinze-Springfield electric starting and lighting system for Ford cars consists of a two-unit, six-volt, single wire equipment with Bendix drive. It is interchangeable on both old and new types of Ford engines.

The manufacturer claims that this starter insures a surplus of power for starting and a generator output sufficiently high to keep the battery fully charged and in good condition.

This outfit eliminates the dangers of hand cranking and stalling in traffic. The engine is always locked when the car is left for any length of time and steady lights are provided for night driving. The control is from the dash on which is lo-



cated the ammeter, dash light switch and lock. It can be easily placed on the front of the engine by using a special cast mounting plate and fittings furnished with the starter. The system is complete as sent out by the manufacturer and no extras are required.

Manufactured by the John O. Heinze Co., Springfield, O. Prices and literature on application.

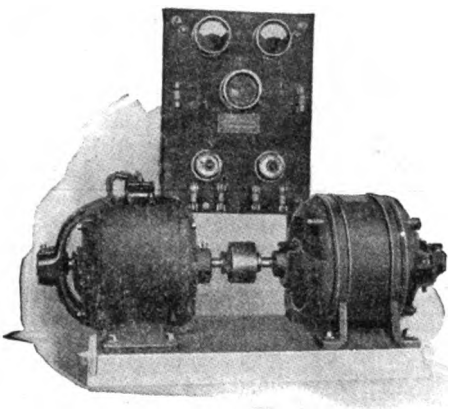
Kewanee Motor Generator Sets. Kewanee Motor Generator Sets are manufactured in many sizes and capacities and are suitable for all classes of charging work from the private owner having one battery to charge occasionally to the service station where many batteries are overhauled and charged daily.

The outfits include beside the motor generator a suitable panel of slate upon which is placed the instruments used for charging. Among these instruments are a generator field rheostat, voltmeter, ammeter, motor and generator circuit control switches, fuses, ammeter reading switches, battery circuit switches and charging rheostats; also a circuit breaker when ordered. The regular equipment consists of a two-circuit panel, including instruments and switches as specified, with charging rheostat in one circuit. Additional circuits, circuit breaker and charging rheostats are furnished at extra prices. The voltmeter reads the voltage of the generator circuit only.

The generator is shunt wound, its voltage increasing as the batteries approach the charged condition and the ampere load decreasing, thus permitting the long low rate charge necessary for the life of the batteries.

The motor generator sets are made from the best materials, guaranteed by the manufacturer, and may be operated either on single or double phase circuits alternating current. These outfits will charge from one to six six-volt batteries in series, or double this number in multiple in the smaller sizes, and in the larger outfits will charge from four to 13 six-volt batteries in series or double this number in multiple, with the amperage for charging varying from six to 37½. The point that recommends these outfits is the fact that experienced men are not required for their operation, the regular garage or service station help being sufficient.

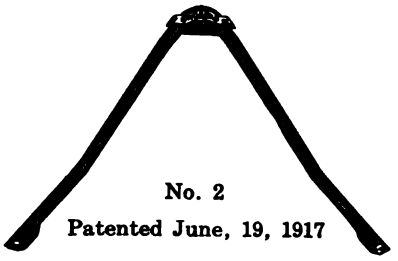
The same company manufactures a direct connected pump and electric plant for isolated service stations where electric current is not available, for which it makes many claims. This outfit will supply the necessary electric current for use about a shop for lights and small motors and also pump the necessary water to a pneumatic storage tank, either from a deep or shallow well. The pump and electric light plant may be used together or



separate as required. Power is obtained from a gasoline engine, direct connected to the dynamo and pump. A button on the switchboard starts the engine and the engine is automatically stopped when either the tank is filled or the storage batteries in connection with the outfit have reached their maximum charge.

Manufactured by the Kewanee Private Utilities Co., Kewanee, Ill. Prices and literature on application.

Radius Rod Supports for Ford Cars. Radius rod supports for Ford cars are made from angle steel and shaped to fit either beneath radius rods or inside of them. The No. 2 support is the most used because of its position when in place, as it is fitted directly in the crotch of the radius rod. In the event of the loss of the clamp or bolt there is a support for the front axle, and there are no strains on the bolt or clamp. The support is so formed at the crotch into a clamp that



No. 2

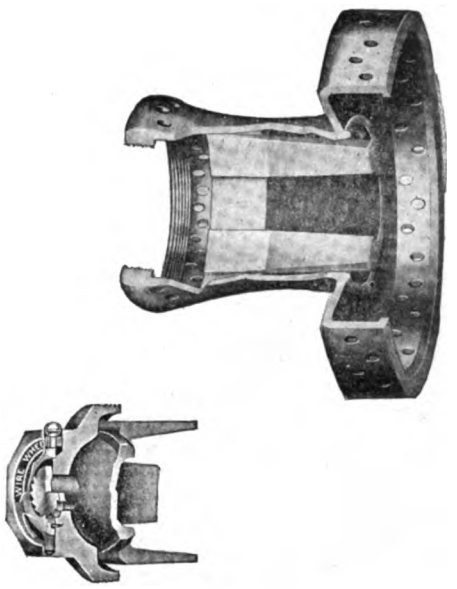
Patented June, 19, 1917

cannot be moved by pressure from its position, as the top web of the angle is formed at the crotch that when placed it hugs the radius rod its full length. The manufacturer claims that the clamp may be removed from the support and the car driven without danger of accident.

Manufactured by the Brocksmith Manufacturing Co., St. Louis, Mo. Prices on application.

Stewart Wire Wheels for Passenger Cars. Stewart Wire Wheels for Passenger Cars while new to the trade are the product of a concern that has long been connected with the automobile industry.

In the newly perfected Stewart wheel, all danger of wheels accidentally coming off is obviated the manufacturer claims. The inner hub and outer hub each have four reverse tapers. As the outer hub is applied the tapers slip into grooves and a one-eighth turn locks the reverse tapers of the outer hub to those of the inner.

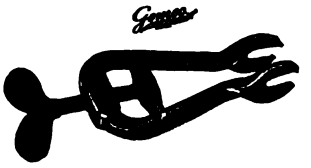


Each taper has bearing on the entire surface of the other. Even when the tapers begin to wear perfect bearing surface is maintained until both reverse tapers are entirely worn away is claimed. Until the reverse tapers are thus automatically locked the hub cap cannot be applied. Inside this hub cap is swiveled a wedge key with four tapered wedges. This wedge key has two functions. It carries the wedges for securing the wheel upon its taper bearings, at the same time the end of the inner hub projects into the wedge key, which in turn seats in the recess of the hub shell, thus affording a positive, direct drive combined with rigidity of wedge bearings. Turning the hub cap forces the wedges home and they are held by an automatic spring lock ratchet mechanism. Two or three final turns with a hub wrench make the hub cap absolutely tight, and the spring lock prevents its working loose.

Manufactured by the Stewart Wire Wheel Corporation, Frankfort, Ind. Prices and literature on application.

Gemco Universal Valve Spring Release. Garage and service station repairers will be interested in the Gemco Universal Valve Spring Release No. 202. By its use obstinate valve springs may be compressed and the pins removed to take out the valves for grinding.

It consists of two arms forked at one end and hinged to a cross member at the other. A bolt carrying a winged nut at one end passes through the center of the cross member and fits against a block



slidable between the two hinged arms. When operating the forks are placed one under the valve spring and the other over the push rod, and they are forced apart by the bolt and block, the block bearing against the sides of the arms. When the spring is compressed it is held so that the pin may be easily removed, and the valve can be taken out. By turning the bolt in the opposite direction the tool may be released for use on the next valve. The tool is made throughout of the best of material and the manufacturer claims that it will last for years.

Manufactured by the Gemco Manufacturing Co., Milwaukee, Wis. Prices on application. Sold through the jobbing trade.

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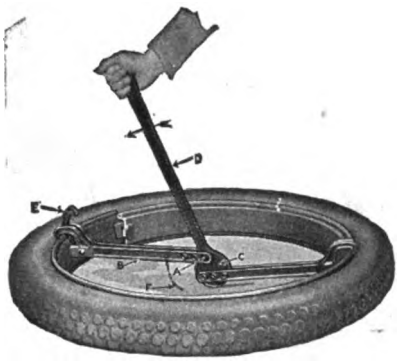
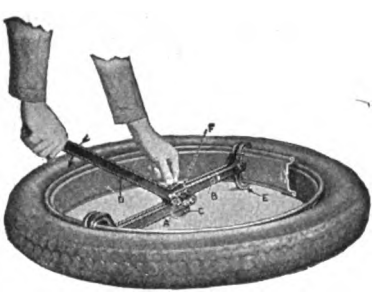
Duplex Rim Device. Safstrom's Patent Duplex Rim Device is a new tool for the removal of straight side and clincher casings from demountable rims. The manufacturer makes many claims for its adaptability, ease of operation, etc.

It consists of three levers, two of which have hooks on the ends that fit over the rim and the third is used as a handle, having a disc at one end to which the side levers fasten.



To operate the valve stem is pushed in and the casing is placed flat on the ground and the tool placed across the rim a few inches from the split in the rim. The pin (A) is inserted through the bars and the disc, making the lever stand in an upright position. With expanding movement unlock the rim. Then swing the tool to within a few inches of the opposite side of the split. Slip the lower hook (E) under the bottom side of the rim and contract to the full extent of the lever (D). Insert the locking pin (F) in disc (C) and lift the rim out of the casing, leaving the tool in the locked position ready to replace. In replacing put the rim in the casing, guiding the valve stem through first, and press down the lever (D). Then pull out the locking pin (F) and force the lever (D) to the opposite side and expand the rim until the lock fits. In expanding, fold back the lower hook (E) so that the tool may travel freely inside the rim and reach any point where expansion is needed.



As the tool is universal it may be adapted to any size rim by simply changing the pins in the disc and side levers. It will lock and unlock any make of rim and do all of its work without damage to the casing or rim.

Manufactured by the Duplex Rim Device Co., 7546-48 S. Chicago Avenue, Chicago, Ill. Price: No. 1, car size, $6; No. 2, garage size, $7.

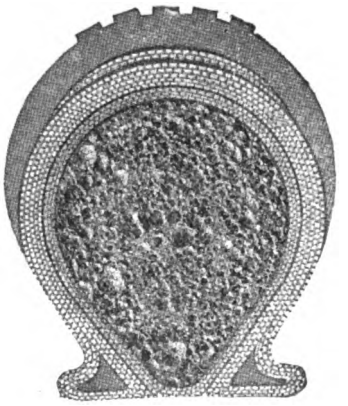
Rockway Automatic Starter for Ford Cars. Rockway Automatic Starters for Ford cars turn the engines with a powerful coil spring in which sufficient energy is stored to insure from eight to 10 revolutions, insuring an easy start. A primer is included in the outfit for cold weather starting, which injects gasoline into the inlet manifold.

The coiled spring is placed parallel to the frame at the front left corner and is connected to the crankshaft by two sprockets and a chain. A special clutch under the fan pulley engages the crankshaft when starting and during the winding of the spring. When the spring is fully wound the clutch automatically releases, allowing the engine to run free. A rod entends from the starter to the dash for operating the starter. In case the spring should be unwound, provision is made for rewinding it either by the hand crank at the front of the engine or by the brake lever at the seat. A small push pin on the floor operates in conjunction with the hand brake lever during the rewinding. The mechanism of the Rockway automatic starter operates in a bath of oil, thus insuring lubrication with minimum attention.

The manufacturer claims that the best of materials are used in the construction of Rockway starters and warrants all parts as shall under normal use and service appear to have been defective in workmanship or material. All defective parts will be replaced without charge, except transportation. Rockway starters are guaranteed to work when installed and operated according to printed instructions.

Manufactured by the I. B. Howell Co., Manufacturers, Waukesha, Wis. Price, $48.50, installed. Where no agency is established a discount of $10 is allowed to cover cost of installation, the customer being asked to send them the factory name of the garage or shop installing the starter.

Parco Inner Tires. Parco Inner Tires are a tire filler for pneumatic casings and are filled tubes of special construction for which the manufacturers make many



claims. The Parco Inner Tire is a one-piece unit, made of the best grade of pure rubber, containing innumerable tiny air filled rubber cells, each of which is a pneumatic shock absorbing cushion that is claimed to afford greater resiliency than the customary one cell air filled tube.

Parco Inner Tubes replace the vulnerable air filled tubes and can be used in any standard make of casing. With these tires the casings can be worn to the last layer of fabric, giving many miles more than would otherwise be possible.

Manufactured by the Pan-American Rubber Co., Milwaukee, Wis. Prices on application.

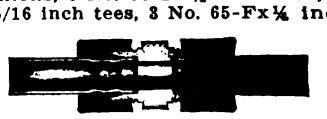
X-Pel-Zit. X-Pel-Zit is a chemical product that may be mixed with gasoline in the proportion of one ounce to five gallons for engines in ordinary condition, but where they are very foul with carbon deposits the proportion may be three ounces to five gallons, gradually reducing the proportion of X-Pel-Zit as the engine becomes free of carbon until one ounce is used. The manufacturer claims that X-Pel-Zit does not improve gasoline, but does prevent formation of carbon. The gasoline is a conveyor to get X-Pel-Zit into the combustion chambers. The moist vapor of X-Pel-Zit is sprayed throughout the combustion chamber and united with the lubricating oil. The carbon is not deposited and is forced out of the combustion chamber with the exhaust, insuring a cleaner, smoother running engine. As the pistons are better lubricated through the action of X-Pel-Zit mixed with the gasoline entering the combustion chambers, less gas is required to develop power and this means a saving in fuel.

Manufactured by the X-Pel-Zit Manufacturing Co., St. Paul, Minn. Prices on application.

Imperial Compression Couplings. Imperial Compression Couplings are claimed to be the quickest and most effective means of connecting tubing for gasoline, oil and air lines. These couplings may be connected and unconnected as often as desired or they may be taken from the tubing and used elsewhere without lessening their efficiency the manufacturer claims. In connecting them the only tools required are two wrenches. Simply insert end of the tubing through the nut

and sleeve, as shown in the illustration, and then insert the tubing into the body of the fitting so that the end of the tube seats. Tighten the nut on the fitting and the double grip of the sleeve on the tubing, thus obtained, makes an absolutely tight joint. Put up in cartons of assorted sizes for the garage and service station trade in the following sizes:

No. 110-F, handy assortment, includes the following: 12 No. 60-Fx¼ inch sleeves, 12 No. 60-Fx5/16 inch sleeves, 3 No. 62-Fx¼ inch unions, 3 No. 62-Fx5/16 inch unions, 3 No. 64-Fx¼ inch tees, 3 No. 64-Fx5/16 inch tees, 3 No. 65-Fx¼ inch elbows, 3 No. 65-Fx5/16 inch elbows, 3 No. 66-Fx¼ inch bushings, 3 No. 66-Fx5/16 inch bushings, 8 No. 68-Fx¼ inch connectors, 8 No. 68-Fx5/16 inch connectors, 8 No. 69-Fx¼ inch elbows, 8 No. 69-Fx5/16 inch elbows, 3 No. 70-Fx¼ inch elbows, 3 No. 70-Fx5/16 inch elbows, 3 No. 72-Fx¼ inch tees, 3 No. 72-Fx5/16 inch tees.



No. 111-F handy assortment is similar to the above, but contains a larger number of fittings.

Manufactured by the Imperial Brass Manufacturing Co., 1200 West Harrison Street, Chicago, Ill. Price to dealers, No. 110-F, $8; No. 111-F, $10.

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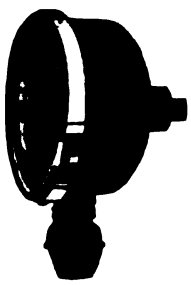
Superford Honeycomb Radiators for Ford Cars and Trucks. Superford radiators are made up to a price and are guaranteed by the manufacturer to be of the best of material obtainable and made by skilled workmen. The material that enters into their construction is identical to that used in the radiators of White and Packard cars, it is claimed.

Both 1916 and 1918 models have removable radiator casings and the inner units are easily accessible and the water tanks (upper and lower) are made entirely of brass. The radiator casings are stamped in one unit with the side walls heavily reinforced.

A lower priced radiator of the finned tube type manufactured by this company is claimed to be an improvement over other types in construction and general makeup. All important parts subject to strains are reinforced, and the side walls are riveted and solidly joined to the upper and lower brass water tanks. All water connections made of heavy castings, strongly riveted and fused. The trade name of this radiator is "Fin-A-Tube" and it is interchangeable with any original Ford radiator.

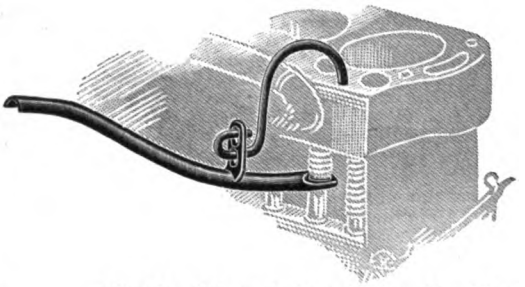
Manufactured by the Superior Lamp Manufacturing Co., 136 W. 52nd Street New York City. Prices: "Superford" honeycomb type, No. 16-F for 1909 to 1916 Ford cars, $35; No. 18-F, for 1917 to 1918 cars, $35; No. 18-F combination, for 1915 or 1916 Ford cars; streamline hood of the 1918 type, $43; "Fin-A-Tube" type, No. 16-B, for 1909 to 1916 Ford cars, polished brass, $30; No. 18-B, for 1917 to 1918 cars, complete with casing, $30; No. 17-B, 1918 radiator, with a streamline hood that will fit a 1915 or 1916 Ford car, $38.

Tail Light for Ford Cars. The Jefferson electric transformer tail light for Ford cars consists of an electric rear lamp having a three-volt low amperage bulb, a transformer conveniently located on the dash, and two dry cells. When the engine is running, light for the rear bulb is obtained from the extra current de-



veloped by the magneto. When the engine is stopped, current is obtained from the two dry cells by turning a switch on the front of the transformer. Current control is obtained from the transformer and it is automatically controlled, the manufacturer claims. The brilliancy is the same when the car is driven slow or fast. The complete outfit consists of transformer, standard electric tail light and sufficient rubber covered wire to make the connections.

Manufactured by the Jefferson Electric Manufacturing Co., 426-30 S. Green street, Chicago, Ill. Prices on application.

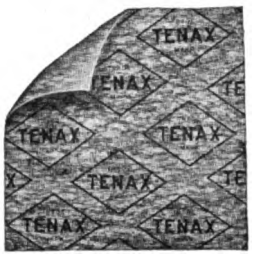


Liberty Valve Spring Lifter for Ford Cars. Liberty valve spring lifters are so designed that two valves may be taken out at one placing of the tool without removing the manifold on the side of the engine. The Liberty valve lifter is equally as useful for the home repairer as it is for the automobile mechanic. It is made of cold rolled steel and is strong and indestructible. It is simple and easy of operation, requiring only one hand, and stays in place without locking or holding.

The manufacturer claims that with this tool the most stubborn valve may be removed with ease and the necessity of resetting the pin each time is eliminated, as the valve is left free to be rotated. Full directions with each lifter for operating.

Manufactured by the Madison Tool and Stamping Works, Madison, Wis. Price, $1.

Tenax Compressed Asbestos Sheet Packing. Automobile supply houses and service stations can obtain sheet packing of a superior brand from a manufacturer who makes claim that its packing is unusually well made of the best of material; that it has been in the market for the



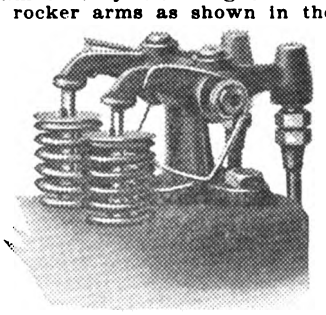
past 18 years and has a very enviable reputation not only with the steam industries, but with the automobile, truck and tractor manufacturers as well.

It is used for renewing packings, gaskets, pump packings, etc., and as the base is asbestos and it is not effected by heat, it is especially useful for exhaust pipe gaskets.

Manufactured by the Advance Packing and Supply Co., 11-15 North Franklin St., Chicago, Ill. Prices on application.

K-H-K Motor Silencers. An equipment of value to owners of cars equipped with overhead valves not of the enclosed type is the K-H-K silencer. These take the form of a spring that may be attached to the rocker arm, pass around the end of the arm bearing shaft and fastened by spring tension at the base of the post supporting the arm. Their use is to silence the noise of the arm and the push rods when operating.

The manufacturer of the K-H-K silencers claim that by attaching them to the engine rocker arms as shown in the cut



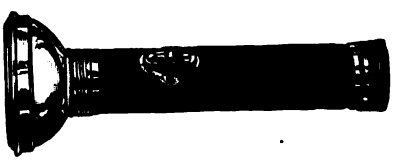
that a smoother running and snappier engine is obtained, and that the clacking noise so often heard is prevented.

It is not necessary to make alterations or to bore holes to install the silencers, as they are simply sprung into place around the rocker arms and become permanent fixtures.

Manufactured by the Kay H. Kay Co., 967 Woodward Ave., Detroit, Mich. Prices on request.

Everready Daylo Searchlight. These lights are built to the design of the famous Everready miners' flashlights and are made to meet the demand for a portable electric searchlight of the greatest possible power.

They appeal especially to automobile and truck owners who need a hard lamp of great brilliancy. They are unusually sturdy, made for the hardest kind of service and give an intensity of light that will penetrate not only ordinary darkness, but fog and smoke, the manufacturer



claims. The cases are heavy vulcanized fiber fitted with a highly polished parabolic reflector and unusually powerful beveled lens. All metal parts are brass heavily nickeled. The switch is the sliding type, the same as used on the standard fiber and nickel tubular Everready Daylo's. In every detail of construction they measure up to the Everready standard for durability, dependability and intensity of light.

Manufactured by the American Ever Ready Works, Long Island City, N. Y. Prices on application.

Magic Rubber Mend. Magic Rubber Mend, as its name implies, is a compound suitable for making repairs to automobile tires and tubes or for repairing rubber goods of all kinds. It is a cement, prepared in small cans, with snap tops, ready for use without using heat or acid.

To repair cuts in casings roughen the surface to be repaired with either sandpaper or a file and knead a quantity of rubber mend between the palms of the hands till it reaches a dough-like state. Wash the spot to be patched with gasoline and allow it to dry. Apply two or

three coats of cement and let each dry. Force a thin layer of Magic Rubber Mend into the cut. Then press the manipulated Magic Rubber Mend tightly into the cut, leaving it slightly above the external surface of the casing.

When repairing tubes the method is similar, except that only one coat of cement is applied and the dough is pressed into the cut so the patch is quite thick over it. The repair is dried over night and the tube is then ready to use.

Manufactured by the Eastern Rubber Co., 1529 Ridge Avenue, Philadelphia, Pa. Price, $1.

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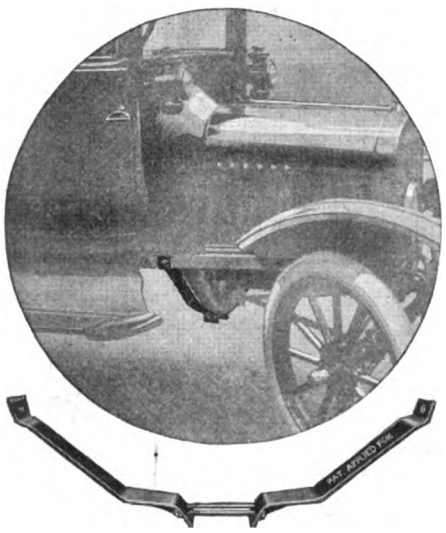
Simpson Crank Case Support for Fords. The Simpson crank case support consists of two short strips of steel, bolted together at the center and fastened at the ends to the frame by bolts. In case of a broken arm on the engine a Simpson crank case support may be put in place in a few moments time, and the engine driven as with the regular support. Many

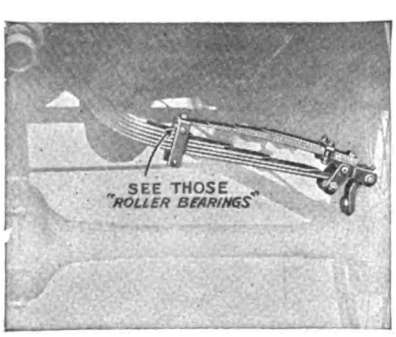


Ford owners reinforce the regular arm with the Simpson crank case support and practically prevent an accident. This support may be installed, the manufacturer claims, in from 15 to 20 minutes.

Manufactured by the Simpson Garage and Machine Co., Newark, O. Price per set, $2.

Defender Spring Shock Absorbers for Ford Cars. Defender spring shock absorbers are short springs of four leaves that are fastened to the ends of the regular Ford springs at the outer ends by clips fastened around the springs a short distance from the ends and at the wheel ends by suitable shackles.

The manufacturer claims that the absorber action is similar to that imparted by roller bearings and that the resiliency imparted to the springs is fully 50 per cent. more, and that tire mileage is greatly increased by their use. Rough roads may be driven on safely and 40 miles an

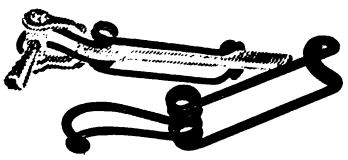


hour is not impossible by their use, as they facilitate steering, as the car will hold the road.

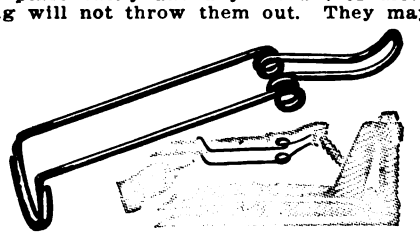
The Defender shock absorber is guaranteed never to tilt and to positively protect the car from shocks and rebound. It may be attached by any one in a few minutes time with simple tools. It has a handsome appearance when in place and requires no attention except to oil occasionally. Suitable for pleasure cars, sedans, coupes and trucks.

Manufactured by the Defender Auto Lock Co., Detroit, Mich. Sold through dealers only.

Fernald Steer-Aids and Little B-R-A-T-S. Fernald Steer-Aids and Little B-R-A-T-S for Ford cars are made from spring steel wire. The manufacturer claims that they will prevent all rattle and noise due to



wear at the ends of the front wheel tie rod and the emergency brake rods. Steer-Aids are placed one at each end of the tie rod and little B-R-A-T-S at each end of the emergency brake rod. They are put in place easily and any amount of driving will not throw them out. They may

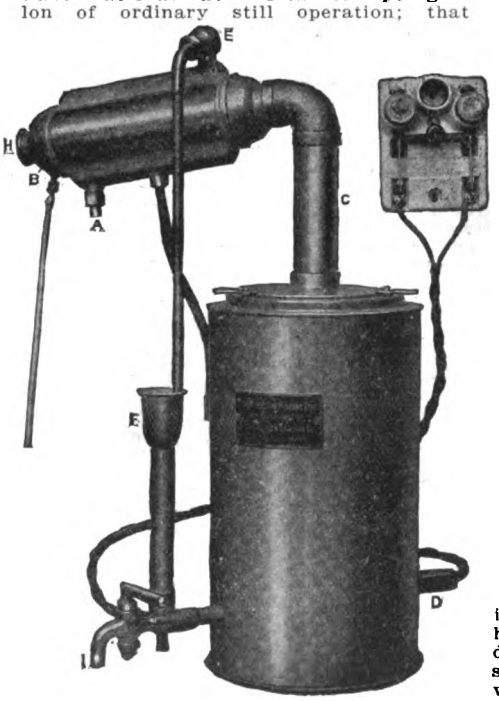


be applied instantly without the use of tools. Steer-Aids and Little B-R-A-T-S are sold to the dealer in display cartons for counter sales that are efficient silent salesmen.

Manufactured by the Fernald Manufacturing Co., North East, Pa. Prices on application.

Barnstead Water Still. Battery service station repairers, garage owners and motorists can utilize the Barnstead Water Still, an apparatus with which distilled water may be made in quantity from any water supply by the use of steam, kerosene or electricity for heating the still.

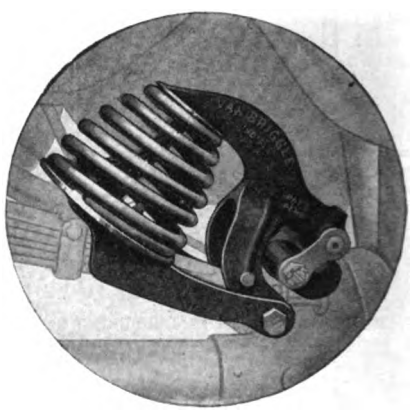
The manufacturer claims that the Barnstead Water Still can be installed at small cost and will deliver the purest of distilled water at one-half the cost per gallon of ordinary still operation; that



analysis proves that the highest degree of purity ever obtained (mineral matter one part to 1,000,000) by any process of distillation is reached with a Barnstead Water Still. The apparatus can be set up in small space, requires no attention while operating, is made of the best of material throughout and with ordinary care will last a life time. Barnstead stills are made in sizes to produce from one-half gallon an hour up.

Manufactured by the Barnstead Still and Sterilizer Co., 7 Lanesville Terrace, Forest Hills, Boston, Mass., and 189 West Madison street, Chicago, Ill. Price, one-half gallon capacity, $18.70.

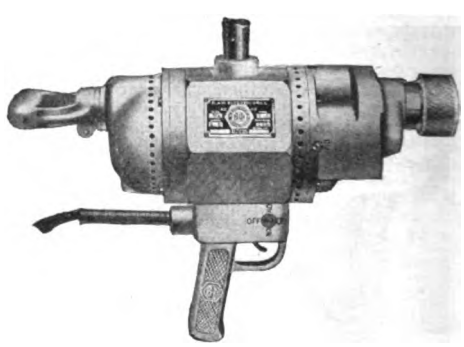
Van Biggle Shock Absorber. The Van Biggle Shock Absorber for Ford cars is a new device. The base of the absorber rests freely on the spring, allowing free action of the leaves and does not cramp or bind them. The arms of the base join the arms of the fulcrum lever and are fastened to the eyes of the spring ends by the usual spring bolt. The other section of the absorber is fastened to the clip on the axle, the same bolt being used.



In action, as the spring straightens from a shock, the arm of the absorber presses down the large coil spring and base, and on the rebound serves as a check. The manufacturer claims that this action thoroughly absorbs all road shocks and the car rides very easy.

Manufactured by the Van Biggle Motor Device Co., Indianapolis, Ind. Price, complete, cash with order, $18 f. o. b.

Portable Electric Drill. This is a new drill with a capacity of 0 to 9/16 inch that will drill a 9/16 inch hole through machine steel at a rate of 1½ inches a minute without overloading the motor, the manufacturer claims, which has been tested with pressures up to 500 pounds without stalling the drill. This drill is similar in construction to the other sizes. The housing is of magnalite, an aluminum alloy of great tensile strength. The gears are packed in grease in a separate grease-tight compartment similar to an automobile transmission gearset, the drill spindle running in a long bronze bushing and against a ball thrust bearing. The motor



is air cooled and in testing these drills have been run continuously for 14 weeks, day and night, Sundays and holidays, stopping only to renew the brushes. The weight is 21 pounds and the load speed 600 revolutions a minute.

An interesting feature of this tool is the attachment for the Morse taper socket. This is a separable sleeve secured in the drill handle by a large knurled nut. By unscrewing this nut the entire taper socket may be removed from the spindle. This drill has the patented pistol grip and trigger switch, which characterizes all Black & Decker drills.

Manufactured by the Black & Decker Manufacturing Co., Baltimore, Md. The drill complete, with interchangeable spade handle and breast plate, 15 feet of Duplex electrical cable, separable plug attachment and detachable side handle, sells for $96.

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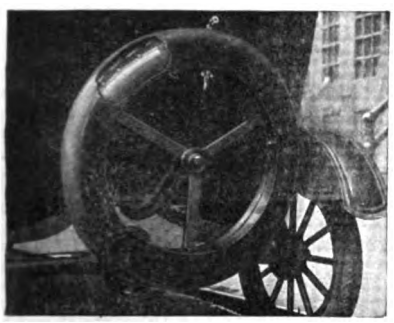
"Almetl" Tire Carrier for Ford Cars. "Almetl" Tire Carriers are new to the automobile trade and are built to a new principle that is quite different from those usually adopted. It consists of a suitable steel bracket securely fastened to the car body at the rear with a nut at the end. The tire carrier is fastened to the bracket by this nut. The carrier consists of three spokes radiating from the hub and supporting a rim at their outer ends. The



spare casing and demountable rim are mounted on this stationary rim and securely fastened to it. These tire carriers may be purchased in either the single or double type for carrying one or two casings. They are finished in black japanned or nickel and are very easy to operate, as there is only four nuts to unscrew and the casing is ready for removal from the carrier. By the use of a special side bracket the carrier may be attached to the running board of the car.

Manufactured by the Almetl Accessories Corporation, 484-6 Hart St., Brooklyn, N. Y. Price, single carrier, $14; double, $25.

Trosien Security Transmission Lock. The Trosien Security Transmission Lock is a new device that may be attached to the transmission of certain cars, and is claimed to be thief proof.

A description of the lock is as follows: Nos. 1 and 2 make use of three steel balls setting in a row. The end balls fit into a recess in the gear shift pull rods when the gear shift is in the locked position. When unlocked the end balls have a certain amount of clearance that allow the rod to pass freely by them. The lock consists of a short upright or casting located in the rear of the gear shift lever and having at the top a suitable lock using a form of Yale key. Below the key way a short shaft extends down and at the lower end carries a socket fastened to the shaft securely. The bottom of the socket is recessed in the form of a Y and rests upon the middle or center ball of the three. To lock the transmission the key is inserted in the lock and turned to the left one-quarter turn. To unlock, turn the key one-quarter turn to the right. The socket at the bottom of the lock serves as a separator, forcing the outer balls away from the center ball and into the recesses of the gear shift sliding rods when locked. In unlocking the conditions are reversed and the three balls slip towards the center, allowing a free movement of the rods.

In the No. 3 lock instead of balls for locking and unlocking the transmission are two caps, separated by a spring, supported by a small steel pin. There is a clearance between the end of the pin and one cap so that when the transmission is unlocked the caps work toward each other on the rod and against the spring, allowing the rods free movement. When locked a wedge on the end of the shaft extending from the lock fits between the edges of the caps, securely locking them in place in the recess in the pull rods of the gear shift.

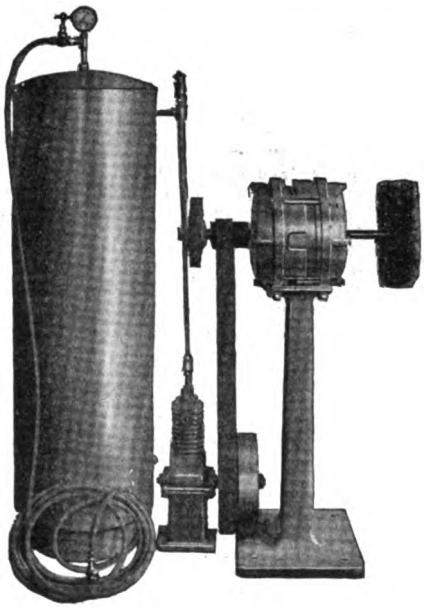
No. 1 fits Oakland model 34-B, Scripps-Booth model 34-S and McLaughlin, Canada, models H-62 and H-63.

No. 2 fits Oakland models 32, 32-B and 34; Oldsmobile, all models 37; McLaughlin, Canada, models D-60, E-62 and E-63.

No. 3 fits cars having universal type transmission, Oakland, model 34-C; Scripps-Booth, model 39; Chevrolet, model F. B. 5; Oldsmobile, McLaughlin, Canada, K-22 and K-63.

Manufactured by Charles G. Trosien, 108 Franklin Blvd., Pontiac, Mich. Prices, retail, installed, $10. For sale by dealers and distributors.

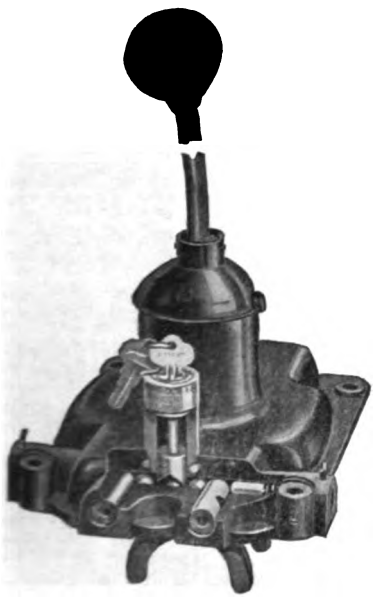
LeBron Electric Buffing, Power Grinding Machine and Air Compressor. This outfit is complete as shown in cut and consists



of one air tank, 16 by 48 inches that carries a working pressure of 150 pounds; an air compressor, belted from the motor grinder and buffer, with tight and loose pulleys, having a bore of 2⅛ inches and stroke of 2½ inches; equipped with a vertical air check, safety valve, 25 feet of air hose, one air chuck, four nipples, three long nipples, one union, 10 feet of 1½-inch belt and a 1200 pound gauge.

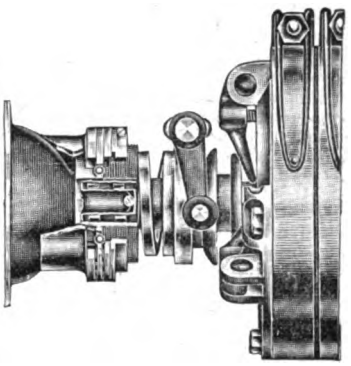
The buffer and grinder, with stand, includes an electric motor having dustproof bearings, all oil being filtered through felt before entering the bearings, with option of single phase motors from one to three horsepower wound for 110, 220 or 440 volts, or three phase motors from two to five horsepower wound for voltage of 110, 220 or 440. The wheel is a special carborundum, eight by 1½ inches and the special steel brush is 12 by two inches.

Manufactured by the LeBron Electric Works, Inc., 318-20 South 12th St, Omaha, Neb. Prices, from $220 to $275 for the motor and stand, including grinder and buffer. Air outfit, $125 extra.

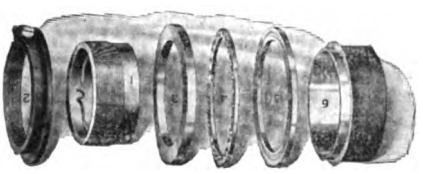


Three-Point Thrust Bearing for Ford Cars. The manufacturer of Three-Point Bearings for Ford cars make many claims for their products, chief of which is that by its use end play of the crankshaft is prevented, the magnets of the magneto are kept in better alignment and wear in the transmission bearings is minimized.

Most trouble in Ford engines is claimed to be due directly or indirectly to the end thrust of the crankshaft. This is



caused by the backward pull of the clutch spring when changing speeds, running in low and reverse gear, and from the natural backward pull of the engine towards its load. When this strain or pull is released and the car runs in high speed the tendency is for the crankshaft to slide forward and this backward and forward motion, together with the rotation of the shaft, wears the main shaft and connecting rod bearings very rapidly. Cylinders and pistons are worn out of round on account of the added strain on the connecting rods and crankshaft end play. This causes loss of compression, leakage of oil in the cylinders, fouling of spark plugs and loss of power.



The three-point thrust bearing, fitted at the rear of the clutch release spring, is claimed to obviate these causes for wear when installed in the Ford car when new, or later when they are developed.

Full instructions for installing are included with each bearing and it may easily be installed by anyone at all familiar with Ford engines.

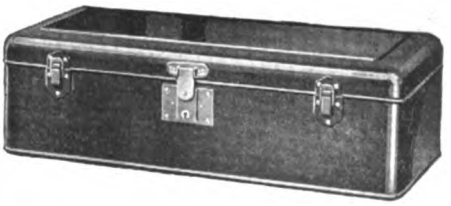
Manufactured by the Green Dragon Co., 54 W. Randolph St., Chicago, Ill. Price, $12.

New Tool Box for Pleasure Cars and Trucks. A new Globe tool box for use on pleasure cars and trucks is that known as B-2296-SC1. The box is equipped with a suit case lock and two catches. The bottom is electrically welded to the body, making it as strong as though formed from one piece of sheet steel, and the cover corners are annealed.

It was designed to meet the demand for a box that combines strength of body with permanence of finish, and at the same time can be sold at a price that is attractive to motorists.

The box measures 22 inches in length by nine inches wide and 6⅞ inches high.

Manufactured by the Globe Machine and Stamping Co., 1200-50 West 76th St., Cleveland, O. Prices on application.



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RECORD OF BUILDING OPERATIONS FOR JULY

Contracts Made and Plans Contemplated for Alterations or Erection of Garages, Repair Shops, Service Stations and New Plants.

CONTEMPLATED PLANS AND SPECIFICATIONS.

Birmingham, Ala.; A. Tebshrany and J. Macksawd, 2016 Avenue 3; one-story garage; $15,000.

Bridgeport, Conn.; City of Bridgeport, Board of Contract and Supply; one-story garage; $150,000.

Hartford, Conn.; A. C. Hine Co., 314 Pearl street; two-story garage, 65x300; $140,000.

Hartford, Conn.; T. Yaffo, 127 Lawrence street; one-story public garage; $15,000.

Washington, D. C.; Harper & Zimmerman; two-story garage, 65x140x130; $70,000.

Washington, D. C.; Stanley Simmons, District National Bank building; three-story garage and show room; $75,000.

Washington, D. C.; A. G. Voight, Home building; two-story garage, 50x100; $25,000.

Washington, D. C.; Thomas Machen, 1325 Fidelity building, Baltimore, Md.; one-story, semi-fireproof garage, 22x68.

Jacksonville, Fla.; P. J. McCullough; two-story fireproof garage, 40x105.

Miami, Fla.; D. V. Freeman; two-story concrete garage, 50x115; $9000.

St. Petersburg, Fla.; Ford Service Station, 600 First avenue S; one-story fireproof garage, 100x120; $8500.

Atlanta, Ga.; Reo Atlanta Co.; four-story automobile building; reinforced concrete, 50x190; $90,000.

Eastman, Ga.; Reynolds Auto Co.; one-story garage and salesroom, brick and concrete, 100x130; $12,000.

McRae, Ga.; E. S. Street, Dublin, Ga.; one-story garage, 70x100.

Rome, Ga.; Rome-Buick Co.; two-story garage; $15,000.

Chicago, Ill.; John G. Beutler Co., 2411 W. Madison street; one-story brick garage and storage station, 33x125; $25,000.

Chicago, Ill.; William Lamack, 346 Roscoe street; one-story garage, 50x125; $15,000.

Chicago, Ill.; Morris & Co.; U. S. Yards; one-story garage, 50x125; $25,000.

Chicago, Ill.; Charles D. Frey, care C. D. Frey & Son, 104 S. Michigan avenue; one-story garage, 18x21.

Decatur, Ill.; George A. Keller, 148 S. Franklin street; one-story garage; $12,000.

East Chicago, Ill.; George Saxbo, 4857 Alexander avenue, Chicago; one-story garage, 50x150; $15,000.

Evanston, Ill.; E. W. Kinback, care M. J. Morehouse, 343 S. Dearborn street, Chicago, Ill.; one-story garage; $2000.

Fairfield, Ill.; Sexton Manufacturing Co.; one-story stucco and hollow tile garage, 60x75; $5000.

Grayville, Ill.; Frick & Skiles; one-story garage, 60x140.

Marion, Ill.; Melvin Pulley, 300 E. Bouboard street; one-story public garage, 40x90; $10,000.

Mt. Sterling, Ill.; Sterling Auto Co.; two-story public garage, 62x120; $21,000.

Frankfort, Ind.; Nees Construction Co., 1152 E. Walnut street; two-story public garage, 86x132; $35,000.

Hammond, Ind.; F. S. Betz, 890 Hohman street; one-story garage, 75x95; $10,000.

Hammond, Ind.; John Schmuesser, 92 Clinton street; two-story garage, 50x136; $22,000.

North Vernon, Ind.; Calvert Klingner; one-story garage, 50x150; $15,000.

Sioux City, Ia.; Harry Barish; one-story public garage, 48x130; $13,000.

Kansas City, Kan.; J. A. Butler, 753 Central avenue; one-story garage, 50x60; $5000.

Topeka, Kan.; F. C. Blodgett; one-story stone garage, 50x140; $7000.

Wichita, Kan.; E. W. Lewis; five-story garage, 50x140; $60,000.

Wichita, Kan.; O. S. Shirk, 201 N. Main street; one-story garage, 50x130; $15,000.

Winfield, Kan.; A. L. Lippert & Co., 608 Main street; one-story garage; $5000.

Alexandria, Ky.; Clifford B. Gospey; one-story garage, 53x79; wing, 6x30.

Louisville, Ky.; Gulf Refining Co.; one-story service station; $10,000.

Lake Charles, La.; B. F. Singleton; one-story brick salesroom, 50x100; plate glass front, tile floors; $8000.

Annapolis, Md.; Frank Kries, 3 Conduit street; one-story garage, 10x18; $2000.

Baltimore, Md.; E. H. Kiester, 648 W. Lexington street; one-story garage, 60x80; $7500.

Baltimore, Md.; Phillip Woodarek, 1716 Fleet street; one-story garage, 60x160; $15,000.

Baltimore, Md.; E. R. Springer, 10 Uhlers alley; one-story garage, 40x140; $10,000.

Baltimore, Md.; Mrs. Julia R. Emory; one-story garage, 21x51.5; $23,000.

Baltimore, Md.; Acme Building Co., 511 Equitable building; one-story garage, 84x217.11; $9000.

Baltimore, Md.; J. C. Spedden, 2915 Harlem avenue; one-story garage, 46x127; $7500.

Baltimore, Md.; I. Rosenstadt; one-story garage, 75x219; $25,000.

Easton, Md.; Harry E. Clark; one-story garage and show room, 50x100; $12,000.

Hagerstown, Md.; Hagerstown Welding and Automobile Works; one and two-story concrete block and steel garage, 40x100 and 40x50; install machinery, automobile repairing and acetylene welding. Recently organized with $50,000 capital.

Hagerstown, Md.; John Jones, 801 Pennsylvania avenue; two-story concrete and concrete block garage, 40x100; $8000.

Salisbury, Md.; William B. Lowe and Weldon Fooks; one-story brick machine and repair shop, 61x175; $20,000.

Westminister, Md.; Klee & Hoff; two-story brick and concrete garage, 60x198; $60,000.

Framingham, Mass.; Framingham Garage, Inc.; one-story garage, 170x170.

Lynn, Mass.; William Miller & Son; one-story public garage, 59x110; $30,000.

Waltham, Mass.; Gertrude E. Strout, 30 Dexter street; one-story garage, 96x109; $10,000.

Detroit, Mich.; Roy Weaver, 576 Brook building; one-story garage, 40x100; $6500.

Detroit, Mich.; Joseph P. Keena, 46 Erakin place; one-story garage, 42x8x48; $3000.

Detroit, Mich.; Joseph Nowack; one-story garage, 30x100; $10,000.

Kalamazoo, Mich.; Leo T. Flanksburg, 449 W. Main street; one-story garage, 111x165.

Muskegon, Mich.; Bert Bennett; one-story garage; $12,000.

Hinckley, Minn.; H. Dempsey; one-story public garage, 50x100.

Kansas City, Mo.; W. B. Weaver, 304 Commerce building; one-story garage, 60x130; $15,000.

Kansas City, Mo.; Lion Eagle Realty Co., care I. Adler, 3717 Tracy street; one-story garage, 50x100; $8000.

Kansas City, Mo.; T. A. Bechtal Lumber Co., 328 Railway Exchange building; two-story garage, 48x132; $20,000.

Joplin, Mo.; B. L. Buhrer, 2022 Main street; one-story garage, 50x75.

Joplin, Mo.; Lanpher Motor Co., 826 Joplin street; one-story garage, 60x100; $10,000.

St. Louis, Mo.; United Motors Co. (General Motors Co., sales agency); three-story reinforced concrete automobile building, 100x122 and two wings.

St. Louis, Mo.; John Branz, 3231 Dittman street; one-story tile garage; $5000.

Sedalia, Mo.; J. R. McAllister, 29 S. Osage street; one-story garage, 91x120; $25,000.

Springfield, Mo.; Henry C. Snider, McDaniel National Bank; one-story garage and show room, 52x240.

Springfield, Mo.; H. L. Schneider; one-story brick and concrete show room, 52x215. Lessee, Oakland Automobile agency.

Ridgway, Mo.; C. A. Donelson; one-story public garage, 48x120; $8000.

New Castle, Neb.; J. H. Wendle; one-story public garage, 50x140; $20,000.

East Orange, N. J.; Adrian A. Allard, 104 Steuben street; one-story garage, 19x85; $5000.

East Orange, N. J.; J. W. Cowenhoven, 106 S. Grove street, 24 individual garages; $10,000.

Elizabeth, N. J.; Peter Feiling, 645 Magnolia avenue; one-story public garage, 50x65; $7000.

Newark, N. J.; I. Feinsod and D. Spieler, 402 Hunterdon street; one-story public garage, 48x125; $14,000.

Newark, N. J.; Giovanni Palliti, 288 Chestnut street; one-story public garage, 30x95; $5000.

Newark, N. J.; Mrs. Aurora O'Hara, 37 Carteret street; 11 individual garages; $3500.

Newark, N. J.; Nathan August, 324 15th street; one-story public garage, 25x40; $4000.

Newark, N. J.; John DiRiase, 156 Ridge street; 10 individual garages, 17x190; $8000.

Newark, N. J.; Max Levine, 338 S. 19th street; one-story public garage, 50x100; $9000.

Newark, N. J.; Daniel Mariniello, 93 Garside street; one-story private garage, 25x50, at 108 Ridge street.

Newark, N. J.; Hudson Rubes, 21 Mt. Prospect avenue; two-story garage; $10,000.

Passaic, N. J.; John T. Harrop, Garfield, N. J.; one-story concrete block garage, 66x100; $20,000.

Trenton, N. J.; Alexander Klinkowstein, care Trenton Wine and Liquor Co., 120 S. Broad street; two-story public garage, 60x75; $15,000.

Arverne, L. I., N. Y.; Rox Construction Co., Rockaway; one-story garage, 64x90; $10,000.

Binghamton, N. Y.; Tarrabee Boys Motor Truck, Washington and Water street; one-story garage, 44x130.

Brooklyn, N. Y.; Nibur Construction Co., 294 Milford street; one-story brick garage, 18x19; $6000.

Brooklyn, N. Y.; Mayor Stinner, 217 Havemeyer street; one-story brick public garage, 75x100; $25,000.

Brooklyn, N. Y.; M. McNamara, 215 Montague street; one-story garage, 100x100; $20,000.

Brooklyn, N. Y.; Frank Feldman, 321 Wyona street; one-story garage, 89x105; $25,000.

Brooklyn, N. Y.; S. Halperin, 373 Hinsdale street; one-story garage, 10x18; $6000.

Brooklyn, N. Y.; Riverstone Improvement Co., 620 Saratoga avenue; one-story garage, 100x188.

Brooklyn, N. Y.; Samuel Kewal, 174 Williams avenue; one-story garage, 37x41; $3500.

Brooklyn, N. Y.; William F. Flannery, 183 80th street; two-story garage, 99x101; $15,000.

Brooklyn, N. Y.; H. Sklar, President street and New York avenue; one-story garage, 25x30; $1500.

Brooklyn, N. Y.; Kopp-Spear Garage, Inc., 330 Utica avenue; four one-story garages, 16x17 each; $3000.

Brooklyn, N. Y.; M. C. K. Contracting Co., 2168 Dean street; one-story garage, 100x140; $35,000.

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Brooklyn, N. Y.; Realty Associates, Inc., 162 Remsen street; one-story garage, 65x107; $15,000.

Brooklyn, N. Y.; Maron Realty and Construction Co., 189 Patchen avenue; one-story garage, 75x200; $25,000.

Brooklyn, N. Y.; Peter Lesser, northwest corner Underhill and St. Marks avenue; one-story garage, 28x56; $6000.

Brooklyn, N. Y.; Henry F. McKeon, 105 King street; one-story garage, 50x100; $5000.

Brooklyn, N. Y.; Max Applebaum, 58 Sutter avenue; one-story garage, 50x100; $25,000.

Brooklyn, N. Y.; Bly & Hamann, 833 St. Johns place; one-story garage, 92x141; $30,000.

Brooklyn, N. Y.; Rickers & Cohen, 454 Park Row; one-story garage, 27x50; $3000.

Brooklyn, N. Y.; Alassandro Caruso, 1615 Atlantic avenue; one-story garage, 27x45; $5000.

Brooklyn, N. Y.; Paramount Realty and Construction Co., 2307 Myrtle avenue; 10 one-story garages, 10x18 each; $5000.

Brooklyn, N. Y.; Ginsberg & Mow, 1510 E. 18th street; one-story garage, 55x136, at 954 Fulton street; $18,000.

Brooklyn, N. Y.; C. L. and E. K. Behlert, 161 Prospect place, West, Brooklyn, N. Y.; one-story garage, 80x211; $9000.

Brooklyn, N. Y.; Kraslow & Bialock, 188 Montague street; one-story garage, 100x100; $35,000.

Brooklyn, N. Y.; B. W. Construction Co., 190 Montague street; one-story garage, 100x113; $15,000.

Buffalo, N. Y.; Jacob and William Rich, 1453 Fillmore avenue; one-story public garage, 60x90; $6500.

Buffalo, N. Y.; Louis Engel, Jr., 129 Woodward avenue; one-story public garage, 83x100; $12,500.

Dongan Hills, L. I., N. Y.; Frederick Roeder, 1214 Old Town road; one-stor garage, 50x100; $4000.

East Elmhurst, L. I., N. Y.; Jackson Heights Garage Co.; one-story garage, 100x100; $20,000.

Jamaica, L. I., N. Y.; Fundy Co., Inc., 115 Broadway, New York; one-story garage, 126x134; $50,000.

Jamaica, L. I., N. Y.; Joseph J. Herlbauer; one-story garage, 37x44; $4500.

Jamaica, L. I., N. Y.; Midwood Building Co., 44 Court street; one-story garage, 105x178; $50,000.

Long Island City, L. I., N. Y.; Dr. Patrick Burns, 230 E. 63rd street; one-story garage, 45x100; $10,000.

Long Island City, L. I., N. Y; David S. Carruth, 1025 Tinton avenue, New York; one-story garage, 75x95; $15,000.

Long Island City, L. I., N. Y.; Schwerine Parker & Kafka, 158 Jamaica avenue; one-story garage, 50x100; $15,000.

Mt. Morris, N. Y.; Mann Brothers; two-story garage, 42x86.

New Rochelle, N. Y.; F. L. Scott; two-story garage, 22x35x20; $3000.

New York, N. Y.; Greenwich Association, Inc., care Ames & Co., 26 W. 31st street; one-story garage, 125x150.

New York, N. Y.; David Faith, 2152 Westchester avenue; one-story garage, 99x175; $8500.

New York, N. Y.; William S. and Henry S Coffin, 44 Pin street; one and two-story brick fireproof garage, 90x188; $100,000.

New York, N. Y.; Richard Carvel, 401 W. 59th street; one-story public garage at 245-9 W. 61st street; $50,000.

New York, N. Y.; S. & B. Construction Co., 700 Trinity avenue; one-story brick garage, 100x124; $12,000.

New York, N. Y.; Louis Gold, 44 Court street; four-story public garage, 100x100.

New York, N. Y.; Hillman Co., 567 Third avenue; one-story garage, 98x125; $25,000.

New York, N. Y.; James Readon, 237 South street; one-story garage, 27x86; $[illegible]

New York, N. Y.; Estate Henry A. Cran, 505 Fifth avenue; one-story garage, 99x100; $15,000. Lessee, Theodore Klein Construction Co., 605 W. 131st street.

New York, N. Y.; Deola Realty Co., 1541 Overing street; one-story garage, 73x150; $12,500

New York, N. Y.; William A. Smith, 272 E 141st street; one-story garage,, 25x100; $4000

New York, N. Y.; Charles Dahlen, 341 E. 142nd street; two-story garage, 50x100; $20,000.

New York, N. Y.; Francis P. A. Vaccarelli, 1475 Broadway; one-story garage, 58x100; $20,000.

New York, N. Y.; A. Guidone, 25 Vanderlily avenue; one-story garage, 100x100; $25,000.

Rochester, N. Y.; Walter A. Adams, 405 Central building, 1049 Culver road; one-story private garage, 20x40; $3000.

Rosebank, L. I., N. Y.; F. L. Rader, 1214 Richmond road; one-story public garage, 50x100.

Springfield, L. I., N. Y.; W. B. Jones; one-story garage, 60x100.

Syracuse, N. Y.; Overland Service Station, 1100 W. Fayette street; three-story garage, 97x100.

Asheville, N. C.; J. T. Bledsoe and N. T. Robinson; three-story garage and salesroom, 50x140; $30,000.

Mandan, N. D.; Western Auto Co.; one-story garage, 100x140; $40,000.

Akron, O.; Frank W. Remark, 199 Beck avenue; one-story garage, 58x142; $15,000

Cambridge, O.; Guernsey Garage; two-story commercial garage, 42x100.

Lima, O.; Clen Thompson; one-story garage, 50x200; $15,000.

Marion, O.; Harruff Brothers; one-story public garage, 58x165; $7000.

Marion, O.; Charles Maples; one-story pubic garage, 66x165; $18,000.

Marion, O.; E. S. Moon; two-story public garage, 55x66; $16.000.

Rittman, O.; R. Frederick, Rittman Savings Bank; two-story commercial garage, 50x130; $12,000.

Washington Court House, O.; Frank Bending; two-story garage and salesroom, 41x165; $10,000.

Newkirk, Okla.; Nelson & O'Neal; one-story garage, 50x150.

Oklahoma City, Okla.; Herskowitz Estate, 2 N. Broadway; two-story garage, 100x140; $6500.

Pawhuska, Okla.; Ferguson-Hurley Motor Co.; two-story fireproof service station, 65x140; $40,000.

Ponca City, Okla.; E. W. Marland; two-story garage, 21x38.

Tulsa, Okla.; C. L. Vaughn, 216 S. Denver street; one-story garage; $12,000.

Shawnee, Okla.; Central Sales Co., 213 N Broadway; one-story brick garage, 50x140; $14,000.

Allentown, Pa.; A. W. Snyder, 1404 Linder street; two-story garage, 70x120; $18,000.

Allentown, Pa.; Trayler Truck Co.; two-story garage, 100x200; $7500.

Altoona, Pa.; Walter Frieling, 20 Hutchinson building; 50x120; $25,000.

Lehighton, Pa.; Serpass Motor Co.; one-story public garage, 50x200; $20,000.

Pittsburgh, Pa.; Leo D. Jamieson, Iroquois Apartment, 3100 Forbes street; one-story auto salesroom and commercial garage, 50x140; $15,000.

Philadelphia, Pa.; J. E. Fieldstein, 1328 Chestnut street; one-story public garage, 41x112; $20,000.

Philadelphia, Pa.; E. C. Durrell, 1713 N. 24th street; two-story garage; $10,000.

Philadelphia, Pa.; James J. Gallagher, 108 E. Rockland street; one-story garage, 54x112; $3500.

Philadelphia, Pa.; Thomas Bernard; two-story public garage, 38x50; $10,000.

Philadelphia, Pa.; T. P. Smart, 7200 Elmwood avenue; one-story garage, 50x100.

Philadelphia, Pa.; Richard Hill, 340 E. Somerset street; one-story garage, 13x17 and 13x16; $2500.

Philadelphia, Pa.; Wesley M. Caskey; Oak Lane, Pa.; two-story garage, 26x30; $5000.

Scranton, Pa.; Max Mintz, 410 S. Washington avenue; two-story private garage, 54x62; $7000.

Stevens, Pa.; Harry Mohm, Walnut and Church streets; one-story public garage, 80x100; $12,000.

Sioux Falls, S. D.; Henry A. Homan; two-story garage, 110x150.

Sioux Falls, S. D.; F. T. Williams, 218-30 S. Main street; one-story garage, 88x150.

Chattanooga, Pa.; Hughes Motor Co.; two-story fireproof garage, 69x150; $35,000.

Chattanooga, Tenn.; Fred Bryan; three-story fireproof garage, 75x150; $50,000.

Memphis, Tenn.; H. A. White Auto Co.; one-story garage and salesroom, fireproof; $100,000.

Houston, Tex.; Foster Building and Realty Co.; one-story salesroom and service station, 75x250; lessee, Gydesam-Manfred-Cadillac Co.

Houston, Tex.; Four Sevens Auto Livery Co.; two-story automobile building, 180x200; with 40 foot tower; $50,000.

San Antonio, Tex.; T. D. Cobbs; one-story garage; $4000.

Laurenceville, Va.; Peebles & Purdy; one-story garage, 12x83; $12,000.

Newport News, Va.; Ship Building Realty Corporation; two-story public garage, 54x116; $60,000.

Norfolk, Va.; C. E. Snowden, 1610 Highland avenue; one-story garage; $2500.

Norfolk, Va.; Robert Johnston, Old Dominion Paper Co., 75 Commercial place; three-story public garage, 109x133; $65,000.

Norfolk, Va.; Charles W. Priddy, 219 Colonial avenue; two-story garage, 27x100; $36,000.

Norfolk, Va.; David Cain, Lorraine Hotel; three-story public garage, 75x100.

Norfolk, Va.; Overland Motor Car Co.; two-story automobile building, reinforced concrete with terra cotta, 53x133; $70,000.

Norfolk, Va.; Barton Myers; one-story brick and concrete garage, 52x100; $14,000.

Norfolk, Va.; J. L. Blassingham, 4811 Myers avenue; one-story garage; $3000.

Petersburg, Va.; Potten Motor Co.; two-story public garage and salesroom, 62x250; $30,000.

Richmond, Va.; Miss Helen Baker, 1619 Monument avenue; two-story garage, 21x24.

Richmond, Va.; Imperial Tobacco Co., Sixth and Byrd streets; one-story garage, 28x98; $10,000.

Richmond, Va.; John W. Mueller & Co., Palladum building; two-story garage and salesroom, 54x58.

Richmond, Va.; Seventh Street Garage Co., Inc., 9th and Franklin streets; three-story garage; $75,000.

Roanoke, Va.; Tomplins Brothers; one-story brick garage; $5000.

Suffolk, Va.; T. A. Barbee; one-story brick garage; $10,000.

Keyser, W. Va.; Albert and Herman Davis; two-story garage, 30x90; $18,000.

Menomonee Falls, Wis.; Auto Sales Co.; two-story garage, 60x100; $20,000.

Milwaukee, Wis.; M. H. Grossman, 425 Water street; one-story garage, 20x20; $2000.

Milwaukee, Wis.; Milwaukee Western Fuel Co.; one-story garage, 30x81; $10,000.

Milwaukee, Wis.; Mrs. Marie Cook, 842 Summit avenue; one-story garage, 24x118; $3000.

Milwaukee, Wis.; H. J. Dryant, People's building; two-story garage, 45x150; $40,000.

Milwaukee, Wis.; M. Goes, 717 48th street; one-story garage, 47x100; $8000.

Milwaukee, Wis.; Henry Kulas, 883 Winlake avenue; one-story garage, 20x59; $15,000.

Sheboygan, Wis.; F. Enz, 404 Lincoln avenue; one-story private garage, 20x40; $3000.

Sheboygan, Wis.; Sell Brothers Co.; two-story garage, 17x50; $5000.

CONTRACTS AWARDED.

Waterbury, Conn.; Sullivan & McKeown, 843 Dixwell avenue; one-story garage, 76x142; for Wuestfelt Co., 180 W. Main street; $36,000.

Washington, D. C.; Charles Tompkins, 1883 Third street; three-story garage, 50x110; for Harry B. Willson, 715 Eighth street; $75,000.

Chicago, Ill.; Mueller Construction Co., 179 W. Washington street; one-story garage, 23x43; for Acme Packing Co., 2224 S. La Salle street; $3000.

Chicago, Ill.; M. Kadeshertz, 1342 Independence boulevard; one-story garage, 21x30; for Wolock & Baun, 3343 E. 12th street; $2000.

Chicago, Ill.; Oscar Olson & Co., 3807 N. Clark street; one-story garage, 27x32; for J. Halt; $3000.

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Chicago, Ill.; John S. Sherman, care Detroit Vapor Stove Co.; one-story garage, 100x190; $30,000.

Chicago, Ill.; Charles Anderson, 411 N. Lombard avenue, Oak Park, Ill.; one-story public garage, 75x125; $15,000.

Chicago, Ill.; E. W. Sproul, 2001 W. 39th street; one-story private garage, 22x50; for Edgar T. Ward & Sons Co., 646 Washington boulevard; $5000.

East St. Louis, Ill.; August Rice; one-story garage, 72x97; $8000.

Pekin, Ill.; Edward F. Lampitt & Son, 217 Court street; two-story garage, 50x90; $25,000.

Webster City, Ia.; William J. Zitteral; one-story public garage, 63x120; for J. L. Kamrer; $20,000.

Topeka, Kan.; Lundgren & Carlson, 217 Jackson avenue; one-story garage, 20x28; for Knights and Ladies of Security; $2000.

Louisville, Ky.; L. W. Hancock, Louisville Trust building; one-story garage. 50x200; for H. M. Dunlop; $15,000.

Lexington, Ky.; Mason & Hanger Co.; one-story garage, 40x70; for Phoenix Garage; $7000.

Baltimore, Md.; Joseph H. Small, 3565 Cedar street; 12 garages; 18x19 each; for William M. Burns, 3422 Chestnut street; each, $2000.

Baltimore, Md.; Arthur J. Shriver, 1715 E. Pratt street; two-story garage and machine shop, 50x80; for Emil Funk; $10,000.

Baltimore, Md.; James T. Mathis, 3302 Powhatan avenue; 2½-story garage, 36x48; for Joseph C. Dahle.

Baltimore, Md.; A. B. Fox, 2917 Greenmount avenue; 19 garages; one-story, 10x18; for Louis Deal, 3549 Greenmount avenue; $3000.

Hagerstown, Md.; Aaron Reecher, 1205 Hamilton boulevard; two-story public garage, 40x100; for John Jones, 801 Pennsylvania avenue; $10,000.

Lowell, Mass.; Arthur Rabeour, 984 Bridge street; one-story garage, 70x92; for R. W. Phelps, Gluck building; $5000.

Taunton, Mass.; Joseph A. Flenn, 15 Truscott street; three-story public garage, 110x112; for Robertson Motor Car Co., 25 School street; $75,000.

Detroit, Mich.; I. Appelbaum, 447 Edison avenue; two-story garage and paint shop, 80x140; $75,000.

Minneapolis, Minn.; David Addis, 1127 Humboldt avenue; one-story garage, 26x32; at 76 Royalston avenue; for Harry Rosenbolt.

St. Louis, Mo.; W. McDonald, Odd Fellows building; one-story garage, 40x60; for Pletsch Undertaking Co., 5966 Easton avenue; $4000.

Springfield, Mo.; Joseph Brunnell; one-story garage, 33x80; for H. B. McDaniels; $8000.

Camden, N. J.; H. M. Wolfe, 1307 Park boulevard; one-story public garage; for R. Read, 1103 Haddon avenue; $15,000.

Camden, N. J.; W. Draper, 436 Haddon avenue; one-story public garage, 16x84; for T. S. Pancost, 228 Market street; $5000.

Camden, N. J.; Raymond V. Adams, 1104 Haddon avenue; one-story public garage, 80x90; for Eggie Brothers, 1125-27 Haddon avenue; $100,000.

Elizabeth, N. J.; Byrnes Building Co., 430 Westfield avenue; one-story private garage; for William P. Whitlock, 637 N. Broad street; $3000.

Newark, N. J.; Vincenzo Scudeke, 12 one-story individual garages, 20x132; at 336 Sixth avenue; for Mrs. F. B. Shawger, 334 Sixth avenue; $5000.

Newark, N. J.; Morris & Lefkowitz, 85 Somerset street; one-story public garage, 77x100; $15,000.

Paterson, N. J.; Haenichen & Bogertman, 126 Market street; one-story garage, 22x35; for Peter Van Druten; $5000.

Trenton, N. J.; L. C. Case, Jr., West End avenue and Hermitage street; one-story public garage, 18x120; for Lewis C. Case, Forst-Richey building; $8000.

Buffalo, N. Y.; B. I. Crooker Co., Builders' Exchange; two-story garage, 92x150; for Wheat's Ice Cream Co., 221 Elm street; $50,000.

New York, N. Y.; City of New York Department of Plants and Structures; John H. Delaney, commissioner; one-story garage, 100x200; $30,000; lessee, Max Grober, 41 Goerck street.

Rochester, N. Y.; Simon N. Stein, 29 Portsmouth terrace; 1½-story garage, 24x25; $3000.

Rochester, N. Y.; Michael J. Emma, 427 Clinton avenue, N; one-story private garage, 26x56.

Woodside, L. I., N. Y.; Frank Wall, 551 Ninth avenue, Astoria, L. I.; one-story garage, 50x100; for Benjamin Bingerg, 45 Lispenard street, New York; $21,000; lessees, Adolph Roenier & Bros., Eighth and Jackson avenue.

Lima, O.; Jess R. Clark, 902 W. Spring street; two-story garage, 100x160; for E. L. Dorsey Reed Co.; $20,000.

Columbus, O.; E. Elford, Commercial building; one-story private garage, 50x140; Budd Dairy Co.; $6000.

Toledo, O.; A. M. Stickroth, 1909 Glenwood avenue; one-story storage garage, 30x110; for Allen A. Smith Co., 1216 W. Bancroft street; $5000.

Washington Court House, O.; J. A. Thompson, 8 Dayette street; one-story garage, 34x40; for Mr. Griffiths, Cherry Hotel; $2500.

Tulsa, Okla.; T. J. Buck; one-story garage, 55x60; for Tulsa Realty Co., 405 Robinson building; $4000.

Tulsa, Okla.; Mangrum Construction Co.; one-story garage, 18x40; for John S. Davenport, 1230 S. Biston street; $2000.

Tulsa, Okla.; L. B. Wood Realty Co., 6 E. 5th street; one-story garage for J. H. Gaston, 1700 S. Main street; $4750.

Erie, Pa.; Henry Shenk Co., 12th and Sassafras street; one-story garage, 54x140; for R. W. Griswold; $13,000.

Harrisburg, Pa.; Shoemaker & Son; one-story garage, 70x100; for Galler Metzger, 2236 Second street; $7000.

New Philadelphia, Pa.; New Philadelphia Construction Co.; one-story garage, 40x100; for J. W. Stanhan; $5000.

Pittsburgh, Pa.; J. Jones; one-story garage, 15x20; for William Buehaer, 18 Montana avenue; $4000.

Pittsburgh, Pa.; Toupet Beil & Conley, Inc.; 5814 Ellsworth avenue; one-story garage, 60x100; $15,000.

Pittsburgh, Pa.; A. Bockman & Son, 5110 Harrison avenue; two-story commercial garage, 36x45; $20,000.

Philadelphia, Pa.; R. M. Peterson, 5114 Germantown avenue; one-story garage, 16x24; for James Jallett, Pulaski and Wyoming streets; $25,000.

Philadelphia, Pa.; E. R. Hall, 34 S. 17th street; one-story garage, 32x61; for H. S. Soslovitz, 136 Chestnut street; $4000.

Philadelphia, Pa.; Max Cotter, 1120 N. 42nd street; one-story garage, 36x117; for Brown & Sons, 151 Fairmount avenue; $5300.

Philadelphia, Pa.; Edward V. Holland; one-story brick garage, 37x82; east side 60th street; south Baltimore avenue; $4000.

Philadelphia, Pa.; Fox Brothers, 4814 N. Broad street; one-story garage, 50x200; for Sadie Lubarsky, 2015 N. Fifth street; $17,000.

Philadelphia, Pa.; W. J. Reiner; one-story garage, 19x75; with middle building 18x25 and rear building, 19x86.8; east side Conestoga street; north Media street; for Joseph Dambacher, Jr.; $8500.

Philadelphia, Pa.; J. G. Miller; one-story brick garage, 20x101; north side Allegheny avenue, west 23rd street; for George Gross; $2500.

Philadelphia, Pa.; F. A. Phillips; one-story brick garage, 15x40; at 5232 Jackson street; for David Daylor; $1000.

Philadelphia, Pa.; John Mortimer; one-story brick garage, 54x76; at 2508 E. Cumberland street; for William J. Brady; $3500.

Philadelphia, Pa.; John Mortimer; one-story garage, 60x190; at 3237 N. Lee street; for M. Duffy; $12,000.

Philadelphia, Pa.; Frank I. Wintz; one-story brick garage, 90x92.6; at 134-154 N. Second street; for W. Bruce Barrow, agent; $20,000.

Philadelphia, Pa.; G. C. Krewson; one-story brick garage, 20x22; at 319 Bowen avenue; for F. T. Jennings; $2340.

Philadelphia, Pa.; William Marriott; one-story brick garage, 16x32; at 3113 N. Potter street; $1000.

Philadelphia, Pa.; Raith Construction Co.; one-story garage, 9.6x16; at 2655 South Camac street; for Raymond & Kilpatrick; $950.

Philadelphia, Pa.; Paul Wenke; one-story garage, 18x54; at 1216 East Berks street; for Emma Daniels; $1700.

Philadelphia, Pa.; Samuel Wright; two-story brick garage, 12x18; southeast corner 62nd and Washington avenue; $1000.

Philadelphia, Pa.; W. H. Nobonar; one-story brick garage, 17x80; south side Tabor road, east Mascher; for M. L. Bastian; $2000.

Philadelphia, Pa.; Davis & Clayton; one-story stone garage, 18x22; at 606 W. Upsal street; for J. Baizley; $850.

Philadelphia, Pa.; Charles A. Carr; one-story brick garage, 36x90; at 2428 N. Mascher street; for Frank Rafferty; $6000.

Philadelphia, Pa.; George H. Evans; one-story garage, 15x22; at 912 Wynnewood road; for H. B. Lockwood; $1100.

Philadelphia, Pa.; H. Andrews; one-story brick garage, 16x20; at 5334 Ridge avenue; for Edward Earnshaw; $500.

Philadelphia, Pa.; Walter C. Johnson; one-story concrete garage at 4601 Ella street; $5000.

Philadelphia, Pa.; B. J. Campbell; one-story brick and stone garage, 16x20.4; northeast corner Wayne avenue and Coulter street; for Raymond Leopold; $1600.

Philadelphia, Pa.; Berkelbach Co.; one-story brick garage, 20x20; at 503 West Lindley avenue; for W. J. Frosch; $4700.

Philadelphia, Pa.; J. Schultzbach; one-story brick garage, 16x19; at 5111 York road; $5000.

Philadelphia, Pa.; Harkins McGough; one-story brick garage, 28x35; at 923 East Chelton avenue; for Patrick McDermott; $2000.

Philadelphia, Pa.; W. L. Bushnell; one-story brick garage, 16x24; at 5411 N. Water street; for C. W. Hennings; $1500.

Philadelphia, Pa.; L. H. Eckard; one-story garage, 60x64; at 2404-8 N. 27th street; for William Roat; $7500.

Philadelphia, Pa.; John H. Cloak; one-story brick garage, 9.6x16; at 5234 N. Mascher street; for Walter Webb; $500.

Philadelphia, Pa.; C. E. Lloyd, Jr.; one-story stone garage, 21x24; at 6510 N. 11th street; for W. L. Ridpath; $1000.

Philadelphia, Pa.; Edward Holland; one-story brick garage, 11x17.10; southwest corner Linderwood and Race streets; for M. Kleise; $750.

Philadelphia, Pa.; G. A. Thiele; one-story concrete garage, 10x26; north side Sellers street, West Elizabeth; $500.

Philadelphia, Pa.; Edward Clifford; one-story garage, 12x17; north side Logan street, east Morris; for B. Springthop; $635.

Philadelphia, Pa.; R. M. Peterson & Son; one-story garage, 16x24; northeast corner McCallum street and Lincoln drive; for L. A. Hellett; $2500.

Philadelphia, Pa.; Franklin Engineering and Construction Co.; one-story brick garage, 12x299; southwest corner Florence avenue and St. Bernard street; for John Botwright; $700.

Philadelphia, Pa.; James A. Nolen; one-story stone garage, 25x90; at 232 Church lane; $2000.

Philadelphia, Pa.; Walter Smith; two brick garages, 19x73; south side Salaignac street, east Lauriston; $4800.

Philadelphia, Pa.; Alfonso Verdi; one-story brick garage, 19x21; at 6117 Oxford street; for W. Richard Scarlett; $1700.

Philadelphia, Pa.; John J. Hurley & Co. one-story fireproof garage, 10x16; north side Martin street, east Ridge avenue; for G. Koethe; $900.

Philadelphia, Pa.; Berkelbach Co.; one story brick garage, 18.6x58, with rear building, 10x18; southwest corner Kirkbride and Melvale streets; for Pellman Boyer.

Philadelphia, Pa.; Richard B. Wallace one-story brick garage, 32x40; at 3126-2 Kensington avenue; for Gustave Schingen $1500.

Philadelphia, Pa.; J. Sims Wilson & Co. one-story brick garage, 21.8x24.8; at 639 Drexel road; for C. A. Barnes; $1500.

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Philadelphia, Pa.; W. H. Bunn; one-story brick garage, 30x42; at 4845-47 Chestnut street; for George Tajiviliu; $1300.

Philadelphia, Pa.; H. S. Barnes; one-story brick garage, 15x75; southwcst corner Russell and H streets; for Charles Beaver; $2500.

Philadelphia, Pa; Albert Zellefelder; one-story hollow tile garage, 12x20; at 3116 West Penn street; for Mrs. L. P Piper; $1000.

Philadelphia, Pa.; A. W. France; one-story brick and concrete garage, 18.6x21.6; west side Oakland and North Harrison streets; $1000.

Philadelphia, Pa.; C. E. Lloyd, Jr.; one-story stone garage, 20x21; at 6708 N. Sixth street; for K. D. Conly; $800.

Philadelphia, Pa.; James J. Gallagher; one-story brick garage, 54x110; north side Elanor street, west A street; $3500.

Pillipsburg, Pa.; A. Gearhart; one-story commercial garage, 39x101; for Harry and Henry Mirbach; $4000.

Reading, Pa.; H. J. Radenbusch, 1334 Perkiomen avenue; two-story garage, 24x40; for Rt. Rev. Msgr. George Borneman, care St. Paul's R. C. Church, 151 N. Ninth street; $12,000.

Wilkes-Barre, Pa; Isaac Saba, 2 Airy street; one-story public garage, 40x60; for R. B. Jackson, 71 Carlisle street; $6000.

Norfolk, Va.; A. M. Johnson, 110 W. 31st street; one-story garage; for Michael Coleman, 198 Cumberland street; $7000.

Richmond, Va.; James Fox & Son, 25th and Franklin streets; two-story garage, 21x24; for Miss Helen Baker, 1619 Monument avenue; $3000.

Richmond, Va.; G. C. Davis; one-story garage, 28x102x14; for Imperial Tobacco Co., Sixth and Canal streets; $7000.

Cudahy, Wis.; Joe Gertz, 907 Central avenue, Milwaukee, Wis.; one-story garage, 30x80; for Andrew Steiger, 1416 Packard avenue; $10,000.

Milwaukee, Wis.; Andrew Taphoven, 487 Fourth avenue; one-story garage, 100x102; for Albert J. Stoltz, 209 Hanover street; $8500.

Sheboygan, Wis.; Verhulst Bros.; one-story private garage, 22x30; for E. W. Schultz, N. Seventh street and Zimbal avenue; $3500.

NEW CONCERNS RECENTLY INCORPORATED

Monthly Record of New Business Houses for which Charters Have Been Issued in the Various States and Classified According To Nature of Business.

NEWLY ORGANIZED MANUFACTURERS OF CARS, TRUCKS AND TRACTORS.

Wilmington, Del.; Lancaster Body Co.; $500,000; to manufacture automobiles and trucks.

Dover, Del.; Track-Back Trailer Co.; $200,000; to manufacture automobiles.

Dover, Del.; Union Motor Truck Co.; $1,500,000; James R. Tainter, Howard P. Woodworth, James R. Tanner, George Beaulieur.

Wilmington, Del.; The Auto and Motor Truck Axle Co.; $1,000,000; to manufacture automobiles and engines.

Ft. Wayne, Ind.; Ft. Wayne Garage Co.; $2000; to manufacture, repair and sell automobiles; Louis C. Eckerle, Loretta Eckerle.

Rockford, Ill; Rockford Motor Vehicle and Specialty Co.; $50,000; to conduct a general manufacturing business.

Newark, N. J.; General Automotive Co.; $50,000; to manufacture automobile engines, tractors and motors.

New York, N. Y.; Automotive Supply Co., Inc.; $51,000; to manufacture motor trucks, automobiles and automobile products; Richard Reidy, Robert P. Branery, Richard George.

Orville, O.; Wayne Tire and Rubber Co.; $500,000; to manufacture automobile tires and inner tubes; R. Richmond, E. C. Love.

Harrisburg, Pa.; Atlantic Motor Truck Co.; $50,000; S. M. Palm, John E. Dare, R. L. Dare.

Norfolk, Va.; A. D. Speight Motor Truck Co.; $20,000; Hugo Bernagozzi, A. D. Speight.

PARTS AND FITTINGS MAKERS.

Wilmington, Del.; National Motor Control Co.; $550,000; to manufacture electrical devices.

Chicago, Ill.; Lazear Auto Leek Wheel Co.; $100,000; Frank S. Lazear, Frank Breako.

Chicago, Ill.; Trio Auto Parts and Tire Co.; $125,000; Harry L. Mickelson, Jack Green.

Hammond, Ind.; Liberty Car Wheel Co.; $5000; Chas. Aaron, Franklin Raber, Chas. E. Clark.

Terre Haute, Ind.; The Automobile Jack Co; $10,000; to deal in appliances for automobiles; William E. Lindley, Clarence Ranberger, Henry Ranberger.

South Bend, Ind.; South Bend Battery Service Co.; $10,000; to deal in electrical supplies; E. A. Bennett, Della M. Shafer, Harry W. Brewster.

Fairview, Mont.; The Improved Spark Plug Co.; $20,000; Leon S. Bates, P. E. Ludtke, R. J. Cowles.

New York, N. Y.; Barney's Auto Parts Co., Inc.; $3000; to deal in automobile parts; Samuel N. Goldman, D. M. Cohn, Gus Meyer.

Cleveland, O.; B. M. Sallot Battery Co.; $10,000; Marcella N. Sallot, Edward Hobday, Corman F. French.

Yakima, Wash.; Yakima Auto Body Co.; $50,000; J. O. Walker, G. A. Walker, W. A. Stuart, E. C. Cameron, F. E. Garlick.

GARAGES AND REPAIR SHOPS.

Wilmington, Del.; American Metals Corporation; $135,000; to repair automobiles and sell automobile supplies.

Wilmington, Del.; Automobile and Marine Engineering Co.; $125,000; to repair automobiles and sell automobile supplies.

Macon, Ga.; Square Deal Garage Co.; $2000; to conduct a general garage business; H. D. Washburn, J. E. Cunningham.

Chicago, Ill.; Winnetka Garage and Auto Livery; $25,000; to conduct a general garage business.

St. Louis, Mo.; The Reliable Auto Repair Co.; $2550; to reconstruct automobiles.

New York, N. Y.; Quartullos Auto Repair and Welding Service, Inc.; $20,000; H. Goldstein, W. B. Richards.

Jersey City, N. J.; Auto Sales and Repair Co.; $50,000; George H. Wells, Jr., T. H. Glock.

Winston, N. C.; Winston Motor Corporation; $100,000; to conduct a general automobile repair and sales business.

Cleveland, O.; Euclid Forty-Sixth Street Garage Co.; $10,000; Albert Wyes, L. K. Le Ray.

Cleveland, O.; Union Garage Co.; $10,000; Wm. S. Salisbury.

Fulton, O.; International Auto Repairs Co.; $5000; to conduct a repair shop; Curtis Frum, Harry S. Frum, Robert C. Frum.

Portsmouth, O.; F. E. Bryan Auto Co.; $10,000; to conduct a general automobile garage and buy and sell automobiles and other motor vehicles and do general repair work; F. E. Bryan, John W. Krauss, Bessie Bryan.

Philadelphia, Pa.; Howard Garage and Machine Co.; $20,000; Hans S. Lorenaen.

Philadelphia, Pa.; Majestic Garage; $25,000; H. C. White.

Kidder, S. D.; Kidder Garage; $25,000; B. Seibel, Edward Britzius, L. D. Ehlers.

Alexandria, Va.; The Potter Williams Garage and Sales Co.; Charles R. Potter, E. C. Classock.

Richmond, Va.; Seventh Street Garage Co.; $50,000; to conduct a general automobile and garage business; L. H. Kemp, J. B. Blackburn.

Rocky Mount, Va.; Central Garage; $25,000; Ryland Goode, W. E. Woody.

Charleston, W. Va.; Liberty Garage Co.; $10,000; P. E. Fennell, Russell Adams, Clara B. Adams, Estella Wagner.

ACCESSORIES, EQUIPMENT AND SUPPLIES.

Dover, Del.; Gillette Tire Co.; $50,000; E. M. MacFarland, J. Veron Pimm.

Wilmington, Del.; A. L. Jurtz Tire Co.; $300,000; W. F. O'Keefe, George S. Steger, J. H. Dowell.

Wilmington, Del.; Pressman Tire and Rubber Co.; $3,000,000; to buy, sell and deal in rubber tires.

Wilmington, Del.; Universal Rubber Products Co.; $2,000,000; to manufacture, sell and deal in and with rubber tires and tubes; T. L. Croteau, P. B. Drew, C. L. Rimlinger.

Chicago, Ill.; Process Tire and Rubber Co.; $15,000; David L. Golden, Theresa Nicholas, David Sibert.

East St. Louis, Ill.; East St. Louis Auto Supply Co.; $500; Kent Lietschold, Frank Zaenger.

Andrew, Ind.; Gets Manufacturing Co.; $150,000; to deal in automobile accessories; Carl Endicott, George Barcus, W. O. Taylor.

Indianapolis, Ind.; Capitol Vulcanizing and Double Tread Co.; $10,000; Philip Deutscher, Jack Deutscher, Florence Deutscher.

Lafayette, Ind.; Interstate Tire and Sales Co.; $10,000; Paul L. Clark, R. A. Terwelp, John C. Gladen.

Des Moines, Ia.; Savage Tire Sales Co.; $100,000; James A. McCoy, J. A. McCoy, Jr.

Duluth, Minn.; Duluth Fastener Co.; $100,000; to manufacture patent fasteners for automobile tops; A. E. Parker, L. K. Doran, Irene McCabe.

Newark, N. J.; Acme Chemical and Supply Co.; $75,000; to manufacture automobile supplies.

Buffalo, N. Y.; A. C. G. Tire and Rubber Co.; $250,000; to manufacture patented rubber tires. Carmelo Lombardo, Engeld Gerace, Filippo Lombardo.

New York, N. Y.; C. and T. Tire and Supply Co.; $20,000; G. E. Casey, M. M. Carroll, E. J. Carroll.

New York, N. Y.; Leonard Tire Co.; $10,000; L. Fridiger, C. E. Buchner, N. Danziger.

New York, N. Y.; Madison Tire and Rubber Corporation; $625,000; to manufacture rubber tires; Clarence W. Smith, Blanche H. MacQuhae, Harold L. Kimberly.

New York, N. Y.; Pierceless Tire Co.; $5000; to manufacture rubber tires; Sigmund Weininger.

Raleigh, N. C.; The Kline Motor Sales Co.; $20,000; to conduct a general automobile supply and accessory business; R. L. Snyder, F. H. Parker, W. G. Bullock.

Cleveland, O.; Essenkay-Cleveland Co.; $10,000; to manufacture and sell automobile accessories; W. C. Merrick, A. K. Kelley, L. C. Wykoff.

Cleveland, O.; Market Square Tire and Supply Co.; $10,000; John P. Kalina, Louis Bammerlin, A. J. Kolus, Frances Harris, P. J. Mulligan.

Youngstown, O.; Automotive Tire Service Co.; $25,000; N. F. Riehl, B. M. Smart, L. J. Clemons.

Youngstown, O.; Consumers' Auto Supply Co.; $20,000; Archibald F. Buchanan.

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Oklahoma City, Okla.; El Reno Motor Sales and Supply Co.; $100,000; D. R. Zimmerman, Wm. Eckles, D. E. Shierk.

Oklahoma City, Okla.; M. and C. Auto Supply Co.; $25,000; Don A. Cochran, Earl C. Norris, Homer Hinkle.

Philadelphia, Pa.; L-H-P Products Co.; $50,000; to manufacture, sell and deal in and with automobile supplies; F. R. Hansell, E. M. MacFarland, J. Vernon Pimm.

Sioux Falls, S. D.; Lotta Miles Tire Co.; $25,000; W. K. Van Brunt, K. J. Campbell, V. V. B. Campbell.

Sioux Falls, S. D.; U. S. Motor Equipment Co.; $100,000; S. F. Kreiger, A. C. Gulp and H. Bowering.

Chattanooga, Tenn.; Triangle Tire and Sales Co.; $5000; L. L. Hill, D. W. Dillard, C. W. Hulse.

Nashville, Tenn.; Mississippi Automobile Accessory Co.; $75,000; D. D. Price, J. A. Thompson, A. R. Casey, E. H. Trenary.

Memphis, Tenn.; Wood-Wilson Tire Co.; $15,000; H. C. Wood, J. S. Wilson, Dr. A. A. Johnson.

Tacoma, Wash.; Enderton-White Tire and Products Co.; $25,000; H. N. White, L. I. Enderton.

Chester, W. Va.; The Cord Tire Corporation; $500,000; to manufacture and deal in rubber goods; J. D. Comstock, H. B. Woodbury, J. H. Powers, J. T. Johnson.

Queens, N. Y.; The Auto Light Control Co.; $5000; B. B. Berg, L. Sanders, H. J. Goldberg.

Buffalo, N. Y.; Parkside Battery Corporation; $5000; G. J. Cochrane, W. B. Walsh, M. Ashley.

Syracuse, N. Y.; Bolster Tire Sales Corporation; $25,000; B. C. Wheeler, J. A. Griffin, A. G. Bolster.

New York, N. Y.; Challenge Storage Battery Corporation; $50,000; G. D. Davis, S. and B. Apostuloff.

DEALERS IN AUTOMOBILES, MOTOR TRUCKS AND TRACTORS.

Montgomery, Ala.; Rainbow Auto Co.; $10,000; Y. W. Rainer, E. L. Marx, K. D. Owen.

Little Rock, Ark.; Richardson-Miles Tire Co.; $30,000; to deal in automobiles, tires and accessories; P. C. Richardson, Joe Miles, J. F. Boyle.

Texarkana, Ark.; Dreyer Motor Co.; $25,000.

Bridgeport, Conn.; The Tri-State Motor Sales Corporation; $50,000; John A. O'Brien, F. A. Healey, H. H. Grenert.

Wilmington, Del.; American Auto Club; $25,000; F. R. Hansell, E. M. MacFarland, J. Vernon Pimm.

Wilmington, Del.; Associated Autoists' Protective Service Association; $100,000; to carry on a general automobile service business.

Chicago, Ill.; Auto Dealers Investment Co. of Illinois; $50,000; John W. Creekmur, D. J. De Wolfe, R. G. Droffein.

Chicago, Ill.; Biddalo Automobile Co.; $20,000; Harry L. Blim, M. J. Flaherty, M. L. Mueller.

Chicago, Ill.; Lincoln Highway Motor Co.; $25,000; A. L. Roberts, D. Roberts, Julius Rizzle.

Chicago, Ill.; George E. Wright; $1,000; George E. Wright, William S. Lants, James S. Clinton.

Indianapolis, Ind.; Campbell-Dietz Automobile Co.; $3000; Chester A. James, Don Campbell, Arthur Dietz.

Indianapolis, Ind.; The Essenkay Co.; $10,000; to deal in motor vehicles; Thomas R. Lewis, B. B. Lewis, Joseph B. Schroder.

Indianapolis, Ind.; Martin Truck Co.; $25,000; to deal in trucks and automobiles; E. E. Gates, S. W. Huls, M. V. Shrader.

Indianapolis, Ind.; Steam Automotive Co.: $50,000; to deal in automobiles; Will H. Whittaker, John A. Whited, William G. Higgins.

Gary, Ind.; Broadway Garage and Machine Shop; $25,000; to sell and buy automobiles; Celia Krause, Jack Fait.

Richmond, Ind.; King-Wilson Motor Corporation; $50,000; to conduct an automobile business; Hugh D. King, Clyde E. Wilson.

Sioux City, Ia.; The Halseth Automobile Co.; $25,000; A. Halseth, N. A. Halseth, Norman Halseth.

Sioux City, Ia ; The Yellow Taxicab Co.; $25,000; to conduct a general transportation business; K. N. Radlovich, D. T. Kominmich.

Sioux City, Ia.; The Watson Automobile Co.; $100,000; George H. Watson, Stephen Watson.

Wichita, Kan.; Alva Motor Speedway Association; $5000; George M. Bell, A. C. Davis, J. W. Bond.

Boston, Mass.; The Automotive Corporation; $150,000; to deal in vehicles; John S. Pfeil, D. Porter Palmer, Henry E. Woodworth.

Boston, Mass.; The Guertin De Rochment Co.; $100,000; to deal in motor vehicles; Augustus E. Guertin, Perry E. De Rochmont, Malcolm P. Hayden.

Detroit, Mich.; Detroit Motors Corporation; to deal in motor vehicles and accessories; James C. Wormley, M. E. Bromley, W. J. Meisenheimer, G. E. Wright, W. S. Lantz, James S. Clinton.

Detroit, Mich.; Union Truck Co.; $500,000; Howard P. Woodworth.

St. Louis, Mo.; Flint Motor Car Co.; $8000; to deal in automobiles; F. A. Flint, Nellie H. Flint.

Butte, Mont.; Overland-Butte Co.; $100,000; to engage in a general automobile business; Roy N. Hitchcock, M. L. Goodking, O. W. McConnell.

Circle, Mont.; The Circle Motor Co.; $9900; R. H. Chase, C. L. Fletcher, E. L. Hine.

Buffalo, N. Y.; Ferry Automobile Service and Supply Co.; $10,000; to conduct an automobile business; Charles R. Shea, F. M. McDonough.

Buffalo, N. Y.; Packard Buffalo Motor Car Co., Inc.; $50,000; to deal in motors, motor vehicles and accessories; Alvan Macauley, Russell A. Alger, C. E. Hamilton.

New York, N. Y.; Arkin Auto Renting Co.; $2000; to conduct an automobile business; John Frechem, Fred Prawatchke, Carl Dahlmann.

New York, N. Y.; Bennet & Sigerson, Inc.; $5000; to deal in automobiles and accessories; H. Bennet, N. A. Bennet, E. B. Sigerson.

New York, N. Y.; Zenith Motor Car Co.; $20,000; E. J. Bushey, G. Levy, S. C. Levy.

Spring Valley, N. Y.; Paramount Automobile Sales Co.; $10,000; to conduct an automobile business; D. Von Soosten, Jr., E. F. Cordukes, A. E. Fischer, Jr.

Ashville, N. C.; Norvell Motor Co.; $20,000; to conduct a general automobile and garage business; Richard F. Norvell.

Charlotte, N. C.; The American Motors Co.; $50,000; to conduct an automobile business; N. W. Wallace, Jr., J. C. Washam, F. L. Carpenter.

Gramham, N. C.; The Alamance Motor Co.; $25,000; to conduct an automobile business; A. S. Thompson, R. L. Holmes.

Leaksville, N. C.; Boulevard Motor Co.; $9300; to conduct an automobile business.

Mount Airy, N. C.; Allred Motor and Implement Co.; $25,000; to conduct an automobile business; Paul Allred, Lee Franklin.

Cleveland, O.; Leech Motor Co.; $100,000; Edward P. De Gollier, George P. Sherry, Frank L. Fowler.

Toledo, O.; Owners' Used Car Exchange Co.; $10,000; Fred G. Troube, Jesse J. Ottgen, Rosmond L. Troube.

Columbus, O.; Tyler-Armstrong Motor Co.; $50,000; to deal in automobiles; Charles McQuigg, H. L. Taylor, C. W. Armstrong.

Oklahoma City, Okla.; Watson-Cooney Motor Co.; $25,000; Hugh E. Watson, John A. Cooney, J. A. Sheffield.

La Grande, Ore.; Galloway Rees Co.; $100,000; to deal in automobiles; J. F. Hutchinson, Dr. F. W. Whiting.

Philadelphia, Pa.; Laurel Motor Co.; $15,000; D. Evans.

Columbia, S. C.; Carolina Motor and Accessories Co.; $10,000; to conduct an automobile business.

Columbia, S. C.; The M. C. Johnson Motor Co.; $1000; M. C. Johnson.

Greenville, S. C.; Overland Piedmont Co.; $30,000; W. W. Thompson, J. C. Harer.

Menno, S. D.; Redman-Frasch Auto Co.; $50,000; Emanuel Redman, Jacob Redman, John Frasch.

Memphis, Tenn.; Cotton States Motor Car Co.; $5000; to deal in motor vehicles and conduct a general garage; John T. Walsh, C. R. Arnoult, Jr., L. T. McGaughran, H. B. Arnoult.

Memphis, Tenn.; Superior Motor Co.; $110,000; R. R. Prest, A. B. Lewis, Robert Wilson, W. D. Kyser, J. S. Allen.

Pulaskd, Tenn.; Martin Motor Co.; $5000; W. F. Martin, C. H. Whitt, Sam Smith, W. H. Wilson, C. L. Hamlin, Andrew Mitchell.

Newport News, Va.; Peninsula Automobile Association; Hugh Caffee, Hunter F. Grymes.

Norfolk, Va.; Gatewood & Steinbaugh; $25,000; to conduct an automobile business; U. C. Gatewood, R. A. Williams.

Newport News, Va.; Stephens Motor Co.; $10,000; to conduct an automobile business; S. A. Stephens, J. W. Stephens.

Norfolk, Va.; Britt Auto Sales Co.; $10,000; to conduct an automobile business; B. C. Britt, R. F. Holland.

Norfolk, Va.; The Interstate Auto and Repair Co.; $15,000; to conduct an automobile business; Charles L. Gannaway.

Roanoke, Va.; Black and White Taxi and Transportation Corporation; $50,000; to conduct a general automobile and machinery business; D. W. Howell, C. E. Holcombe.

Roanoke, Va.; Munday Motor Co., Inc.; $50,000; to conduct an automobile business; W. P. Munday, D. B. S. Campbell.

Bellingham, Wash.; Model Truck and Storage Co.; to operate a general transfer and storage business; Frank Freeman, A. G. Larson, Jake Kruzer, Ralph Wilke, H. K. Swift, Dave Erickson, Carl Anderson, S. E. Huff, Clyde Creek.

Bellingham, Wash.; Bellingham Motors Corporation; $15,000; C. E. Thomas, Forest L. Gwinn.

Seattle, Wash.; Dragon Motor Co.; $100,000; F. E. Earnest, C. W. Avery, J. A. Bovee.

Seattle, Wash.; Victory Motor Car Co.; $10,000; Howard L. Lerch, C. D. Dennellon, Charles H. Ling.

Walla Walla, Wash.; Washington Motor Equipment Co.; $35,000; Charles H. Perry, H. E. Phillips, W. S. Ryan.

Dover, Del.; The Better Wear Tire Co.; $100,000; T. L. Croteau, P. B. Drew, H. E. Knox.

Dover, Del.; Parenti Motors Corporation; $2,500,000; W. F. O'Keefe, George S. Steigler, J. H. Dowdell.

Brooklyn, N. Y.; Simmons-Nadler Motor Corporation; $10,000; H. S. Simmons, H. H. Nadler, M. H. Nadler.

Albany, N. Y.; Strerel Motor Sales Corporation; $25,000; P. E. Woodward, E. H. Gale, J. L. Gale.

SELLS HUB AUTO BUILDING.

Boston—Papers have passed in the sale of the two-story fireproof building, together with 36,606 square feet of land at 49-67 Lansdowne street, near the corner of Brookline avenue, by the Boston Garage Co. to Max E. and Charles E. Wyzanski.

In acquiring this property the Messrs. Wyzanski secure a modern automobile building, built from plans of Monks & Johnson and having an exceptional frontage of more than 300 feet on Lansdowne street.

This sale is an added indication of the demand for property in this section, and a forerunner of several other transfers now under agreement.

NEW YORK OAKLAND.

New York—William H. Masten, general sales manager of the Oakland Motor Car Co., is in the city to see that the new factory branch for the metropolitan district, officially established July 1, gets off on its right foot and to introduce Charles M. Brown as New York's new branch manager to the many Oakland dealers in this territory.

Mr. Masten states that business prospects are unusually attractive.

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Pneumatics for the long quick haul---

Solids for the extra heavy work.

Resilient--- easy on the car---easy on the driver. Fisk quality through and through and that means nothing better on the market.

Next Time—BUY FISK

FISK TRUCK TIRES

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PERFECTION ANNOUNCES THREE NEW TYPES OF TIRES.

Three new types of tires and a marked extension of the mileage guarantees on its present lines have been announced by the Perfection Tire and Rubber Co. The asbestos protected tire, which formerly carried a guaranteed covering 6000 miles, is now guaranteed for 8000 miles, while the "rib-skid" mileage has been advanced from 3500 to 6000, making it one of the most generously guaranteed automobile shoes now being offered.

One of the new Perfection tire types is known as the "Perfected." It will be made on the Dickinson cord tire machine, controlled by the Perfection company.

The Perfection "rib-skid," another new type, is a combination of the popular rib-thread and non-skid design with the desirable qualities of both.

DAVIS LYNN STORAGE BATTERY

Ground has been broken in Lynn, Mass., for a new plant of the Davis Lynn Storage Battery Manufacturing Co. There will be 10 batteries of storage tanks and this will increase the output of the concern just nine times that of today. Eventually the manufacturing facilities will cover five acres. Five hundred operatives will be employed at the start.

RACERS USE DIXON'S.

All of the racers, except Howard Wilcox, at Sheepshead, July 4, lubricated their cars with Dixon's graphite automobile lubricants.

QUICK LIFT SERVICE JACK FOR FORD CARS.

The White Products Co., 100 W. 55th street, Chicago, announces a new service jack or jack truck for the quick handling of service work on Ford cars. The cut shows this jack as it appears with the handle raised, ready for the same to be placed under the Ford rear axle. As the handle is lowered the car is raised, a safety lock holding the handle in position.

The jack is mounted on roller bearing castors, making it easy to move the Ford to any location desired. The dealer's price of this jack complete is $10 f. o. b. Chicago. Circulars and full information will be mailed on request.

QUICK LIFT SERVICE JACK.

Record of 100 Miles Smashed by Chevrolet

Gaston Chevrolet in a Frontenac car won the 100-mile automobile derby at Sheepshead Bay, July 4, breaking the world's record for the distance with the time of 54 minutes, 17⅛ seconds. The former record, made by Louis Chevrolet on the same track in September, 1917, was 54 minutes, 20 98/100 seconds.

"Howdy" Wilcox, in a Peugeot, finished second and Dave Lewis, in a Meteor Special, third.

A special match race of three 10-mile heats between Ralph De Palma and Wilcox was called off when De Palma retired because of motor trouble after his opponent had won the first heat.

LOUIS CHEVROLET WINS BIG EVENTS AT TACOMA SPEEDWAY.

Louis Chevrolet won both the 60 and the 80-mile events at the Tacoma, Wash., Speedway, July 4. Ralph Mulford captured the opening 40-mile event in 24 minutes 2 2/5 seconds. Durant finished second in the 40-mile race, with Chevrolet third.

In the 60-mile race Chevrolet led the field from the start and won in 36 minutes, 47 1/5 seconds, or at the rate of 98½ miles an hour. Mulford, Hearne, Durant and Resta finished in the order named.

Mulford was forced out of the lead and the race in the final 80-mile run with tire trouble. Chevrolet's time was 49 minutes, 19 2/5 seconds. Hearne was second and Durant third.

INGENIOUS DISPLAY CARD SHOWS BOTTLE OF WAXIT.

The Waxit Manufacturing Co., Plymouth building, Minneapolis, is providing its dealers with an attractive and practical window or counter card. In the center a bottle shape space is cut out so that an actual 14-ounce bottle of the polish can be put on display. The background of the card is a fine representation of American walnut with the letters in yellow.

Scant justice is done by the picture shown herewith. The company will send a sample package of its product to any dealer and advise how this display card may be obtained. Any car owner may get a bottle of Waxit by sending 10 cents to the company.

WAXIT DISPLAY CARD.

BIDDLE & SMART FOREMEN GIVEN SPECIAL TRAINING.

The Biddle & Smart Manufacturing Co., Amesbury, Mass., maker of Hudson automobile bodies, has installed a course of training in "Modern Production Methods." A study group of 67 foremen has been organized by William E. Biddle. John E. Calder, M. E., is director of the course of the Business Training Corporation, New York, which is conducting the work.

LIBERTY SPARK PLUGS ANNOUNCED TO TRADE.

After a long period of development the Casey Hudson Co. has started quantity production on its Liberty spark plugs. The company has been specializing in the making of automobile parts and during the war made some of every screw machine part that went into the Liberty motor—nearly 150 of them. Liberty spark plugs are said to deliver an especially hot, penetrating spark, largely due to an improved and patented spark gap intensifier, built right into the porcelain assembly where it cannot come out of adjustment or cause trouble.

The gap is perfectly adjusted for giving the proper intensifying of the electric current. It is neither too great to throw strain on the ignition system nor too small to get the proper intensity into the spark. It is claimed that Liberty spark plugs make starting easier and stop missing and skipping caused by compression, killing the spark in the cylinder. It is also claimed that they will fire in carbon and oil where some other plugs foul out in a short time.

Liberty spark plugs are packed four or six to the box instead of separately, as is usually the case. Full information regarding them may be secured by writing to the Casey Hudson Co., 361 E. Ohio street, Chicago. Liberty spark plugs packed in heavy leatherette box in sets of four and six sell for $1.25 each by set and $1.50 each for less than sets.

LIBERTY SPARK PLUGS.

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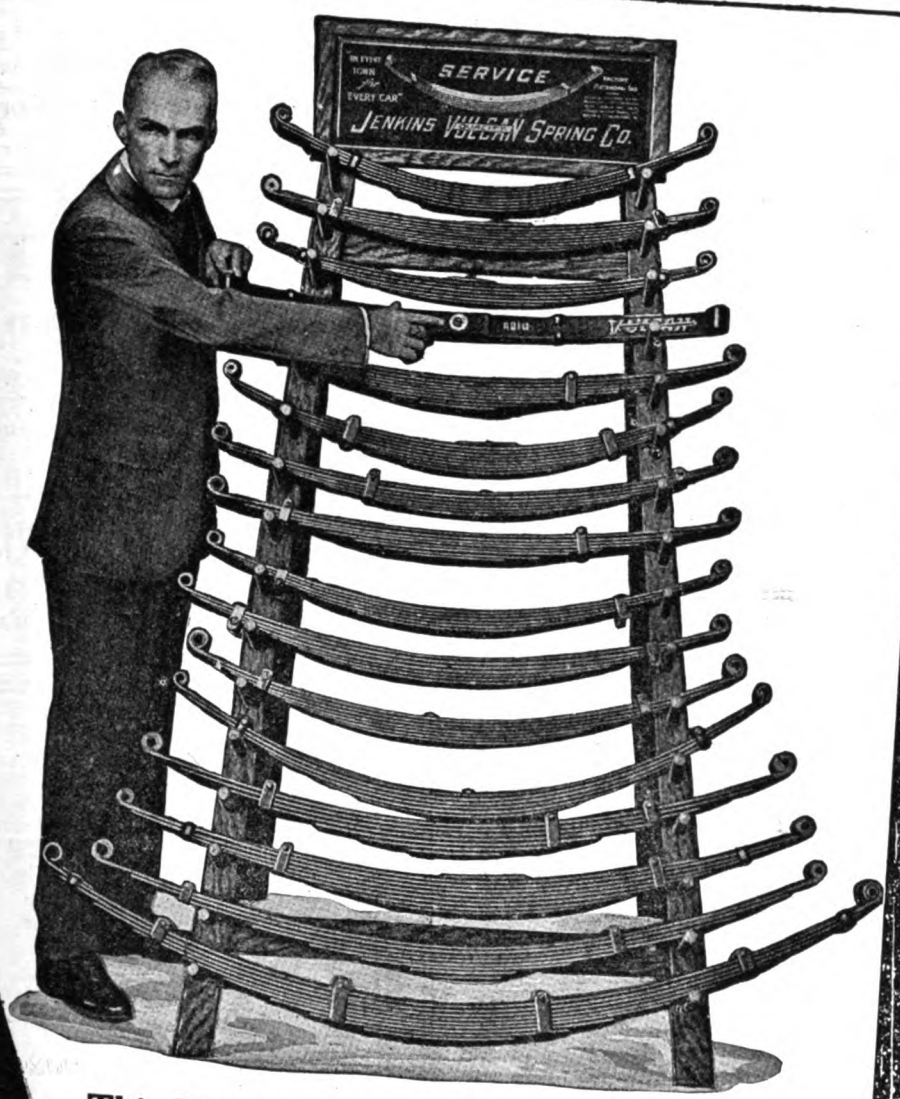
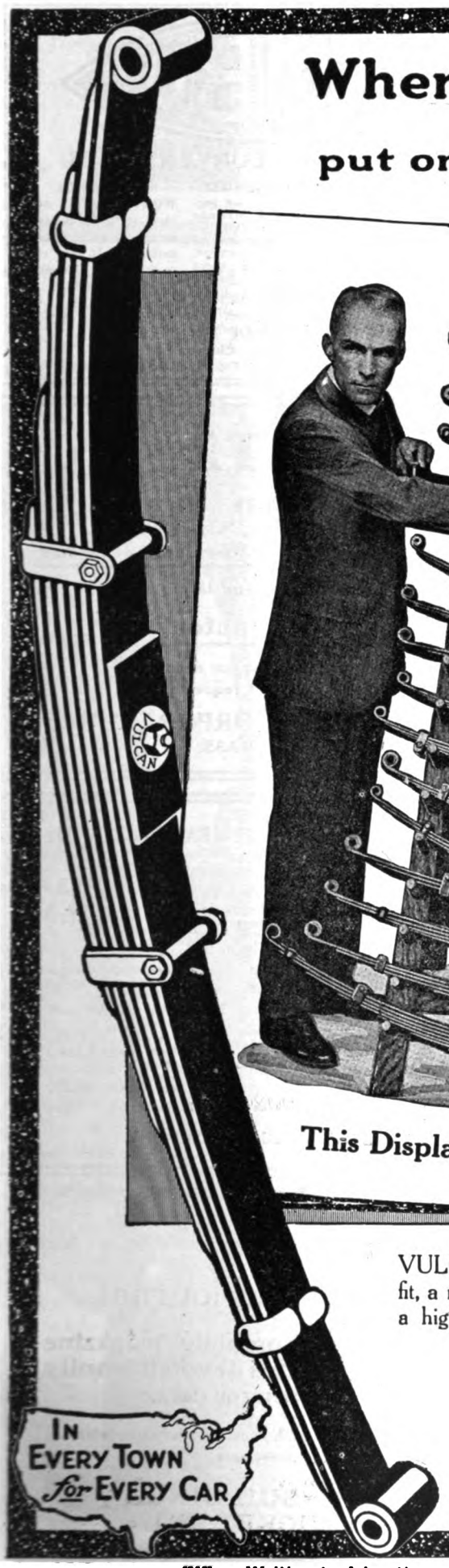
When Springs Break

put on VULCAN QUALITY

The Replacement Spring



This Display Rack FREE with First Order



VULCAN springs represent the highest degree in quality and fit, a remarkable and growing popularity with car owners, and a highly satisfactory PROFIT for the dealer.

Write for our Proposition.

Jenkins VULCAN Spring Co.

Factory Richmond, Indiana

Direct Factory Branches

Atlanta, Ga. Minneapolis, Minn.
Boston, Mass. Sumter, S. C.
Dallas, Tex. Reading, Pa.
Kansas City, Mo.

(When Writing to Advertisers, Please Mention the Accessory and Garage Journal.)

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Mosco No. 200 Timer for Ford Car

Patented Oct. 31, 1916.

The case is made of extra heavy pressed steel, finished in aluminum. Gray bone fibre is used for raceway, with steel inserts dovetailed in and all lathe finished to a polished surface. The threaded terminals are insulated by fibre washers all the way through to contact points, thus removing cause of short circuiting common to this style of Timer.

PRICE, Complete with Brush, $1.50 EACH

Motor Specialties Co.

Manufacturers

WALTHAM MASS.

TRADE AMBU MARK

BATTERY SHOP CONVENIENCES

BATTERY TURN TABLES
Makes work on heavy batteries easy and a pleasure. Saves time and energy—soon pays for the installation. Every shop should have four or five. Simple, sturdy, everlasting. Each $4.

BATTERY CARRIERS
Specially designed carrier handles—fit any battery instantly — makes it easy to remove battery from car. One man can carry two batteries — each $1.75. Pair $3.25.

LEAD MOLDS
With material still high it pays to save scrap lead. These molds put it into convenient form for use—price each $1.75. Pair $3.25.

Get these from your Jobber—or direct if he cannot supply you.

AMERICAN BUREAU OF ENGINEERING
109 E. 16th St., Chicago
Makers of the Famous AMBU Electric Trouble Shooter.

METZ Master Six

The car of the Year **A New England Product**

Honest through and through

$1695 F. O. B. factory FULLY EQUIPPED

We are now extending our agency list
Information at request

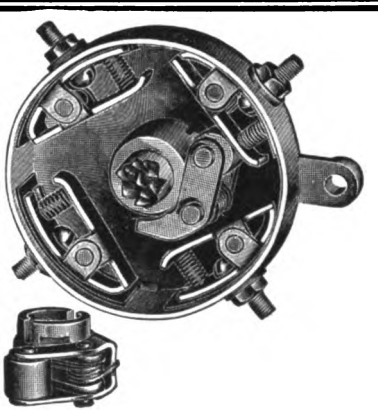
METZ SALES CORPORATION
BOSTON, MASS.

TRACTOR WORLD

Monthly **20c the Copy** **$2 the Year**

A Tractor Journal
devoted to the
tractor industry and trade

Published by
The Automobile Journal Publishing Company
PAWTUCKET, RHODE ISLAND



BAY STATE TIMER for FORD CARS

It adds to power, efficiency and economy.
Eliminates all Timer troubles.
Cuts gas and repair bills and guaranteed to give full satisfaction.
Used by Ford owners everywhere.
There is one best Timer for Ford cars—It is the Bay State.

List Price $2.50
All dealers or direct.

BAY STATE PUMP COMPANY
100 Purchase St., Boston, Mass.

The Automobile Journal

Is the oldest Automobile magazine published in America devoted wholly to owners of passenger cars.

A quality magazine, with prestige and circulation that brings results to advertisers.

TIMES BUILDING
PAWTUCKET, R. I.

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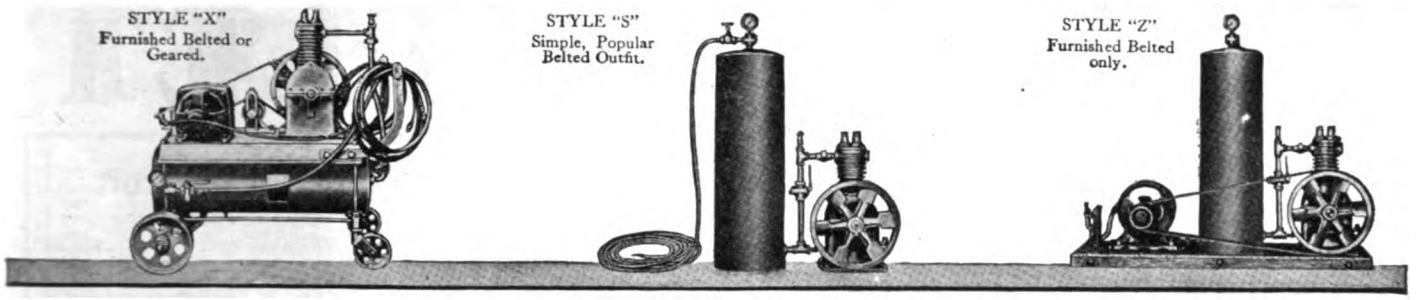

The Curtis Sign is 10 x 14 inches—baked enamel on steel. It is furnished FREE with every Curtis Garage Air Compressor and cannot be obtained in any other way.

FREE
CURTIS AIR
FREE FROM OIL

Conserve Your Patrons' Tires

Motorists will go a long ways to find the Curtis Sign and get Curtis Air—FREE FROM OIL—because it means less blowouts and greater tire mileage.

CURTIS Air — Free From Oil

Because of correct design and good construction, Curtis Garage Air Compressors are dependable and operate with minimum power. The patented and exclusive self-regulating splash oiling system prevents oil from getting into the air line. The air is pure, clean, safe and FREE FROM OIL.

OTHER CURTIS FEATURES

Fan flywheel cools cylinder. Valves of light weight and large area. Hand unloader permits starting against full tank pressure without injury. Large drop-forged crank shaft. Adjustable, renewable, die-cast, non-cutting bearings. Head removable without breaking pipe connections—only one gasket.

MADE IN VARIOUS SIZES

Curtis Compressors are made in various styles and sizes to suit your special needs. Write today for illustrated literature giving full particulars. Use the coupon.

CURTIS PNEUMATIC MACHINERY CO.
1621 Kienlen Ave.,
St. Louis, U. S. A.

Branch Office:
531-A Hudson Terminal,
New York City.

Curtis
Pneumatic
Machinery Co.
1621 Kienlen Ave.
St. Louis, Mo.

Gentlemen:
Please send me full details on Curtis Air Compressors—your proposition and prices.

Firm Name.....

Address.....

Jobber's Name.....

Address.....

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PURITAN HAS IT

New Parts for All Cars — We Do Not Wreck Cars

IF IT'S FOR AN AUTOMOBILE

SEND FOR MONTHLY BARGAIN BULLETIN

ELECTRICAL MATERIAL.

6 volt Autolite Generators $15.00
6 volt Ward Leonard Starting Motors with Bendix Drive 15.00
6 volt Menominee Lighting Generators..... 12.50
6 volt Menominee Generators—complete with all attachments for Fords.. 28.50
Master Vibrators for Fords 1.98
12 volt Klaxon Horns for Dodge and Maxwells.... 15.00
6 volt Trojan Motor Horns 2.90
Bijur Starting and Lighting System for Scripps-Booth 85.00
Bosch DU4 Magnetos—rebuilt 85.00
6 volt Atwater Kent K-2 Unisparkers 10.50
6 volt Atwater Kent Coils. 5.00
12 volt Atwater Kent systems for Maxwells..... 17.50
6 volt C. C. Atwater Kent Coils 5.00
Westinghouse Generators for Chalmers..... 15.00

CARBURETORS.

1 inch Kingston top intake
1 inch "R" Schebler Carburetors 12.50
Fletcher Carburetors for Fords 8.50
Gardner Carburetors for Fords 8.50

SPARK PLUGS SPECIAL.

$1.00 ½ inch Sando Spark Plugs—each 85c
.90 ½ inch Champion X Plugs—only 4 to a customer 45c
1.00 Red Head Spark Plugs—all sizes.....45c
1.25 Marcy ⅞ plugs.....19c
1.25 Marcy—Metric—Motorcycle size.....19c
1.00 7.8" Spark Plugs.....19c
1.00 Bethlehem ⅞" Extension A. L. A. M....45c
1.00 Bethlehem ½" Extension 45c
1.25 Jumbo ½" Extension..45c
1.00 A. C. 7.8" long—Dodge 45c
2.50 Mosler Spitfire ⅞ A. L. A. M.....45c

FOR YOUR FORD.

Racing type bodies—snappiest, easy riding, speedster outfit on the market. Includes gas tank, nicely upholstered seats, cowl, etc.....$60.00

SPECIAL RATIO RACING GEARS, 2¾ AND

3 to 1 ratio ring gear and pinion $15.00
4 to 1 gears for commercial use 15.00
Speedster Fenders, set of 4 10.00
Heavy Crown Fenders, set of 4..... 15.00
Tool boxes—with lock—22 inches long..... 1.35
18-inch Steering Wheels with corrugated rim.... 3.05
Fan Belts—for all models 18c
Standard Roller Bearings for front wheels—set of 4 7.50
Bumpers 5.00
Warner and Shaler Lens, per pair..... 1.75
One-man Mohair Tops—complete with top boot and curtains for touring car 35.00
For roadster..... 25.00
Honeycomb Radiators for 1917-18-19 ..... 20.50
Honeycomb Radiators for 1914-15-16 ..... 20.00

SPECIALS.

Timken Worm Drive Truck Axle—complete with hubs and drums $85.00
Brand new late model 5-passenger Packard Body, complete, top and shield.....$200.00
5-passenger Studebaker Bodies $50.00
Complete Steering Gears—left or right — Jacox, Gemmer and Warner makes.....$15.00
6-cyl. Lycoming Motors..$150.00
One-man Khaki Tops for 1917 Maxwell cars—best grade waterproof mohair material; complete with curtains and top boot. Price while they last $25.00
One-man Mohair Tops with curtains for Chalmers touring cars $30.00
Rain Vision Windshields for Buick models C-45, D-35, D-45 .....$20.00
Hartford Shock Absorbers—complete with fittings for many cars—per set.....$30.00

NEW PARTS FOR ALL CARS

Gears, Axle Shafts, Bearings, Transmissions, Axle and Motor Parts, Piston Rings, Pistons, Universal Joints, Hubs and Hub Parts, Springs, etc.

Write us for quotations.

RIMS AND WHEELS

All makes for all cars—Let us quote you prices

RADIATORS FOR ALL CARS

Brand new Honeycomb Type for all cars. Write for price list

SPRINGS FOR ALL CARS

High grade standard Springs for all cars. Better prices; better service.

BEARINGS

All makes and sizes in stock. Bearings suitable for all cars. Immediate deliveries.

STARTING AND LIGHTING BATTERIES

BRAND NEW—guaranteed—with universal terminals will fit most every car.
6-volt, 110 ampere.....$25.00
12-volt, 60 ampere..... 36.00

ELECTRIC LIGHT YOUR FORD

Complete lighting system. Includes generator complete, storage battery, electric side and tail lamps, switches, wiring, etc. Everything complete installation. Regular price $29. Our price, $17.50.

PURITAN MACHINE CO., 607 PURITAN BLDG. **Detroit, Mich.**

EASTERN BRANCH, 245 WEST 55TH STREET, NEW YORK, N. Y.

Send it to Detroit

MAGNETOS.

Bosch DU4 Variable spark.....$30.00
Bosch DU-4 set spark..... 25.00
Bosch D4 and Dr4..... 25.00
Bosch D6 and Dr6..... 30.00
Splitdorf 4 cyl. Dixie, high tension 25.00
Splitdorf 4 cyl., Models A, T, X and D..... 10.00
National 4 cyl. low tension..... 8.00
Briggs 4 cyl. low tension..... 8.00
Remy 4 cyl., type R L..... 15.00
Simms SU4 high tension..... 22.00

GENERATORS.

Deaco 6 volt.....$12.00
Auto Lite 6 volt..... 15.00

COILS.

Splitdorf T S type.....$10.00
Splitdorf box type..... 6.00
Bosch type A..... 10.00
Remy box coils..... 6.00
Remy type LC and LE..... 8.00
Briggs box coils..... 6.00

DETROIT MAGNETO REPAIRS ARE BETTER.

WE REPAIR any make magneto, coil, lighting generator or starter and give 24 hours service. Member Detroit Automobile Trade Association.

Detroit Magneto Exchange

192 Grand River Ave. Detroit, Mich.

GARDNER *thermostat*

CARBURETOR

SIMPLICITY, DURABILITY, EFFICIENCY. ECONOMY

WHY?

THE THERMOSTAT TELLS

Highest Mileage, Easiest Starting, Most Power, Smoothest Running, Quickest Get Away, Simplest Construction

FORD MODEL $10.00 RETAIL

Gardner Carburetor & Brass Works, Detroit, Mich.

AUTO PARTS SAVE 50-90% FOR 400 CARS

POPE, PACKARDS, PIERCE, BUICK, STEVENS-DURYEA, KNOX, OVERLAND, ETC.

Motors	$25.00 up	Presto Tanks	$ 4.50 up
Magnetos	4.00 "	New Spotlights	2.00 "
Carburetors	3.00 "	Generators	10.00 "
Rear Axles	15.00 "	Gears	1.00 "
Front Axles	5.00 "	Bearings	1.00 "
Cylinders	5.00 "	Radiators	10.00 "

$12 Diamond Bumpers.....$5.50

Jobbers in Bankrupt Auto Supplies.

BRIGHTMAN AUTO EXCHANGE

84 Wooster St., Hartford, Conn.

AUTO PARTS.

50% to 90% Off List.

24 Hour Service. Unlimited Stock.
Pope-Hartford, Columbia, Reo, Overland and 200 other makes.

Motors, $20.00 up | E. Presto Tanks, $4.00
Magnetos, $3.50 up | B. Presto Tanks, $4.75
Cylinders, $3.00 up | Bearings, 50c up
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1000 Other PARTS Bargains.

If you want any part not listed here, Write Us—We Have It.

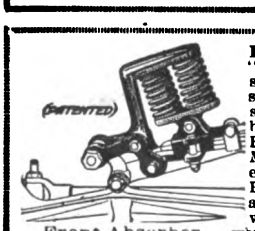
Conn. Auto Parts Co. Inc.

1070 Main St., Hartford, Conn.

MOTOR BARGAINS.

Continental Motors, Model 9-N.
New—In Original Crates.
Specially priced at $300 each for quick sale. Write

C. C. NEWBURN,
621 Superior St., Milwaukee, Wis.



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Champion Shock Absorber Sales Co., Inc., Indianapolis, Ind., Mfs.

EXPERT REPAIRING; every known Magneto and Ignition System, Starters, Motors, Generators. **Magneto Exchange and Repair Shop, 269 Halsey Street, Newark, N. J.**

LOZIER OWNERS—Why buy counterfit repair parts. We have all **Original Parts.** Made from original Patterns. Order from headquarters.

LOZIER MOTOR CO.
Fort and 6th Sts., Detroit, Mich.
Service Stations—E. A. Cornely, Inc., 1445 Bush St., San Francisco, Cal. Lozier Motor Co. of New York, Inc., 47th St. and 11th Ave., New York City.

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Send for our free complete Price List covering Auto Dealers, Owners, Ford Dealers, Truck Dealers and Owners, Garages, Auto Mfrs. and etc., any state.

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Every Ford Owner Should Read "TRANSFORMING THE FORD." Tells how to secure smooth, positive brake action that no car can excel. A little "transforming" and your car will glide to a quiet, quick stop without the annoying, irritating clatter that you now experience. It will go into low or reverse without jumping or jerking and you can pick up speed with all the smoothness and ease of a high-priced car. All accomplished without additional expense and the result is a clear saving of 75 per cent. in one direction alone. "TRANSFORMING THE FORD" tells how it's done. Send for your copy this very minute. IT IS FREE. **Cormack & Co., 500 Fifth Ave., New York City.**

GARDNER CARBURETORS
FOR FORD CARS

Dealers write us for special price.
Salesmen with Ford Cars Wanted.

FACTORY SALES COMPANY
Sun Building, Detroit, Mich.

AGENTS, all territories, we have a fast selling carburetor for Ford and other makes of cars. $7.50. Write for proposition. Sample, $5.00.

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WANTED: OLD MAGNETO ARMATURE CORES

We pay cash for armatures you have no use for.

PAUL G. NIEHOFF & CO., INC.
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AGENT WANTED

to handle our 5,000-mile guaranteed tire.

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We Are Exclusive
SELLING AGENTS
for the N. F. G.
CARLISLE CORD TIRE.
Dealers write for our special proposition.
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CYLINDER GRINDING

Pistons—Rings—Piston Pins

Prompt Service—Prices Right

Ford Cylinders Reground, new Pistons, Rings, Wristpins and Bronze Bushings fitted.....$14.50 Net

We Use Genuine Ford Parts.

STERLING ENGINE CO.
329 S. CLINTON ST., CHICAGO, ILL.

TIRES

JOB LOTS

Obsolete, Surplus Stocks and Factory Seconds

WRITE—CALL

BROADWAY TIRE JOBBERS

250 West 54th Street **New York**

WATCH FOR OUR MONTHLY SPECIALS

JULY

GENERATORS

Autolite	$25.00	Vesta	$20.00
Gray & Davis	25.00	Ward Leonard	25.00
Splitdorf	35.00	Wagner	30.00
Remy	30.00	Westinghouse	30.00

Complete stock of brushes and parts for the above generators.

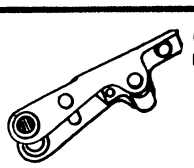
Starter and Generator Chains. All makes. $4.00 to $15.00 each.

SPECIAL BOSCH OUTFITS FOR FORDS
Complete $65.00

We have a most complete line of Magnetos, Coils, Distributors, Starters and Generators, as well as the parts thereto. Our Expert repair department gives 24 hours service. It will be to your advantage to give us a trial.
All merchandise and repairs fully guaranteed.

CATALOG SENT UPON REQUEST

MEINERT MAGNETO SPECIALTY CO.
1216 Prospect Ave., **Cleveland, Ohio**



Superior Parts and Brushes

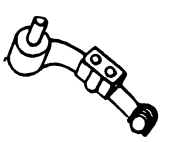
FOR ALL

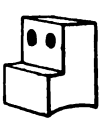
Ignition and Starting Lighting Systems

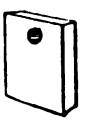
Used for Years by the Best Repair Shops Everywhere

"They Last Longer but Cost Less"

Write for Catalogue







Specialty Manufacturing Co.
637 Massachusetts Ave., **Arlington, Mass.**

(When Writing to Advertisers, Please Mention the Accessory and Garage Journal.)

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"Send Us More New York Automobile Replacement Coils at Once"

is the request of every Jobber and Dealer who have ordered previously

TYPE D

Unless you are already handling our REPLACEMENT IGNITION COILS you cannot realize the tremendous existing demand—they are not in the class of ordinary accessories. They must be procured immediately when coil troubles occur.

Fifteen years' coil building experience enables us to produce a coil that gives a crashing big hot spark, even when battery is low, which insures easy starting, perfect running and full power from present day gas.

No article ever supplied the automobile industry has proven more beneficial alike to Dealer, Jobber and user. We make a coil for every car, that is guaranteed for all time.

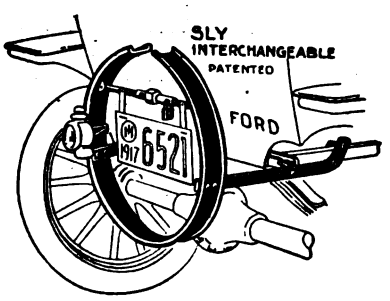
Circular showing how to order for each model car with prices and other information upon request.

TYPE A

NEW YORK COIL COMPANY

338-340 Pearl Street, New York, N. Y.

THE MODERN REAR TIRE CARRIER FOR ALL FORD MODELS



"Sly Perfect" Interchangeable Rear Tire Carrier

It takes but a moment to unlock the SLY Perfect Interchangeable Rear Tire Carrier Lock, and slip off your spare tire. An expanding band, like a Demountable Rim, holds your spare tire naturally in place, gripping it by the bead as a tire should be handled.

Will carry casings alone, or casings on Demountable Rims. Avoids all contacts or chaffing. Combines places for lamp and number plate.

Quickly attached to frame by one "U" bolt. Small "L" on arm catches on cross frame.

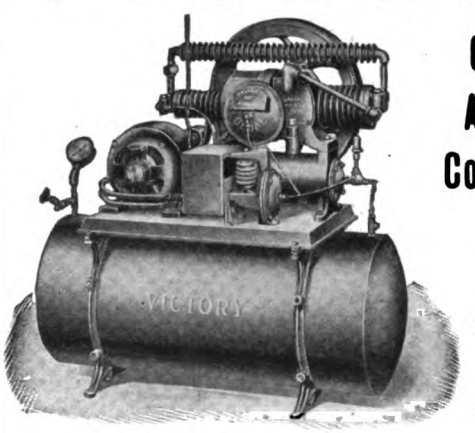
PRICES FOR ALL FORD CARS

No. 150—Single—Plain Rims	$5.25
No. 152—Single—Firestone Rims	5.25
No. 252—Double—Plain Rims	7.85
No. 254—Double—Firestone Rims	7.85

NEW ERA SPRING & SPECIALTY COMPANY

1177 Hamilton Ave., Grand Rapids, Michigan

VICTORY



Complete Automatic Compressor Unit

ACE OF ACES

GLOBE TYPE B—Original Two-Stage Garage Compressor. Saves power, time and money.

WONDERFUL new system of AUTOMATIC LUBRICATION insures Oil-Free Air, provides abundant and continuous lubrication and wastes NOT AN OUNCE of lubricant.

Automatic Pressure Unloader protects belts, fuses and motors.

15 Sizes and Styles of LAST WORD Equipments from which to select.

Desk C.

Globe Manufacturing Co., Battle Creek, Mich., U.S.A.

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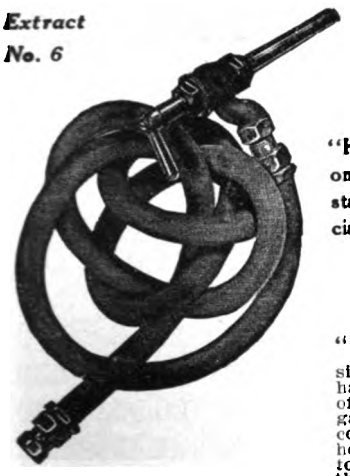
What Garagemen Think About "TRIPLEXD"

Extract No. 6



Before

"Had considerable trouble on account of leaks constantly developing, especially around the couplings."

and After

"I HAVE been using a length of this hose since June 18, 1917, and have averaged at the rate of about 2500 gallons of gasoline per month; in comparison with other hose, I must say in justice to Triplexd, that none of the others have stood up as well; I have had absolutely no trouble, and from appearances expect none for some time to come."

William Rapp, Nelson Park Garage on old Albany Post Road, Ossining, N. Y.

Watch from Month to Month for *What Garagemen Think.*

TRIPLEXD

AN GASOLINE HOSE AN

METAL HOSE & TUBING CO.
INCORPORATED
227 Tillary St.
BROOKLYN, N. Y.

Airplane Carburetion for Automobiles

Satisfactory Performance Guaranteed

Dependable Because of Simplicity

Model "P" Carburetors with airplane principle, for Dodge, $18.00. For Maxwell, $15.00 For Ford cars and trucks, $10.00

VAN BRIGGLE CARBURETOR and SHOCK ABSORBERS

Van Briggle Shock Absorbers Catch the Rebound Easy to Install

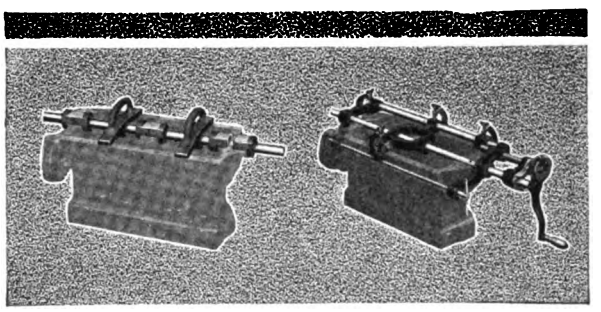
Price per set, f. o. b. Indianapolis, $18.00

Van Briggle Motor Device Co.
INDIANAPOLIS, U. S. A.

KEEP THE BODY OF YOUR CAR *SHINING* LIKE A MIRROR

No Grease to Catch Dust
Does Not Coat the Finish
Best Furniture Polish Made
Use With Spray if Desired

International Metal Polish Co.
INDIANAPOLIS, INDIANA



Universal Main Bearing Replacement Equipment for Ford "T" and Fordson

The finished bearings are accurate in diameter, thickness and alignment.

Why depend on someone else to do this work? Hundreds of Dealers and garage men are increasing their business by replacing bearings with these tools in their own shops.

Write us today for more information regarding this equipment.
See Current Issue Automobile Trade Directory for the list of jobbers carrying stock.

THE UNIVERSAL TOOL CO., INC.

Manufacturers of Universal Cylinder Reboring Tool and Ford and Fordson Main Bearing Replacement Equipment

DETROIT, MICH

TRADE MARK U REGISTER PENDING

U. S. and Foreign Patents Pending

UTCO PRODUCTS

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SPECIAL SALE—AUTO TIRES

GUARANTEED 4000 MILES

If a tire fails to give service of 4000 miles we will replace it with another tire for ½ price marked below:

Size	Plain	Non-Skid	Tube	Size	Plain	Non-Skid	Tube
28x3	$6.45	$7.45	$2.30	34x4	$14.95	$15.95	$3.45
30x3	7.45	8.35	2.15	35x4	15.45	16.95	3.55
30x3½	8.95	9.95	2.40	36x4	15.95	17.50	3.60
31x3½	9.45	10.45	2.45	34x4½	18.45	20.45	4.30
32x3½	9.95	10.90	2.50	35x4½	18.95	20.95	4.40
34x3½	10.45	11.30	2.80	36x4½	19.45	21.45	4.45
31x4	13.45	14.60	3.20	37x4½	19.95	21.95	4.50
32x4	13.95	14.95	3.30	35x5	20.95	23.45	5.15
33x4	14.45	15.45	3.35	37x5	21.95	24.75	5.30

Deduct 2 Per Cent. When Check or Cash Accompanies Order.
10% Deposit Required on All C. O. D. Orders.
We Carry a Full Line of New and Reconstructed Tires.

ATLAS TIRE COMPANY,

Tires and Tubes Shipped Express Prepaid

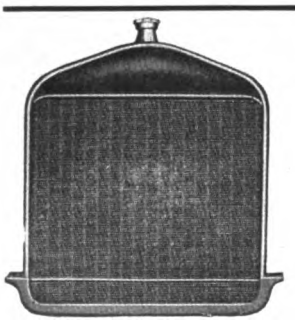
Telephone Poplar 2970

822 BROAD STREET, PHILADELPHIA, PA.

Government Sale of (New) Goggles, 65,000.

Sealed Bids will be opened 10 A. M. August 18, 1919, at Zone Supply Office, Surplus Property Division, 21st St. and Oregon Ave., Philadelphia, Pa. Particulars, special bid forms may be obtained at above office or Zone Supply Offices, attention Surplus Property Officer, following cities; Boston, New York, Baltimore, Newport News, Atlanta, Chicago, St. Louis, New Orleans, San Antonio, Omaha, El Paso, San Francisco. Refer to S. P. D. No. 707 GS.

RADIATORS *for* FORDS



BRASS TANKS

SPECIAL BOTTOM TANK

Will fit any model

Write today

Bremer Manufacturing Company
Canal and Forquer Streets, Chicago

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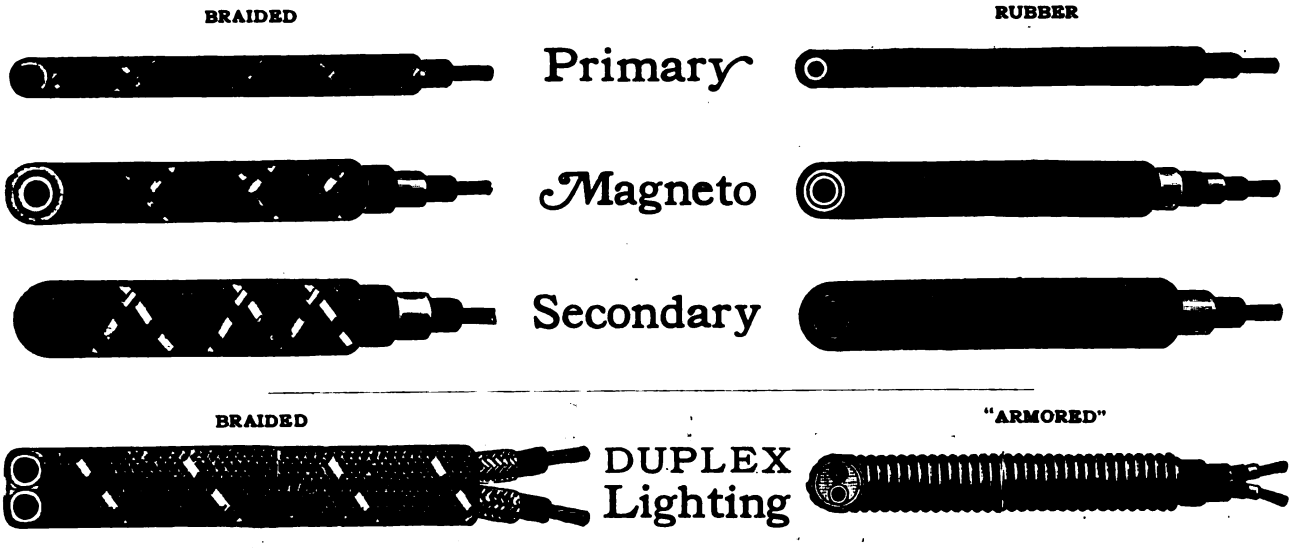
AMERICAN-STANDARD

IGNITION CABLES

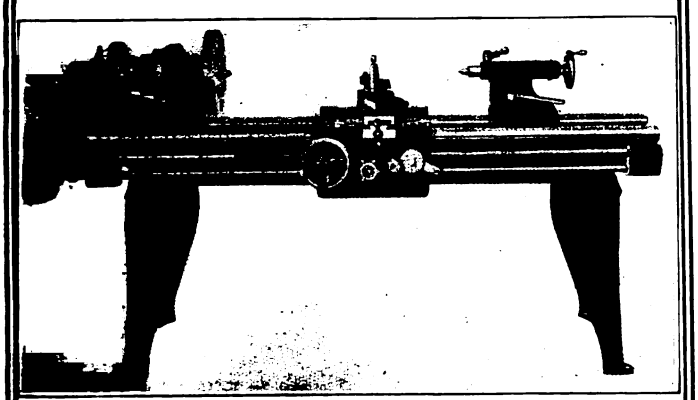
BRAIDED RUBBER



BRAIDED "ARMORED"

WE CAN SHIP FROM STOCK

27 Warren St. **J. H. FAW, Inc.** New York



UNION LATHES

MANUFACTURED BY

UNION LATHE WORKS, York, Pa., U. S. A.

This lathe is especially designed for garage and machine shop work. It is well constructed and can be obtained at a moderate price.

Obtainable in various sizes with equipment of large and small face plate, follow rest, tool post, center, double friction counter shaft (see cut) rod and screw feed and all necessary change gears, wrenches, etc.

Write for complete descriptive literature and prices.

THE UNION LATHE WORKS
York, Pa., U. S. A.

Wanted: Distributors

Manufacturer of well known and nationally advertised automobile shop equipment will consider applications from jobbers and distributing agencies for exclusive territorial rights. This is one of the easiest selling and most profitable selling lines open today, and the opportunity is offered only because of a change in selling policy. In answering please state lines you are now handling on a similar basis, number of salesmen and territory covered. None but high grade connections will be considered, and inquiries will be treated as confidential. Address

John H. Thomas, Sales Manager

416 Anisfield Building, Cleveland, Ohio.

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NEW LOWERED PRICES NOW IN EFFECT
Write today for information

Battery charging makes the Biggest, Safest Profits in Your Garage if you use the

HB 32-Battery Charger

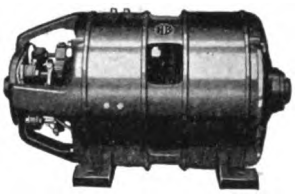
For *BIGGEST PROFITS AT LEAST EXPENSE*, use HB Charging Equipment. Actual letters from HB Users in our files show that they make $100 to $450 clear profit each month. It costs them from 12c to 15c to charge batteries and the owner pays from 75c to $1.50.

The Biggest Money-Maker in Your Garage.
Recharges 1 to 32 six-volt batteries or their equivalent at one time. HB Automatic Voltage Control enables you to recharge batteries of different voltage at the same time. Tapering charge puts run-down batteries in perfect condition. Easily installed and operated, requiring no electrical knowledge to handle. First cost your only cost. No burn-outs, expensive renewals, or delicate parts. Simple, sturdy, absolutely dependable, ready for use 24 hours every day.

Small Payment Puts This Money-Maker in Your Garage on Absolute Money-Back Guarantee.

Balance on easy monthly payments. Start your battery business on a profit making basis NOW. Mail this ad with your letterhead today for full information. You run absolutely no risk. We take all the risk.

HOBART BROS. CO.
Box C7 Troy, Ohio
Successful Manufacturers Since 1893

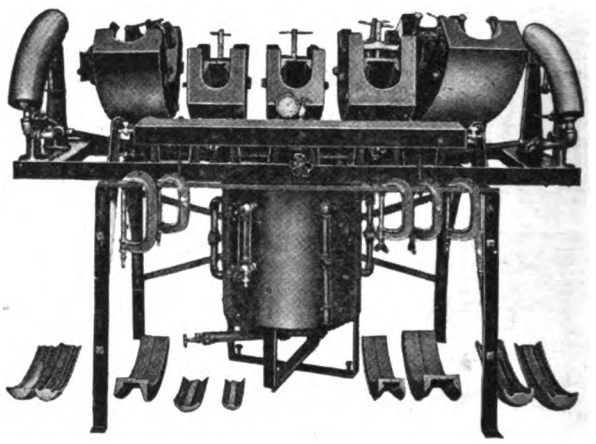


Write for information on HB Ball-Bearing Motors and Generators.

SUCCESS! MONEY! IMMEDIATELY!!!

Open a Tire Repairing Shop—business pours in. Vanderpool Vulcanizer (5 Cavity) has capacity of $100 worth of work a day. We are the pioneer manufacturers of the Dry Cure Vulcanizer—the only vulcanizer that guarantees absolutely PERFECT work.

This field is not crowded like others. Write today for FREE TIRE REPAIRING MANUAL—tells you everything necessary to know. Don't delay. Now is the time to start in the most profitable business on earth—TIRE REPAIRING.



In answering address Dept. V 12.

WM. VANDERPOOL CO., Springfield, O.

ATTENTION! Ford and Fordson Dealers

The FAIRBANKS Company O.K.

Automobile and Service Station Equipment sold under "The Fairbanks Co. O. K."

Burning-in and Running-in Machines for the Ford Cars and Fordson Tractors, Motor Stands, Motor Clamps, Piston Clamps, Radiator Test Plugs, Tow Bars, Jacks, Reboring and Rebabbitting Jigs, etc. Our line is complete for all shops, large or small.
Write or telephone the nearest Fairbanks Branch House for complete information.

THE FAIRBANKS COMPANY

Administrative Offices—New York.

BRANCH HOUSES

Albany, Baltimore, Boston, Birmingham, Bridgeport, Buffalo, Chicago, Detroit, Hartford, Newark, New Orleans, New York, Paterson, Philadelphia, Pittsburgh, Providence, Rochester, Scranton, St. Louis, Syracuse, Utica, Washington, D. C., London, England, Birmingham, England, Havana, Cuba, Glasgow, Scotland, Paris, France

BUNTING BEARING BRONZE B.B.B. CO. No 1

Same quality as our finished bronze bushings and bearings used by manufacturers the country over.
Your repair stock is not complete without it.

All leading jobbers Ask for catalog N

The Bunting Brass & Bronze Co.
727 SPENCER STREET
TOLEDO, OHIO.

CORED BARS

STOCK SIZES

PIECE NO.	Outside Diameter	Inside Diameter	Length	Approx. Weight
A	1	½	12	2
B	1¼	⅝	12	3½
C	1½	¾	12	5
D	1¾	¾	12	7
E	2	1	12	8½
F	2¼	1¼	12	10
G	2½	1½	12	11½
H	2¾	1¾	12	12¾
I	3	2	12	13¾
J	3¼	2¼	12	15½
K	3½	2½	12	17
L	4	3	12	21
M	4¼	3¼	12	20

BURKE AUTOMOBILE PRODUCTS

THE BURKE Condenser

Little Giant Model

Replaces the radiator cap; prevents evaporation of water or anti-freeze mixture from cooling system. 1,000 miles on same water. Distills water continuously. Protects passages of cooling system from corrosion and scale. Makes use of alcohol as anti-freeze medium practicable and inexpensive.

Write for Literature.
Burke Automobile Products.

Ford Model

AUTOMOBILE DEVICES COMPANY
PHILADELPHIA, U. S. A.

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GOGGLES FOR WELDERS.

Fitted with "Essentialite" Lenses.

THE FIBRE WELD.

Frame: Vulcanized fibre, non-conductor of heat and electricity, non-inflammable and infusible not affected by moisture, leather center, ventilated side pieces, adjustable elastic head band. We have demonstrated conclusively that with these lenses we vanquish the so-called "fatigue-weariness" and headaches caused by Ultra Violet and Infra Red rays. Circulars and prices at request. Price each, prepaid, $3 pr.

Manufactured by

CHICAGO EYE-SHIELD COMPANY

2800 Warren Ave., Chicago, Ill.

SCAIFE COPPER-BRAZED AIR TANKS

are positively guaranteed to hold air indefinitely without loss of pressure.

(117 years old. Founded 1802)

WM. B. SCAIFE & SONS CO.

First Nat. Bank Bldg., Pittsburgh, Pa.
26 Cortlandt St., New York, N. Y.
38 So. Dearborn St., Chicago, Ill.

SCAIFE GASOLINE STORAGE OUTFITS

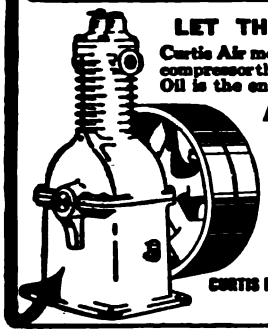
ARE IDEAL FOR PRIVATE GARAGES.

Send for catalogue.

CURTIS AIR FREE FROM OIL

MOTORISTS Have CONFIDENCE IN THIS SIGN

LET THEM FIND IT AT *YOUR* DOOR.



Curtis Air means more mileage, because Curtis is the only air compressor that can't flood cylinder with more oil than it can use. Oil is the enemy of rubber. It rots tires, causing blow-outs.

A Curtis Compressor is Dependable

requires practically no attention, costs very little, quickly pays for itself, always delivers the kind of cool, clean air that makes tires last longer.

5 sizes and 125 combinations. Write for full particulars and let us tell you why the Curtis will prove to be your best investment. Ask your jobber for prices—but be sure and mention Curtis—the name is your protection against substitution

CURTIS PNEUMATIC MACH. CO. 1621A Kienlen Ave. St. Louis, Mo.
Branch Office: 531A Hudson Terminal, New York

BRAKE LINING

2 inches wide by 3-16 inch thick

Per foot . . .	40c
Per 100 feet . .	38c per foot
Per 500 feet . .	35c per foot
Per 1000 feet or more,	30c per foot

MAKES:

J. M., Garco, Stanwal and Stabestos
(State 1st, 2nd and 3rd choice)

Bargains in other sizes, also bargains in axle shafts for Overland, Chevrolet and Maxwell. Send for complete list.

S. BREAKSTONE 1326 Michigan Avenue Chicago, Ill.

GENEROMETER

The new and practical generator testing instrument. It will locate shorts and grounds in generator armatures where most of the trouble is of a Lighting System. You will need this instrument if you want to be 100% efficient in your electrical repair work. Further particulars upon request.

PAUL G. NIEHOFF & CO., INC.
232 E. Ohio Street, Chicago, Ill.

Niehoff Laminated Magnetizer

This is the most scientific and practical Magnetizer ever constructed. It will magnetize any size magnet from a Ford to all the various other magnets used on the different cars today. Due to the fact that it generates an enormous amount of magnetism, with a pulling power of about 75 pounds, you can more quickly remagnetize a magnet, and, therefore save much current. All magnetizers are subject to considerable wear. The faces will wear down according to their use. The top pieces of our Magnetizer are especially hardened and also detachable so that when worn down they may be replaced at a very small expense. We have two types: one for 6 volt storage battery and another for 110 volt D. C. current. Write for further information.

PAUL G. NIEHOFF & CO., INC.
232 E. Ohio Street, Chicago, Ill.

"The Most Trustworthy TIRES Built"

THE OLDFIELD TIRE COMPANY
BARNEY OLDFIELD, President
CLEVELAND, - - OHIO

NEW DEPARTURE BALL BEARINGS

Strength
Stamina
Service

The New Departure Manufacturing Co., Bristol, Conn.
Conrad Patent Licensee

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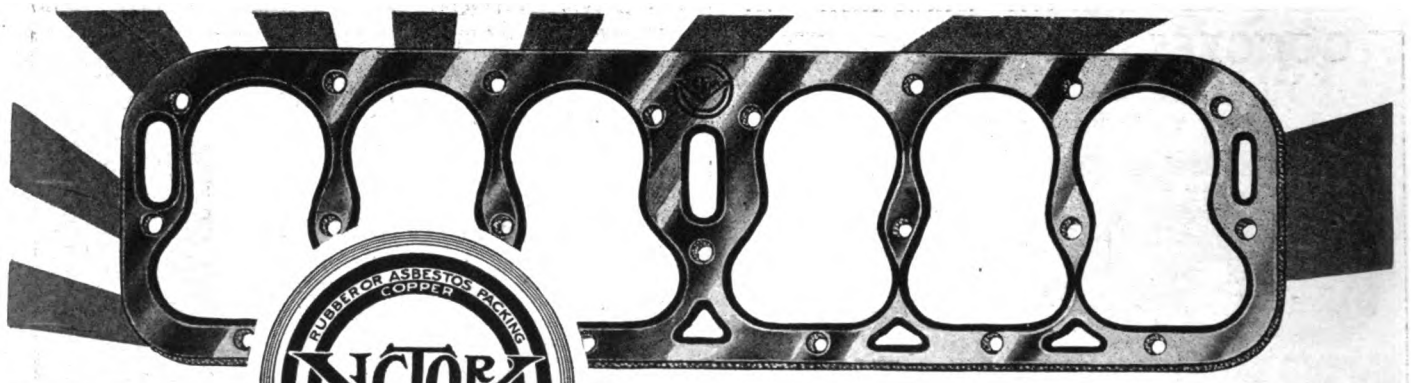


RUBBER OR ASBESTOS PACKING COPPER
VICTOR
GASKETS
TRADE MARK REG. U.S. PAT. OFF.

Victor Gaskets Set a Standard in Quality & Service that Counts

Dealers, Garage and Repair Men

For repair and replacement work, to be sure of a dependable, durable job that will save your customer money and annoyance, use Victor Gaskets. Made from pure Lake Superior Copper and highest quality asbestos. Absolute insurance against leaks and blowouts. Used in almost every make of automotive vehicle. We can ship gaskets for new and obsolete model engines at a moment's notice, because our big, modern plant carries complete stocks. Order Victor Gaskets through your jobber.

VICTOR MFG. AND GASKET COMPANY

World's Largest Gasket Manufacturers TROY AND TWENTY-FIRST STREETS, CHICAGO, ILL.

Shackle Bolts
Tie Rod Bolts
and Bushings

Steering Knuckle Bolts
Piston Pins
Axles and Cones

THE ORRELL MFG. CO.

67 Hampden Street **Boston, Mass.**

Screw machine products for Dodge, Overland and Hudson cars. We are very pleased to take excellent care of the smaller dealer and repair man to whom we allow very generous discounts.

SPECIAL FOR THIS MONTH

Highest grade fibre pinions, No. 1, No. 2, No. 3—5 cents each, any quantity.

Stewart type speedometer shafts, complete—$1.25 each, any quantity.

IF YOU ARE A DEALER SEND FOR "The Little Salesman"

Our illustrated, confidential Net Price List of

AUTO SUPPLIES

It's Free!

Make Money on Old Fords by equipping them with Fidelity bodies, stylish and medium priced club roadsters, speedsters, etc., shown in "The Little Salesman."—WHOLESALE ONLY!

NEW ENGLAND MILLS CO. 1219-1221 Michigan Avenue **CHICAGO**

$100.00 A WEEK

We want at least one well-acquainted ambitious driver in every locality to demonstrate and sell a wonderful new puncture-proof tire. **Givens Beadless Tires** cost only half as much, yet guaranteed

5000 Miles Puncture-Proof

They're also oversize, better looking and easier riding. We help you establish a substantial flourishing business of your own, the weekly profits from which will amaze you. We show you how and give you every help. If you are ambitious to build a big business of your own, and are now making less than $100 a week, write or wire at once.

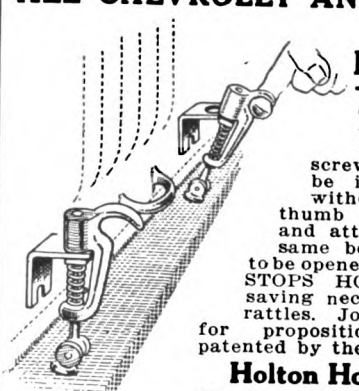
Givens Consolidated Rubber Co.

217 Second St., San Francisco.

ALL CHEVROLET AND BRISCOE CARS

NEED A SET OF

Holton Hood Clips



This is a spring clip that takes the place of those slow, troublesome thumb screws on engine hood. Can be installed in one minute without tools by removing thumb screw from swing bolt and attaching HOLTON clips to same bolts. Enabling the hood to be opened and closed in one second. STOPS HOOD RATTLES, a time saving necessity, never slips, never rattles. Jobbers and dealers write for proposition. Manufactured and patented by the

Holton Hood Clip Company

275 Jefferson Ave., East, Detroit, Mich.

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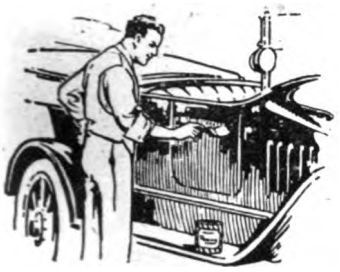
PANVAR



SELF LEVELING RE-FINISH FOR AUTOS THAT HAVE BECOME DULL and SHODDY

It will make any car with original paint in fair condition look like new. Recoating with Panvar lasts as long as varnish, protects and is wonderfully lustrous. It is self leveling and dries perfectly over night.

Just As Good On Seats, Top and Plated Parts Do Not Confuse Panvar With Varnish. Its Different.

Panvar is prepared for cars where ground paint is in fair condition, but varnish has become dull and needs livening up. Such cars anybody can restore to look like new in an hour's time. If there are bruised places in the ground coat of paint, buy a tube of our FIX-A-MAR color to touch up the marred part, at $1.00 per tube, delivered: 12 colors, white and black.

PANVAR ADDS $150 TO THE LOOKS OF ANY CAR

Two Quarts of Panvar is enough for the largest car. Car owners want something that is economical and lasting. Garagemen and car dealers can sell and use Panvar. It has proven a big saving on thousands of cars. It eliminates costly repainting and affords full satisfaction.

$1.50 $5.50
Send 1 Qt. 4 Qts. Delivered

25c per quart additional to points west of Rocky Mountains.

Small test sample for 25c.

JOBBERS AND DEALERS.

You can make big money selling Panvar. We will help you to do so. **Write today for discounts and sales helps.**

THE PANVAR COMPANY, Inc.

18 Bullitt Bldg., Philadelphia, Penn.

Announcement

Your attention is directed to the JEFFERSON trade mark—the emblem of quality—reproduced above.

All **Jefferson Products** have this trade mark on them—it is a small brass disc, lettered with our name, and means that the article to which it is attached is of genuine Jefferson manufacture—guaranteed unconditionally.

The Jefferson trade mark stands for Mechanical and Electrical Perfection, Dependability and Reliability. It is your protection, as we back, without reserve, the quality of every JEFFERSON PRODUCT.

When you buy Ignition Coils make sure that you get genuine Jefferson Products—the 100% Coils—protect yourself and your customers—demand **JEFFERSON** Coils and do not allow substitution.

A small thing to look for.
A big thing to find.

Jefferson Electric Manufacturing Co.

429 S. GREEN ST. CHICAGO, ILL.

TIRES QUALITY AND Economy for Motorists

Slightly used and factory repaired tires and tubes of the best known standard makes that mean big cash savings for every car owner.

A SATISFIED CUSTOMER IS OUR BIGGEST ASSET, THEREFORE WE MUST SATISFY YOU

Size	Used Tire	New Tube
30x3	$4.50	$1.95
30x3½	5.50	2.30
31x3½	5.75	2.40
32x3½	6.00	2.40
34x3½	6.50	2.60
31x4	7.00	3.00
32x4	7.75	3.05
33x4	8.50	3.25
34x4	8.50	3.40

Size	Used Tire	New Tube
35x4	$8.75	$3.50
36x4	8.75	3.65
34x4½	9.00	4.15
35x4½	9.25	4.25
36x4½	9.50	4.40
37x4½	10.00	4.50
35x5	10.25	4.60
36x5	10.25	4.70
37x5	10.75	4.75

Complete Stock of New Tires

Write for Prices Terms: $1.00 deposit with each tire ordered, balance C. O. D. subject to inspection. Specify style of rim to avoid delay. Although at the above prices these tires bear no mileage guarantee we will make reasonable adjustments should they prove unsatisfactory. All tires sent in for adjustment must be prepaid.

LINCOLN TIRE & SUPPLY CO.

1463 S. Michigan Ave.
Dept. E
CHICAGO, ILL.

TIRES

FINDS ALL IGNITION TROUBLES

Makes car owners and repairers expert trouble finders

UNIVERSAL AND MARVEL SPARK PLUG INTENSIFIERS

Pat. 3-19-'18.

Attached to Plug Stops all Spark Plug Troubles

The spark is always visible. It is a window in the cylinder.
It will make a plug fouled with grease or carbon or that has a broken porcelain, fire perfectly.
When the magneto is not working properly, a wire short circuited or broken, or the battery is out of order, the Intensifier will prove it at a glance and it can be adjusted to overcome almost any ignition weakness.
No more guess work or testing with screw driver or pinchers. The Intensifier shows it all at a glance and what causes it, whether no spark, a loose or broken wire, poor connection or shorted. It will increase the voltage and the spark and make starting easy. Eliminates carbon, adds to power, saves the gas and oil, preserves plugs and will last indefinitely. Almost instantly attached to any screw terminal plug.

Jobbers—Dealers—Distributors

It is a wonder worker, a time, trouble and money saver. Sells at a glance. Thousands in use. It is the original and proven Intensifier. Sold with a money back guarantee if it fails in any particular or to afford perfect satisfaction.

LIBERAL DISCOUNTS. PROMPT DELIVERIES.

Send for complete information.

Universal Manufacturing Company

554 WEST HARRISON ST.
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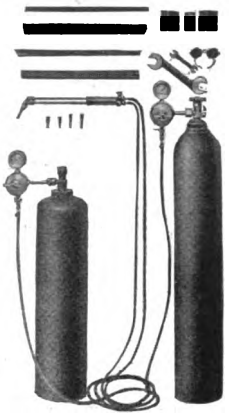
GET A WATERHOUSE WELDING OUTFIT AND WATCH YOUR BUSINESS GROW



Boost your profits—Swing the big profitable welding business to your shop. Thousands of repairers are doing it and most of them use a Waterhouse outfit.

Time is money and a Waterhouse Welding Outfit saves the time as well as labor. It affords utility great enough to meet any shop requirement, yet no shop is too small to own one.

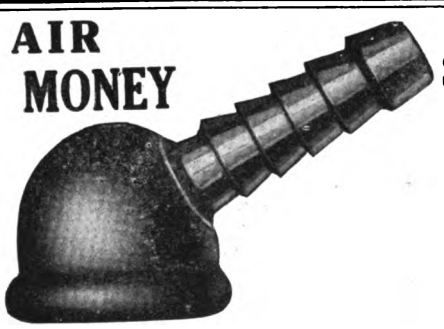
The great difference in welding outfits is all in favor of the Waterhouse. That means quality, utility, long service life, simplicity, dependability, low first cost and the best and most complete welding apparatus ever offered to the trade.

Write for descriptive catalogue, or better still, tell us your requirements. Do it today. We can supply the exact outfit for your needs.

All Waterhouse outfits are guaranteed.

WATERHOUSE WELDING COMPANY, 3 PELHAM STREET, BOSTON, - MASS.

FREE AIR COSTS MONEY



when the customers for whose convenience you provide an air station forget to turn off the flow after they have filled their tires.

Guard against this waste by attaching a

Schrader Universal Inflating Valve

to your air hose.

Thanks to this appliance your bottled air locks itself into the tank the minute it is taken off the tire-valve. You turn on the air by pressing the nozzle of the inflating valve against the tire-valve and you turn it off by removing the device from the tire-valve.

Made to fit any diameter of hose from ¼ in. to ⅝ in.

PRICE $1.50 in U. S. A.

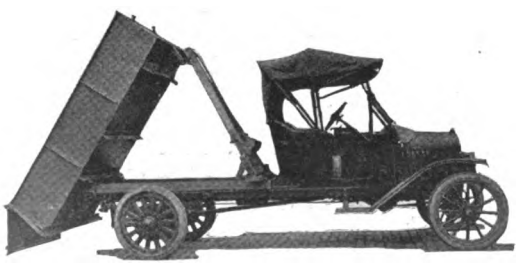
Manufactured by **A. SCHRADER'S SON, Inc.**
800 Atlantic Avenue, Brooklyn, N. Y.

Schrader products were awarded a Grand Prize and two Gold Medals at the Panama Pacific International Exposition. "There's a Reason."

THE PEERLESS HAND HOIST

Single Cable Quadruple Worm Gear Drive.

For Any Make or Type of Truck.



A wonder in efficiency and speed. It will fit any chassis and body. Weighs but 200 pounds. Simple, fool proof, wholly dependable and will last for years in the hardest service.

Any one that can drive a truck can hoist the heaviest load to 30 or 50 degrees in the longest body in less than two minutes. The smaller the body and load the quicker the action.

But two gears are used, quadruple worm and gear (both machine cut) and housed to protect from dirt and dust. The single cable makes an even pull. Compact and can be installed without drilling holes in chassis frame. The body hitch is also furnished.

We specialize in building all-steel bodies for any need.

Write for complete information.

THE AUGLAIZE MOTOR CAR CO.

NEW BREMEN OHIO

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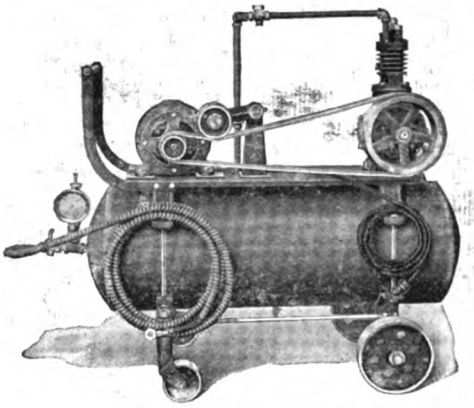
Result of 50 years manufacturing experience.

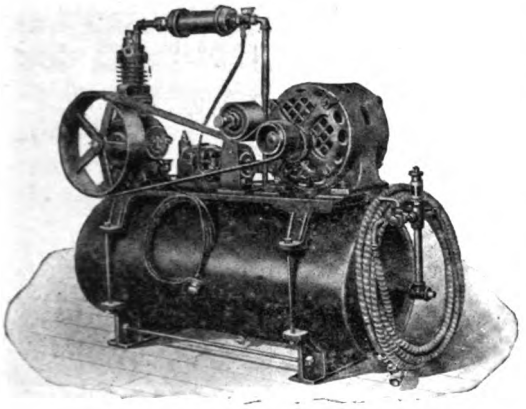
An inefficient air pump makes your air service expensive.
It hurts the quality of your service.
Makes a customer dissatisfied and hurts your business generally.

Install a GARDNER

It will pay for itself in a short time.
It is simple, rugged and efficient.
The fact that many filler stations supplying hundreds of car owners daily use the Gardner air pump is proof that experience had demonstrated it is economical.



GARDNER AIR WAGON



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Made in Single and Two Stage Types

Variety of sizes ***Prompt shipment***

There is a Gardner Air Pump to meet the demands of every garage no matter how large or small.

Ask your jobber for prices.

THE GARDNER GOVERNOR COMPANY

138 Williamson Street, Quincy, Ill.

Garage Department

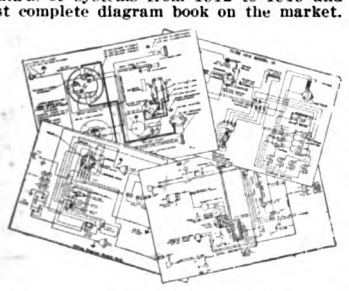
850 WIRING DIAGRAMS

In New Edition of Auto Electrician's Guide

Contains wiring diagrams for every car on the market, including the new 1919 Starting and Lighting Systems for Ford cars, also diagrams for Baker R & L and Detroit Electric and pipe connections for Stanley Steamers. Covers all kinds of systems from 1912 to 1919 and many as far back as 1906. Most complete diagram book on the market.

Highly Endorsed by Auto Mfgrs. Garages and Service Stations

No problem too puzzling if you have the Auto Electrician's Guide. ANY "OLD STICKER" QUICKLY SOLVED with the help of this book. Saves hours of time on both old and new jobs. Impossible for even experts to know all cars, but no car will "stick" you when you have this book.



A practical, easily understood "guide" that will simplify all auto-electric problems and make it possible for you to quickly overcome hundreds of starting, lighting and ignition troubles which otherwise would take hours to solve. Extensively used all over the country. Hundreds of auto experts and repair men depend on it to solve hardest problems. Dozens of letters received telling of its exceptional value.

A Loose Leaf Book

—easy to handle and easy to add new diagrams as issued. Convenient to slip into the coat or car pocket and invaluable as a constant companion to repairmen. Scores of trouble cases quickly and easily corrected with the help of this guide. Send today.

Price $7.50 Postpaid. Money refunded if not satisfactory.

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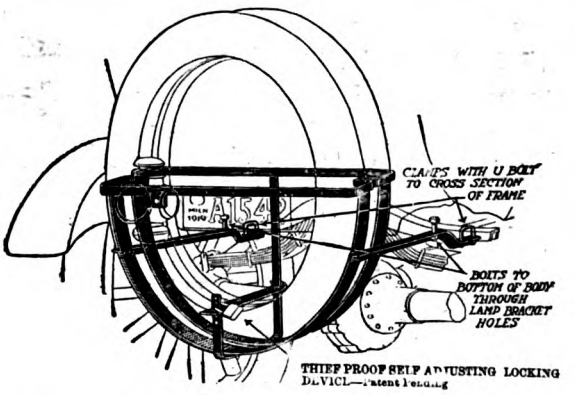

Double Rear Cradle Carrier

HASTINGS TIRE CARRIER

Rigid—Thief-proof. For Ford Cars

Dealers will find a ready sale for this rigid, positively thief-proof tire carrier.
Ford owners have been waiting for a tire carrier that would protect their tires from thieves—one that is simple, easily adjusted and reasonably priced.

Double rear cradle carriers (for 3 and 3½ inch tires), $6.
Single rear, $4.50.
Double side carriers (for 3 and 3½ inch tires), $5.00.
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Send for particulars and discounts.

HASTINGS MANUFACTURING CO.

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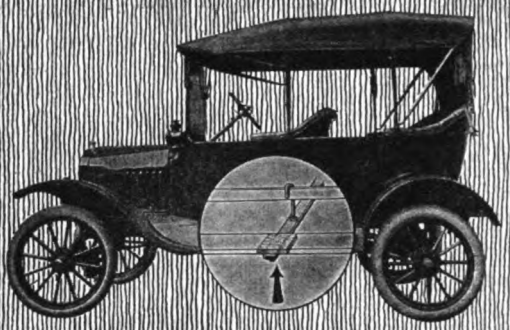

Dow Auto Body Brace

For Ford Cars

A real seller with the jobber and dealer.
Worth its weight in gold to the Ford owner.
Quantity sales with large profits.
Write for quotations and our Agency.

Dow Wire and Iron Works, Incorporated
Louisville Kentucky

DOW LOUISVILLE

BILT-RITE COMBINATION DRILL AND VALVE GRINDER

A device that is as standard, dependable and efficient as any motor.
The constant changes found necessary to make in other types only emphasizes the wonderful service giving qualities of the Bilt-Rite.
Why experiment at your own expense? Why not equip today with the greatest time and labor saving equipment ever offered to repairers. The Bilt-Rite will do the work quicker and better than any other drill or valve grinder. It has every good practical feature found in other combination electrical portable drills and valve grinders. Besides that it has distinctive features that you must have and which are not to be had in other makes.
YET THE COST IS NO MORE.

Any one can do the work any time with a Bilt-Rite. When quality, economy and service count the Bilt-Rite has always proven to be ideal equipment in any shop.

SEND TODAY FOR COMPLETE DESCRIPTIVE CIRCULAR AND TRADE DISCOUNTS.

BILT-RITE PRODUCTS SALES COMPANY
WORCESTER, MASSACHUSETTS

Triangle Tire Patch Makes More Money For Dealers

When you sell a package of Triangle Tire Patch you sell a darn good patch—one that will do the work and bring repeat sales. You also pocket a nice profit, because you save the jobber and salesman profits by buying direct from the factory.

We stand behind this guarantee—your money back if a patch comes off.

There is more money for you in selling this patch and there will be more satisfaction for your customers in using it.

Fire us the coupon below. We'll shoot you the figures.

TRIANGLE RUBBER CO.
Oklahoma City, Okla.

Clip this coupon for profits

TRIANGLE RUBBER CO., Dept. E.
Oklahoma City, Okla.

Send your direct-to-dealer proposition on Triangle Tire Patch to

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ATLANTIC PNEUMATIC GREASE GUN

The Grease Gun is operated with power or foot pump, spare tire or compressed air. It will force the old grease and dust out of joints and fill with new grease.

It is clean in use, saves 90% in time and labor. It never fails to carry the lubricant where needed. Any grade of grease can be used. Capacity 16 oz.

List Price With Filler, $6.00

JOBBERS AND DEALERS: This is the gun that you have been looking for. Prices and discounts at request.

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Works:
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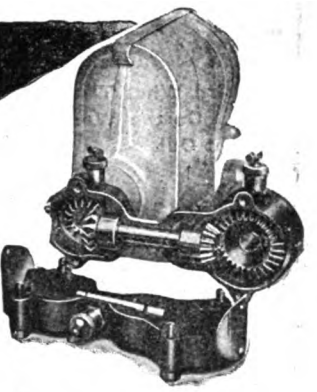
Every Car Needs One



High Tension

MAGNETO ATTACHMENT

For Fords

Magneto ignition in the Ford means quicker starting, increase of power, speed and flexibility—simplified wiring—economy of fuel. It eliminates misfiring, overheating of engine, adjusting of vibrator—clears dashboard of cumbersome coil-boxes—permits use of Ford Generator for lighting.

With the HY-TEN, a Bosch, Eisemann, Splitdorf, Sims, Berling or any other standard magneto is quickly and easily installed on a Ford.

HY-TEN

MAGNETO ATTACHMENT

Simple in construction. Attachment complete includes magneto base, gear housing, gears, spark advance rod, with all necessary bolts and screws.

RETAIL PRICE $25

Liberal trade discounts *A big money maker for live dealers*

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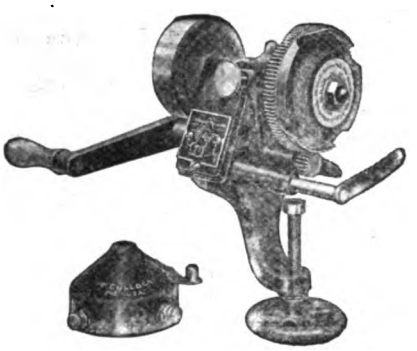
The McCulloch Timer Grinder

THE OLDEST AND MOST ABUSED AND WORN TIMER CAN BE GROUND WITH A SURFACE LIKE GLASS AND EQUAL TO NEW IN LESS THAN THREE MINUTES.



FOR GRINDING THE CONTACTS OF FORD TIMERS.

Made to attach to any bench.

Positive in Action—Anyone Can Do the Work

The McCulloch Timer Grinder is fitted with a special chuck which requires no skill in centering. The grinding stone revolves inside the timer at a high speed while the chuck and timer revolves very slowly around the stone. The adjustment furnished is so accurate that the oldest and most worn timer can be made as good as new.

The Grinder is scientifically and very substantially made and will last a life time. It is guaranteed to give perfect satisfaction and perfect results. All gears are cut from solid steel and lubricators are fitted to all moving parts.

When not in use the Timer Grinder can be instantly removed and a large wheel fitted and used for grinding tools, twist drills, etc.

Tried, tested and proven in Europe for the past three years and extensively used by the War Office of Munitions.

On the basis of estimated work that can be secured and done, the saving in time, material and labor, as well as the first cost, there is no tool in any shop that will earn so constantly or show a greater profit. It is necessary and fitting equipment in any repair shop or service station.

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A. P. McCULLOCH MACHINE COMPANY

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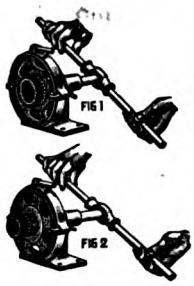
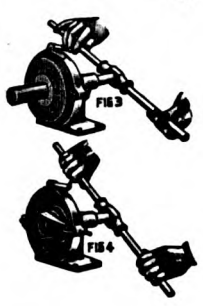
FORD REPAIR MEN

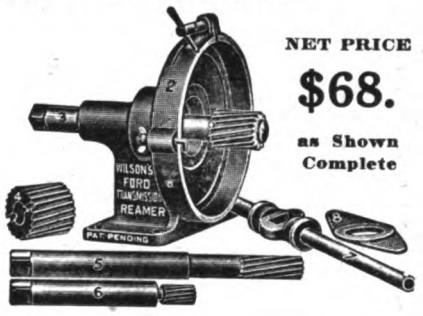
Cut Your Labor Costs to Just One-Third What They Now Cost You by Ordinary Methods and Do the Work Better Than the Best Job You Ever Sent Out.



This great saving of time means a big additional profit, but is now a loss. There is BIG MONEY in Ford repairing if you have efficient tools that save time and eliminate guesswork and experts. The two outfits listed here will save their cost on a very few jobs and enable you to render the quickest possible service to your trade.

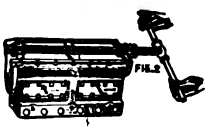
TRANSMISSION REAMING MACHINE reams every bushing in a Ford Transmission to a perfect fit and alignment, so the gears mesh perfectly on their pitch diameter and run without noise or excessive wear. Impossible with any other tool equipment ever offered. **30 Minutes to Completely Overhaul and Re-Bush a Transmission,** making it as good as new. Can you beat it.





NET PRICE
$68.
as Shown Complete

Main Bearing and Connecting Rod Aligning Reamer



30 Minutes to Fit Perfectly All Main Bearings and Connecting Rods.

"A DAY'S JOB DONE IN HALF AN HOUR."

Pilots guide the reamer. No chance to make mistake. Far superior to any other known method. Motors put up this way can be started by hand. I have only a limited supply of this material on hand. Send your order promptly to avoid disappointment. One per cent discount if you mention this magazine. Send for catalogue of other special tools, reamers, etc.

Price $28.

I Make the BEST HONEYCOMB RADIATOR at any price.

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How about the Part of the Car that is out of Grease

Dixon's Lubricant clings to gear teeth when they are not in motion as well as when they are moving.

Ordinary grease slides off the gears when the car is standing, leaving the metal surfaces unprotected when the car starts.

DIXON'S GRAPHITE Transmission and Differential LUBRICANT

protects your gears all the time.

Put Dixon's Lubricant in your customers' transmissions and differentials. They will feel the difference when driving and gear shifting.

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BRUSHES

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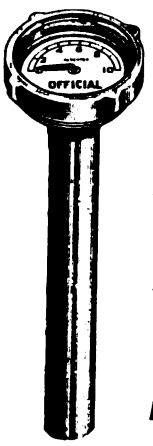
Write for Our No. 6 Car List for Information on New Cars
FOR AUTOMOBILE
STARTING MOTORS AND LIGHTING GENERATORS

THE OHIO CARBON COMPANY

1900 FULTON PLACE, CLEVELAND, O.



THE
"Official" Ford Filler Cap Gauge

USEFUL—ACCURATE—

A dependable instrument that tells the amount of gas in the tank at a glance by lifting off the cushion. It saves time, trouble and worry when desirous to know the gasoline supply.

Is simple in construction—nothing to get out of order.

GUARANTEED FOR FIVE YEARS.

No installing required—takes place of filler cap. Price, $1.25.

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WELDERS!

There's economy in using the best fluxes you can find for particular welding jobs. Insure better and stronger welds, more easily and more rapidly made, by using

ANTI-BORAX COMPOUNDS

For Acetylene, Gas and Electric Welding

Anti-Borax WELDING FLUX

Best on the market for all grades of iron and steel. Weld at lower heat. Leave no scale. They cleanse the molten metal, assist fusion and improve the quality and appearance of your work. Guaranteed to give perfect satisfaction or your money refunded.

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Just slip these steel NU PEP Ring Expanders behind the old piston ring

Nu Pep Piston Ring Expander

Guaranteed to increase compression in any motor

Results: More Power, Less Carbon, Gas Saved

Try a Set at Our Expense SEND NO MONEY. Use Them One Week—pay if satisfied—return if not

4-cylinder set $2.00
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MENTION CAR

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Dependable Garage Supplies

Wire Solder

This solder can be depended upon for service. It flows easily and is economical in use. We can supply all grades.

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Seamless Brass and Copper Tubing of uniform thickness, free from all defects detrimental to strength. All lengths and sizes.

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Our "Silver Genuine" and Universal Bearing Metals will solve your bearing problems. "Silver Genuine" is unsurpassed as a quality bearing metal and can safely be relied upon for duty.

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Black and Galvanized sheet steel in all sizes and gauges. Large stocks always on hand.

"M & E" Grease Cups

(Pat.)

The tops will not rattle off from vibration. Keeps grease free from grit and dust.

Kindly mark your inquiry for Dept. 2

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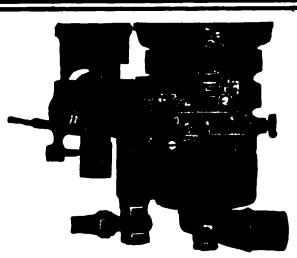
A quality magazine, with prestige and circulation that brings results to advertisers.

TIMES BUILDING
PAWTUCKET, R. I.



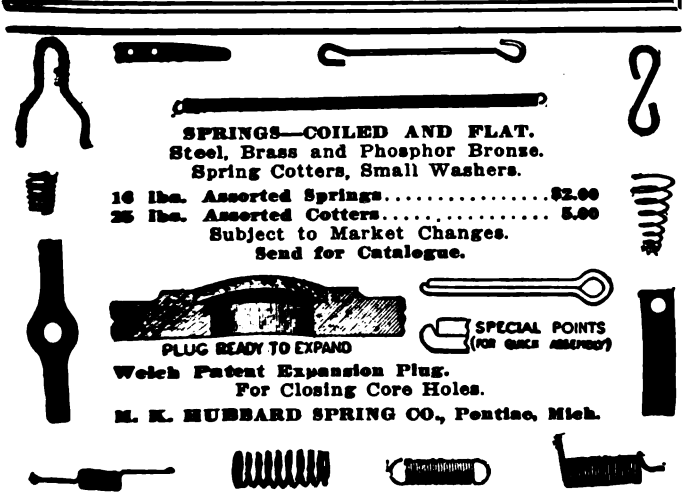
YOUR CUSTOMER HAS BEEN LOOKING FOR SUCH A CARBURETOR FOR A LONG TIME

More Mileage—More Power—More Speed

Get him to try it for 15 days. Satisfaction guaranteed.

WEBBER MANUFACTURING COMPANY

Factory: 66 Stanhope Street, Boston, Mass. New York Branch: 1765 Broadway



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Steel, Brass and Phosphor Bronze.
Spring Cotters, Small Washers.

16 lbs. Assorted Springs..... $2.00
25 lbs. Assorted Cotters..... 5.00

Subject to Market Changes.
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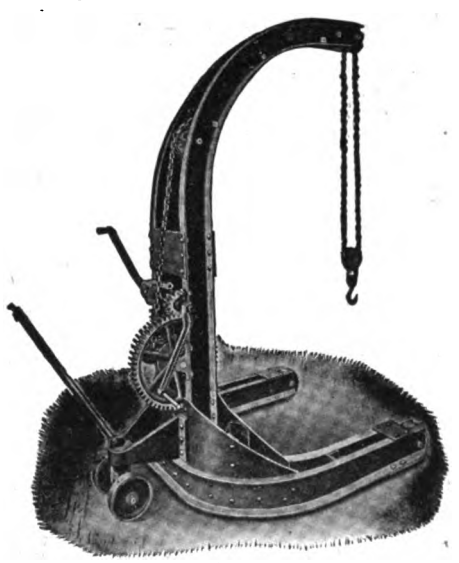
SPECIAL POINTS (FOR CASES REQUIRED)

Welch Patent Expansion Plug.
For Closing Core Holes.

M. K. HUBBARD SPRING CO., Pontiac, Mich.



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"LAFAYETTE PORTABLE STEEL CRANE"

The war is over and we are ready again to fill orders promptly. Labor and materials are 100% higher than pre-war. Our advances are only 50%. It is steel. It will not break. Roller bearings. Low center of gravity and will not upset. Double locked. It is safe. It is a heavy, strong machine for heavy, rough work. It won't wear out in 100 years. For the thousands in use we have not furnished $100 worth of repairs in seven years. It will always invoice at cost. It is in every state and most foreign countries. The only successful steel crane made and standard everywhere. It saves its cost in a short time. No first class garage or shop is without them and none other should be. For sale by jobbers everywhere. If the jobbing men who call upon you do not have it listed, write direct to the manufacturers.

LAFAYETTE ENGINEERING COMPANY
LAFAYETTE, INDIANA.

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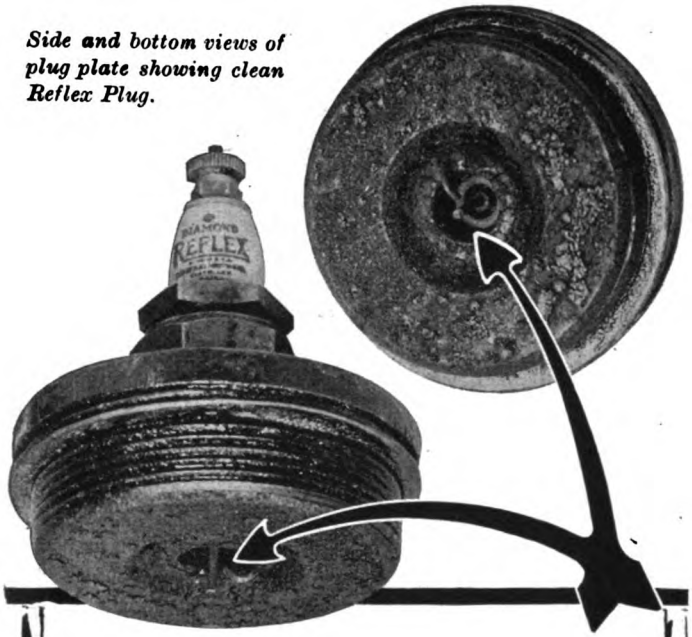
Side and bottom views of plug plate showing clean Reflex Plug.



It took a Reflex Spark Plug to do this

to **unfailingly** snap spark after spark into the carbon loaded cylinders of the five-ton truck from which this plug plate was taken! Note the **unretouched** photograph—the **clean** points of the Reflex—the dense carbon deposit massed on the plate **completely surrounding** the plug.

This Detroit firm had continual trouble with this truck operated in coal haulage service. The hot gruelling grinds and the necessary heavy lubrication were too hard on plug after plug. Delays were not eliminated until the sturdy Reflex was tried. *And now, every truck of their big fleet is Reflex equipped.*

The cromite war service porcelain and non pit electrode construction of Reflex plugs gave just as trouble-free service in thousands of White Trucks in the war zones. It is this Reflex feature which insures an absolutely dependable ignition unit for your trade whatever the engine or whatever the work. The war and commercial record of Reflex plugs takes the uncertainty out of selling them. Order from your jobber—or us direct if he is not stocked.

The Reflex Ignition Co.
Dept. A 2 **Cleveland, U. S. A.**

REFLEX SPARK PLUGS
KEEP THE CAR ON THE GO!

The Accessory and Garage Journal
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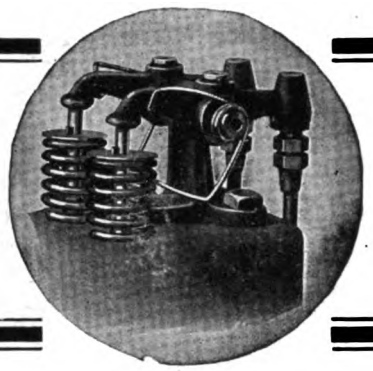

STOP THAT NOISE!

caused by loose action of push rods and rocker arms in

BUICK CHEVROLET

and other valve-in-head motors

with

K H K Valve in Head MOTOR SILENCERS

This attachment is guaranteed to eliminate from 75% to 90% of the noise in the valve action of Buicks and Chevrolets; takes up the play in the push rods and rocker arms and holds the cam rollers snugly against the camshaft.

Nothing Else Like It

K H K Motor Silencers have successfully solved the problem of stopping that clicking noise in valve-in-head motors. There's no other attachment of this kind on the market. Every owner of a Buick or Chevrolet motor appreciates the value of this attachment the moment they see it.

Satisfaction of Money Back

A written guarantee that K H K Motor Silencers will eliminate from 75% to 90% of the noise caused by loose valve action in Buick or Chevrolet motors goes with each set. K H K Motor Silencers are further guaranteed against breakage for six months.

Notice to Dealers

The overwhelming demand for K H K Motor Silencers tells the true story of their success. They sell on sight. We've got a very attractive proposition for the right kind of dealers. List prices—for Buick 6, **$3.00**; Buick 4 and Chevrolet, **$2.25**. Liberal dealers' discount. Sample sent C. O. D. on request.

KAY H. KAY COMPANY

966 Woodward Avenue DETROIT

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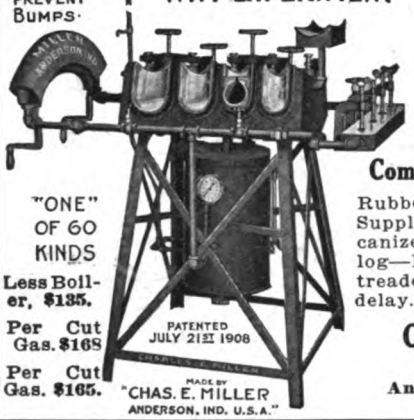
INSULATED AIR-COOLED FLANGES PREVENT BUMPS.

USE MILLER'S WHY EXPERIMENT



"ONE" OF 60 KINDS

Less Boiler, $135.

Per Cut Gas. $168

Per Cut Gas. $165.

Extra Ply Tires, Tubes, Vulcanizers

60 kinds.

6 kinds Wrapping Machines—Tire Building Stands—Air Pumps—Repair Stocks—Reliners—Steam Boilers.

Complete Tire Shop Outfits

Rubber Workers Tools and all Supplies—Boot and Shoe Vulcanizer—FREE 84-page Catalog—Four Cavity Ribbed Retreader. Write today. Don't delay.

CHAS. E. MILLER

1402 Meridian St.,

Anderson, Ind. U. S. A.

TANKS

The tightest, safest, strongest tank it is possible to construct by any known method. Process originated by us over twenty-five years ago.

We also make a special portable emergency tank for filling tires. Throw it in your emergency car and take it with you.

Gasoline and Oil Storage Tanks and Pumps

AIR-TIGHT STEEL TANK CO.

Main Office and Works

PITTSBURGH, PA.

Guaranteed Bearings

We Exchange Rebuilt Bearings for old or worn ones. BILODEAU BALL BEARING WORKS

In Order to Obtain

EFFICIENCY and ECONOMY

in Bearings, send your worn bearings to us for repairs. We will rebuild them, make them as good and better than new at a fraction of the cost of new bearings.

SATISFACTION GUARANTEED.

Garage and Repair Men cannot afford to miss this splendid service. No delay. We carry a big stock of Rebuilt Bearings to exchange for worn ones. Catalog sent and discounts quoted on application.

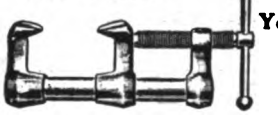
BILODEAU BALL BEARING WORKS

66 Stanhope Street, BOSTON, MASS.

KEEP SPRINGS GREASED

KNOWLSON SPRING SPREADERS

No. 1. $1.75



Both Guaranteed.
Either or Both Delivered.
Your Money Back if You Want It.

They Fit Any Spring. Easy to Operate. Both Drop Forged.

Nickel-plated and polished.

100% EASIER RIDING.

SQUEAKING STOPPED.

Spring Breakages Eliminated.

Use a Heavy Grease (not oil) for real results.

DON'T RUIN YOUR SPRINGS BY NEGLECTING THEM!

No. 3. $1.25

Gun metal yoke, screw and handle nickel.

At your Dealers, or Sent Direct.

SPRING LEAF LUBRICATOR CO., Dept. 4, Ann Arbor, Mich.

The MANLEY GARAGE AND SHOP EQUIPMENT

Every garageman and repairman should get our catalog. You'll find in it just the time and labor savers you need, and their prices will astonish you by their moderateness.

Send for your copy of this catalog today

THE UNITED ENGINE & MFG. CO.

Hanover, Pa.

Your Prospective Customers

are listed in our Catalog of 99% guaranteed Mailing Lists. It also contains vital suggestions how to advertise and sell profitably by mail. Counts and prices given on 9000 different national Lists, covering all classes; for instance, Farmers, Noodle Mfrs., Hardware Dirs., Zinc Mines, etc. *This valuable reference book free.* Write for it.

50¢ Saves Dollars on Your Purchases

Get several quotations on what you buy. It will save many dollars. For 50c (coin or stamps) we will send a few names of manufacturers, jobbers, dealers, or individuals who sell what you want to buy.

ROSS-GOULD Mailing Lists St. Louis

For sale by accessory and hardware dealers or by MAIL POST-PAID 50c EACH

RAIN-SNO CLEAR VIEW WINDSHIELD CLOTH

PREVENTS ACCIDENTS

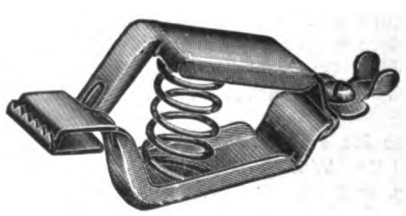
Just RUB IT OVER THE GLASS and RAIN or SNOW cannot collect to obstruct the vision.

INSIST UPON THE "RED CLOTH"

Which is guaranteed to give continuous use for one year or money refunded. Made only by

SUFFOLK MANUFACTURING CO., INC., DEPT. D.
60 LONG WHARF BOSTON, MASS.

UNIVERSAL BATTERY CLIPS



Offer a quick and ready means of connecting storage batteries for charging. Simply fit your connecting cords with these clips and snap them over the battery terminals.

No. 21-A—lead plated—1½" spread of jaws.

Sample mailed postpaid for 15c in stamps.

Single Lots, Each 20c. Lots of 10, Each 15c.
Lots of 100, Each 12½c.

R. S. MUELLER & CO., 431 High Avenue, Cleveland, O.

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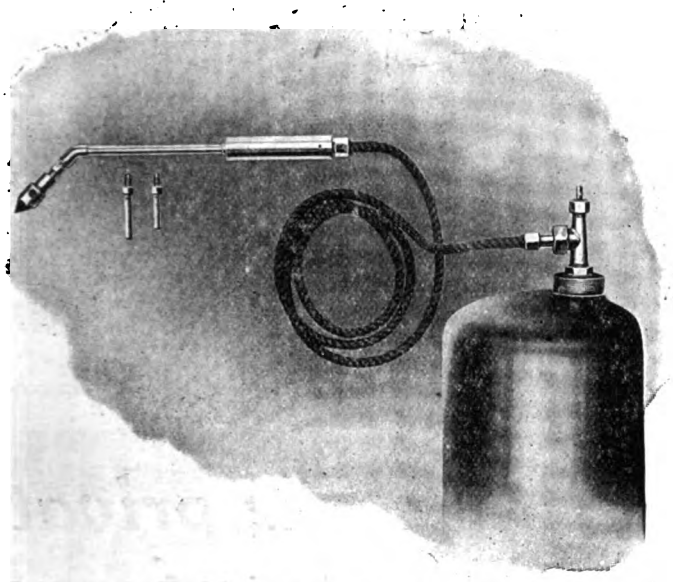
If It's DYER, It's Right!

that is why hundreds of garage and repairmen are using Dyer welding, cutting, carbon removing, lead burning and brazing-soldering apparatus.



Style A Acetylene Soldering and Brazing Outfit.

This torch is used on any size acetylene tank working on the principle of a Bunsen burner. Soldering irons are heated instantly and kept at right temperature while working. The range of work is large, including lead burning and aluminum soldering. Gas consumption is very low. Outfit includes torch, 3 open flame tips, 1 standard soldering copper, 1 special square copper, 6 feet of hose and Prest-O-Lite connection.

The style A outfit which includes all the items shown in the cut except the cylinders, was especially designed for the garage or small repair shop. The welding torch is standard, covering a wide range of work. The regulators and gauges are the same as used on the large outfit. Carbon gun is of the popular pistol grip, trigger control type. The outfit is light and may be easily packed and used in emergency work.

Oxy-acetylene apparatus is very efficient for frame straightening, for heating and for brazing. Your jobber stocks, catalogues or can immediately get Dyer Apparatus.

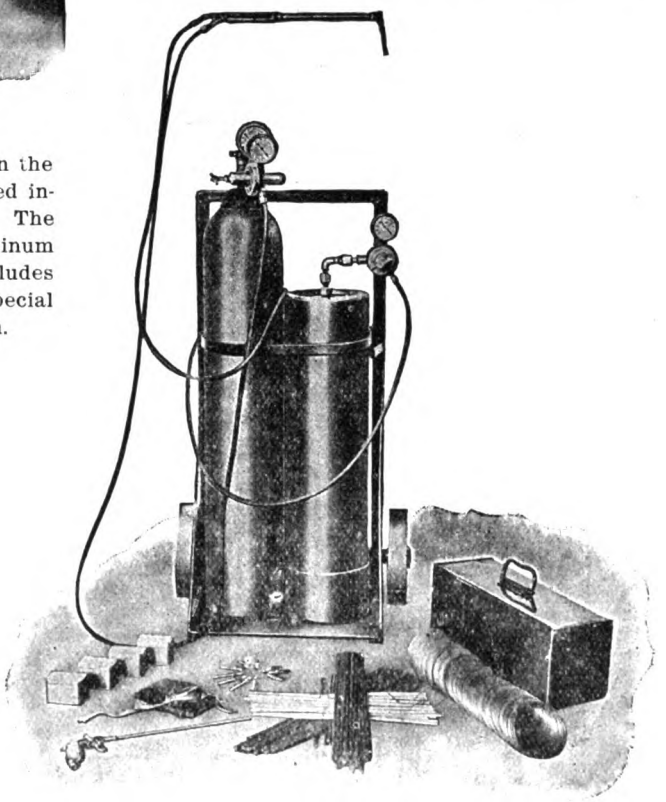
Prices Very Attractive.

It is lightly and simply designed to give the highest efficiency during long, hard service. We guarantee the best quality of materials and workmanship.

Dyer Apparatus is approved by the Factory Mutual Fire Insurance Company and expert knowledge is not required to operate it successfully.

Dyer torches are of the non-flashing, semi-injector type. They practically empty the cylinders and are economical in gas consumption.

Regulators are accurate at all pressures and strongly built. Best grade of gauges.



Style A Welding and Carbon Removing Outfit.

Progressive Automotive and Hardware Jobbers Handle Dyer Products

THE G. H. DYER CO. 155 BROOKLINE STREET **Cambridge, Mass.**

Department of Sales 624 S. Michigan Ave., Chicago, Ill.

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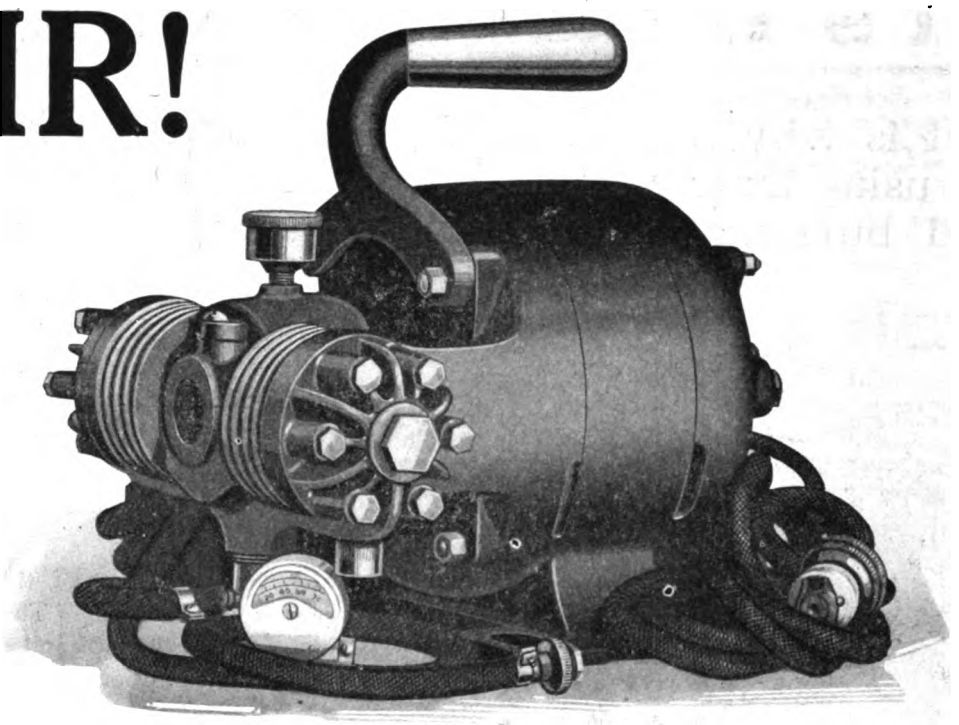
AIR!



An ideal little outfit for the private garage and the small public garage!

The illustration above shows all there is to it—and you'll be surprised how wonderfully it does the job! All the air you need—when you need it—without bother or fuss. No tank needed at all.

You can lift it about easily—weighs only 35 pounds. Just attach to electric light plug—simple, durable, lasting—just exactly what you want for your garage. Thousands of small public garages find it all the air equipment they need. Private owners declare it solves their air problem perfectly.

Gives pressure up to 100 pounds, and will provide 2.61 cubic feet of air a minute.

Air is free from oil and grease. In fact, this little compressor will give you satisfactory service and you have the worth while economy in first cost and operation.

It comes complete with motor, cable, gauge and connections, ready to run—and to keep running.

Further information if you'll write.

No. 10 **The AU-TO Compressor Co., Wilmington, Ohio**

AU-TO Compressor

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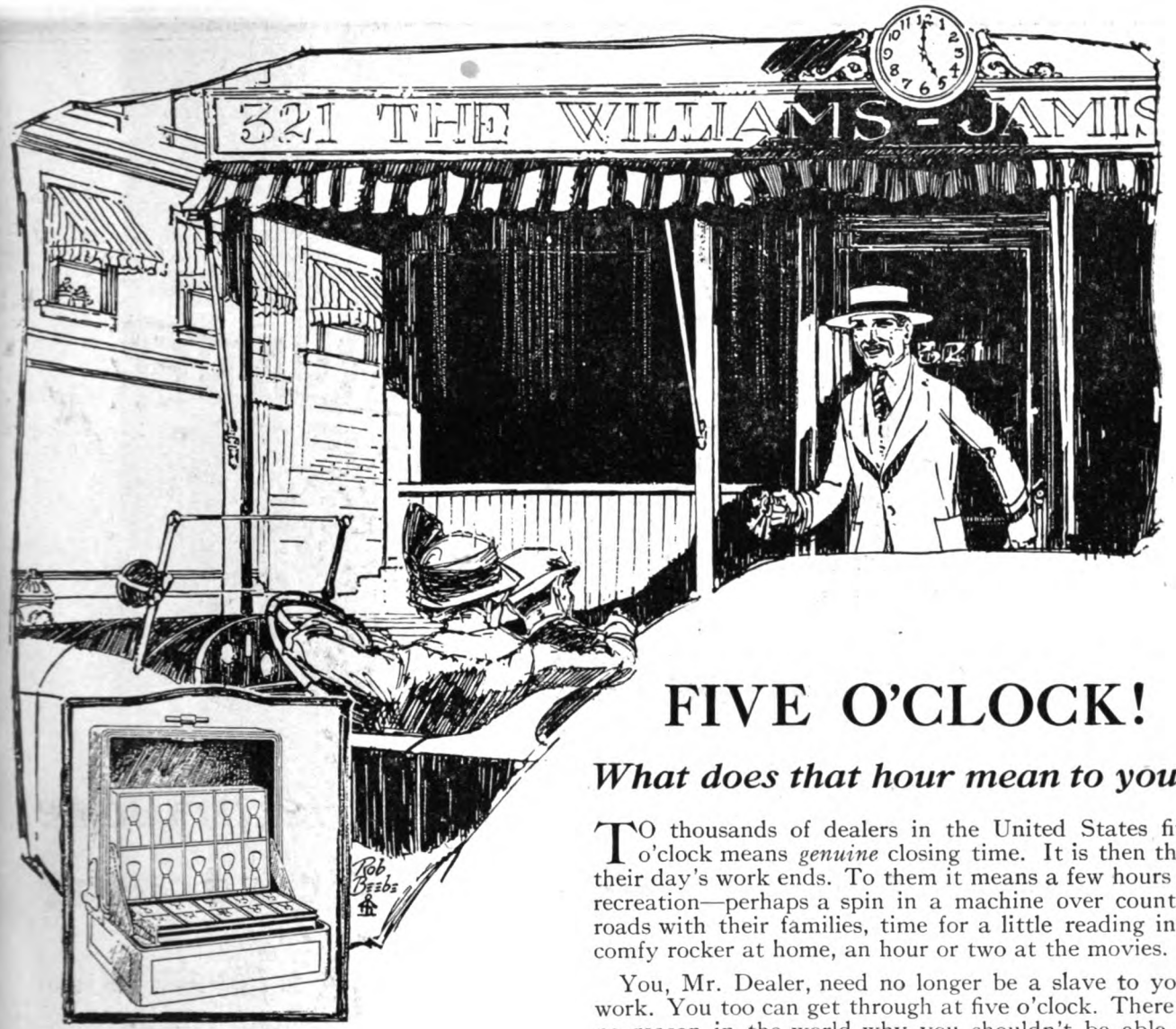

FIVE O'CLOCK!

What does that hour mean to you?

TO thousands of dealers in the United States five o'clock means *genuine* closing time. It is then that their day's work ends. To them it means a few hours of recreation—perhaps a spin in a machine over country roads with their families, time for a little reading in a comfy rocker at home, an hour or two at the movies.

You, Mr. Dealer, need no longer be a slave to your work. You too can get through at five o'clock. There is no reason in the world why you shouldn't be able to enjoy the few hours of daily leisure from business worries to which you are entitled.

But—not so long as you are a victim of bookkeeping drudgery, not so long as you are a slave to posting, can you expect to close at a certain time every day.

Eliminate your bookkeeping drudgery. Save yourself the endless time of recording credit purchases. McCaskey System of Accounts will enable you *with only one writing* to automatically and correctly record all charges as a part of order filling. Every customer's account is always balanced—without an expensive, time-wasting and complicated bookkeeping system. You and your customers always know how much is owing up to the last purchase.

There will be no more night work for you with a McCaskey System of Accounts. Two hundred thousand satisfied users of McCaskey Systems in the United States are able to enjoy a few hours of personal comfort every day.

We'll be glad to supply you with fine illustrated matter, complete information. It's free. Just clip and mail the coupon. Send it in—TODAY!

SALES BOOKS

We are the largest manufacturers of Carbon Coated Sales Books in the world. Our facilities for the manufacture of all kinds of Sales Books are unequalled. Write for prices. It will pay you.

THE McCASKEY REGISTER CO.
ALLIANCE, OHIO

Gentlemen:

I am interested in what a McCaskey System of Accounts is doing for 200,000 tradesmen in the United States. Without any obligation on our part please:—

☐ Send us full information regarding a McCaskey System of Accounts for our line of business.

☐ Have your representative call.

Name .....

City .....State.....

Kind of Business .....

McCASKEY

ALLIANCE, OHIO

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NATION WIDE SERVICE

The jobber is your friend; he is interested in the selection, the installation and the maintenance of your equipment. Your success is his success. Naturally, then, the jobber through salesman and correspondence, is always at your service. You may be distant from the factory but there is a Brunner jobber near you.

Your air system is valuable in proportion to the work it does without trouble. Therefore, it is important that you purchase from a company truly interested in your success, ready to help you in selecting the right outfit and prepared to offer prompt maintenance service.

Brunner equipment, all sizes and styles, is handled by 70% of the important jobbers. Wherever you are located, the Factory offers, through one or more of these representatives, whatever service you may need. Factory men are available in emergency.

Tell us how we can serve you best
Write for illustrated folder

BRUNNER MFG. CO.

MAIN OFFICE AND PLANT
UTICA, N. Y
Branch Cincinnati Ohio

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Automobile Starting Lighting Lamps

QUALITY is the most vital factor in the performance of any starting lighting system. Since the inception of electrical equipment for motor cars, the name "Gray & Davis" has been synonymous with Quality in material, workmanship and design.

GRAY & DAVIS, Inc.

Boston, Mass.

(When Writing to Advertisers, Please Mention the Accessory and Garage Journal.)

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DU PONT AMERICAN INDUSTRIES

HERE IS THE REASON

PONTOKLENE

SELLS ITSELF

Thousands of motorists have bought Pontoklene solely on the strength of the liberal sample cans which we supply free to dealers for distribution to their customers.

To try Pontoklene is to buy it. The fact that it has been introduced ***solely by sampling*** is proof that it is everything we claim it—a real oil, tar and grease remover and cleaner that is actually, honestly selling itself.

Sales of Pontoklene are mounting by leaps and bounds. The next two months will break all previous records. Get your order in today and get your share of this new business. Envelope enclosures, circulars, road signs and a liberal supply of samples free to every dealer.

Address our nearest office.

DU PONT CHEMICAL WORKS

WILMINGTON, DELAWARE

BRANCH OFFICES

New York *Boston* *Chicago* *Columbus* *San Francisco*

VISIT THE DU PONT PRODUCTS STORE WHEN IN ATLANTIC CITY.

The Principal Du Pont Products Are:

Explosives: Industrial Agricultural and Sporting. Chemicals: Pyroxylin Solutions, Ethers, Bronzing Liquids, Coal Tar Distillates, Acids, Heavy Chemicals, Alums, Etc. Leather Substitutes: Fabrikoid Upholstery, Raynite Top Material, Du Pont Rubber Cloth. Pyroxylin Plastics: Ivory, Shell and Transparent Pyralin, Py-ra-lin Specialties, Challenge Cleanable Collars and Cuffs. Paints and Varnishes: For Industrial and Home Uses. Pigments and Colors: For Industrial Uses. Lithopone: For Industrial Uses. Stains, Fillers, Lacquers and Enamels: For Industrial and Home Uses. Dyestuffs: Coal Tar Dyestuffs and Intermediates.

For full information address:

Advertising Division, E. I. du Pont de Nemours & Company, Wilmington, Del.

DU PONT

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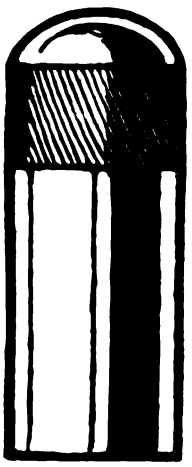
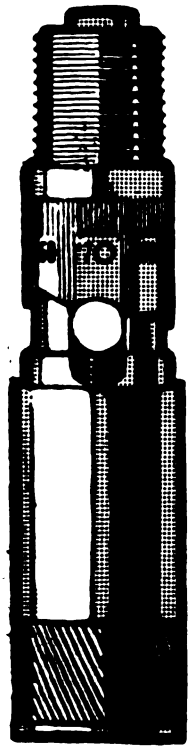
save 60% on tires





Here it is—screw it on

WHAT causes from 50% to 75% of all tire trouble? Over—or under inflation.

Over inflation stretches the tire, causing blowouts, blisters, etc. Under inflation causes rim cut, fabric breaking, etc.

Stop wasting your tires! Equip with the Automatic Pressure Regulator and you can't make a mistake. With this safety valve on your tire, you can start the air going in until a cheery whistle announces that the tire has enough. No time lost using a pressure gauge.

How does this strike you as a sales proposition? Did you ever hear of anything in the accessory business that had such a great chance of going over—*big?*

There are five million pleasure cars in America. The majority of owners will jump at an opportunity to save 60% on tires. *You'll* get their business—their friends' business and the satisfaction they'll get will make them your customers for good.

We furnish the advertising and dealer helps. Ask your jobber or write us about our generous proposition today.

The Automatic Safety Valve Corporation
1765 Broadway, New York City

Automatic Pressure Regulator

"It Whistles When It's Had Enough"

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HAYWOOD'S LATEST INVENTION

SILVUR LINED RE-TREAD MOLD

Here It Is:

A new machine that will earn from $100.00 to $150.00 per week in any well established tire repair shop. More than one year of constant experimenting and development work was required to complete it.

Statistics say there will be **One Billion Dollars** worth of tires worn out this year. The insistent demand for re-treaded tires that would add 3,000 to 4,000 more miles of wear is growing. A new and better machine than had so far been produced was needed.

Two actual photographs of One Tire
BEFORE and AFTER
being repaired and retreaded on a silvur-lined mold.

HAYWOOD'S Silvur Lined MOLD

meets the need. Made of white metal—die cast—absolutely free from blemishes and smooth as glass. It is truly a wonderful machine.

Old tires retreaded on this machine closely imitate the runner, **cord type**, and are, smooth, classy, bright. All 4,000 owners of Haywood Tire Repair plants will **want** this new Haywood invention. Owners of other plants should have one.

Pays for Itself in a Week

Will earn from $100.00 to $150.00 weekly. Are you an auto tire repairman? If you are not, why not enter this profitable business? Tire Repairmen earn **$2,500** to **$4,000 Per Year.** Many are doing better; some up to $6,000 and $7,000 per year. If you have a tire repair shop, you need this Haywood Silvur-Lined Retread Mold. You should write us at once and get the details. It will pay for itself in a week. Every week thereafter you should make $100.00 or more extra profit.

FREE BOOK I have an interesting book to send you that tells about tire repairmen and the Haywood method. It tells about automobile tires—it gives inside facts that you should know about profits. When you write tell me if you have a tire repair shop, or, if you want facts about the tire repair business. Address

M. HAYWOOD,
Haywood Tire & Equipment Co.
955 No. Capitol Ave., Indianapolis, Ind.

WRITE ME!
I will tell you how to start in business as an expert tire repairman and earn $2,500 to $4,000 per year. Sounds too good to be true. But it is true, every word of it.

M. HAYWOOD,
Haywood Tire and Equipment Co.
955 No. Capitol Ave., Indianapolis, Ind.
(Mark an X for interest in either or both subjects)

☐ Send facts about the Silvur-Lined Mold
☐ Send facts about the Tire Repair business.

Name.....

Address.....

.....

N. E. Gibhard, Charlotte, Mich., owner of a Haywood plant, last year did a business of $15,000. Charlotte is a town of 7500 population.

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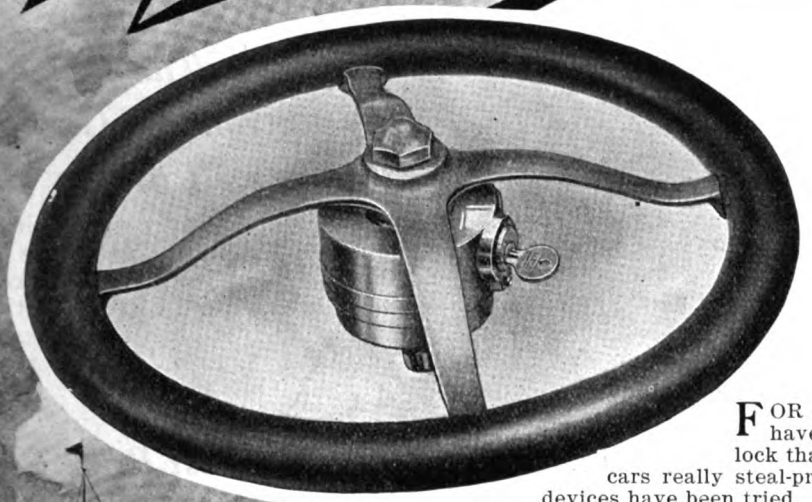
Masters

AUTOMOTIVE ACCESSORIES



It Locks the Ford

FOR years Ford owners have sorely needed a lock that would make their cars really steal-proof. Many locking devices have been tried. Here's the one that stands every test—makes good on every claim—it's the

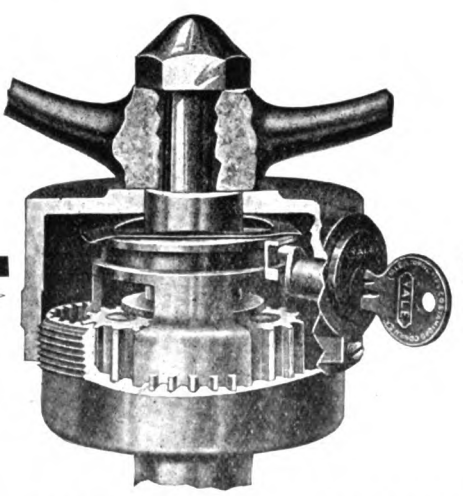
Masters

Steal-Proof Lock

Fords by the thousand will be safeguarded by this lock. It clamps the front wheels so that they cannot be used for steering. It is strong, can't be picked, can't lock accidentally, for the locking bolt **rises** into mesh. Study the illustrations.

You sell it over the counter—any owner or driver can put it in place as easily as he inserts a spark plug.

Sells for $6.50. Dealers write at once for terms and particulars for there's bound to be a big call for this lock.



MASTERS MANUFACTURING COMPANY

Woolsey Square, Jamaica Plain, Boston, Mass.

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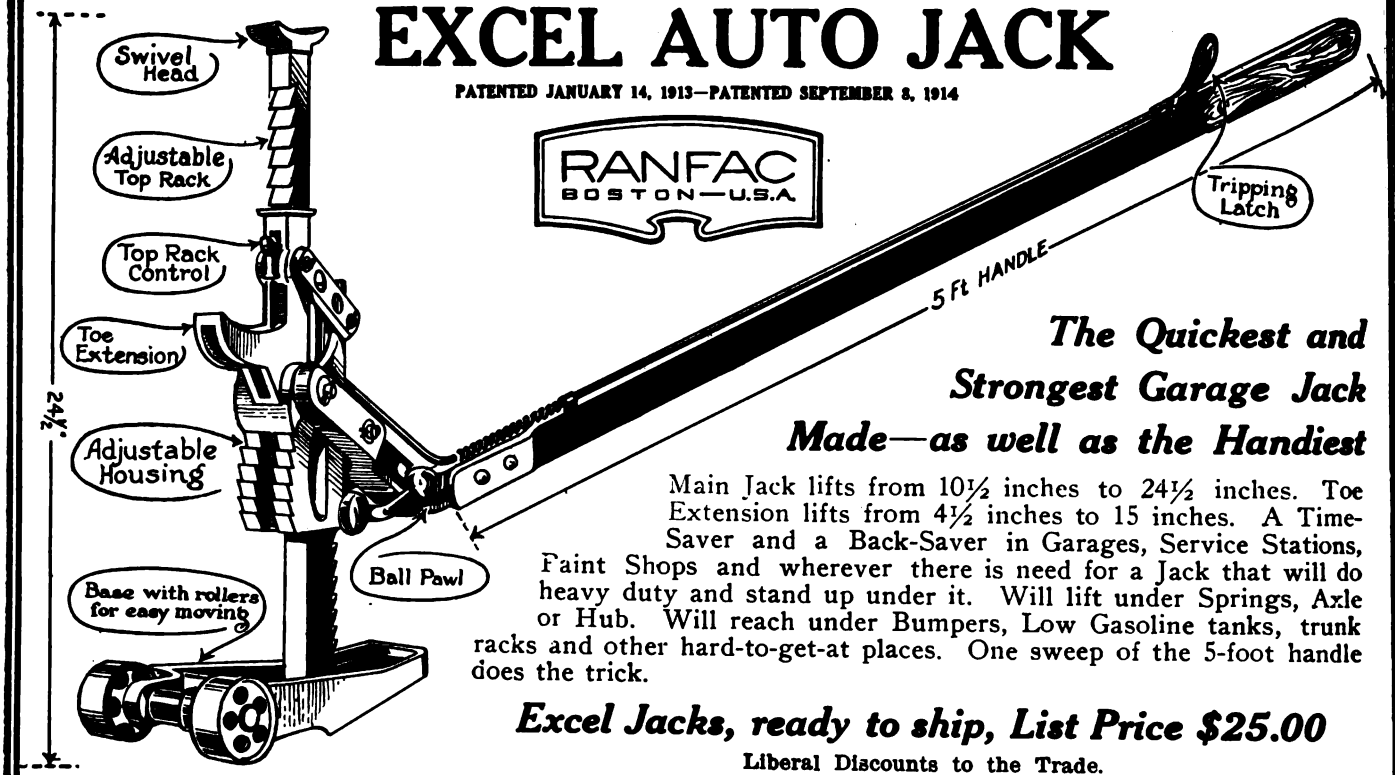
EXCEL AUTO JACK

PATENTED JANUARY 14, 1913—PATENTED SEPTEMBER 8, 1914

RANFAC
BOSTON—U.S.A.



The Quickest and Strongest Garage Jack Made—as well as the Handiest

Main Jack lifts from 10½ inches to 24½ inches. Toe Extension lifts from 4½ inches to 15 inches. A Time-Saver and a Back-Saver in Garages, Service Stations, Paint Shops and wherever there is need for a Jack that will do heavy duty and stand up under it. Will lift under Springs, Axle or Hub. Will reach under Bumpers, Low Gasoline tanks, trunk racks and other hard-to-get-at places. One sweep of the 5-foot handle does the trick.

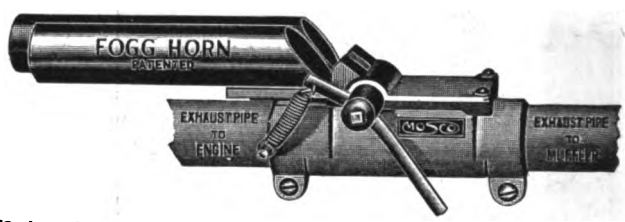
Excel Jacks, ready to ship, List Price $25.00

Liberal Discounts to the Trade.

Consumers will confer a favor by ordering through their Jobbers.

Jericho-Fogg Horn

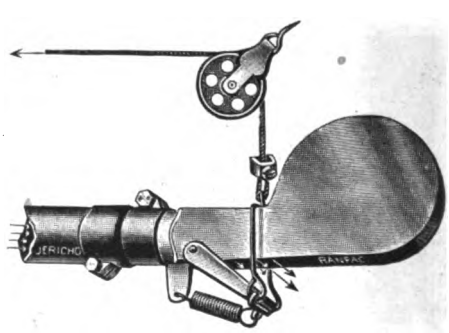
The BEST SIGNAL FOR FORD CARS



It does away with the Tail Pipe Problem because it is attached between the Engine and the Muffler. And so it makes no difference whether the FORD is of the Vintage of 1912 with **long tail pipe**—or a 1919 model with **no tail pipe.** The JERICHO-FOGG HORN blows loudly even when motor is running slowly. It throws the Sound **ahead of the car**—where its warning is most needed and where it can do the **most good.**

One size only—List Price $5.00—complete with all attaching accessories

Jerichos and Jubilees for Trucks



The Regulation JERICHO (Single Tone) and the JUBILEE Chime have the indorsement of careful drivers—because of dependability and performance.
Attached to Rear of Muffler. Operated by the Exhaust.

All sizes—List Price $5.00

Complete with attaching accessories

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JAMAICA PLAIN, BOSTON, MASS.

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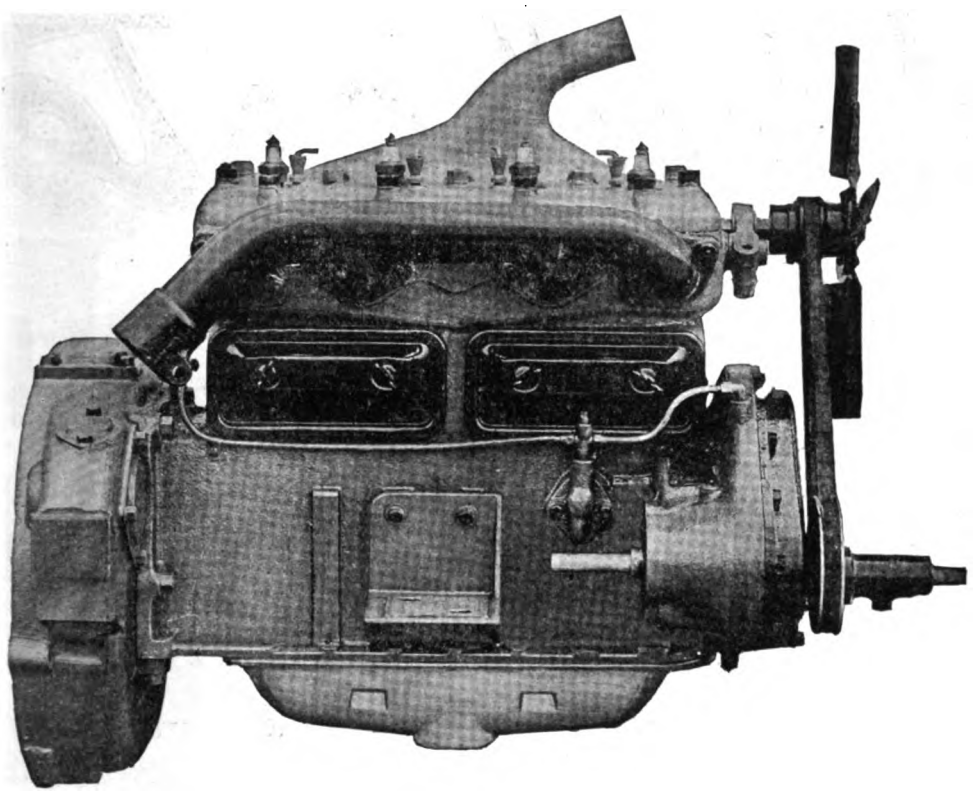

Save 50% On These Motors

—New—First Class Condition —Well Known Makes

A limited number of new Buffalo Motors are in stock and must be disposed of before inventory.

To clear them out quickly we offer them at the exceptionally low price of $150, f. o. b. Buffalo.

These motors are new and in excellent condition.

Buffalo: 4 cylinders, cast en bloc; 30 H. P. 3½ x 5.

This is a wonderful opportunity to get a high grade, powerful motor for passenger cars or trucks at a saving of one-half.

Garage owners who desire a spare motor for stock should get in their order at once.

Carburetor, magneto, clutch and transmission can be furnished at a nominal extra cost.

Motors will be shipped sight draft, bill of lading attached, subject to purchasers inspection and approval.

Wire your order NOW.

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Cor. Delavan and Fillmore — Buffalo, N. Y.

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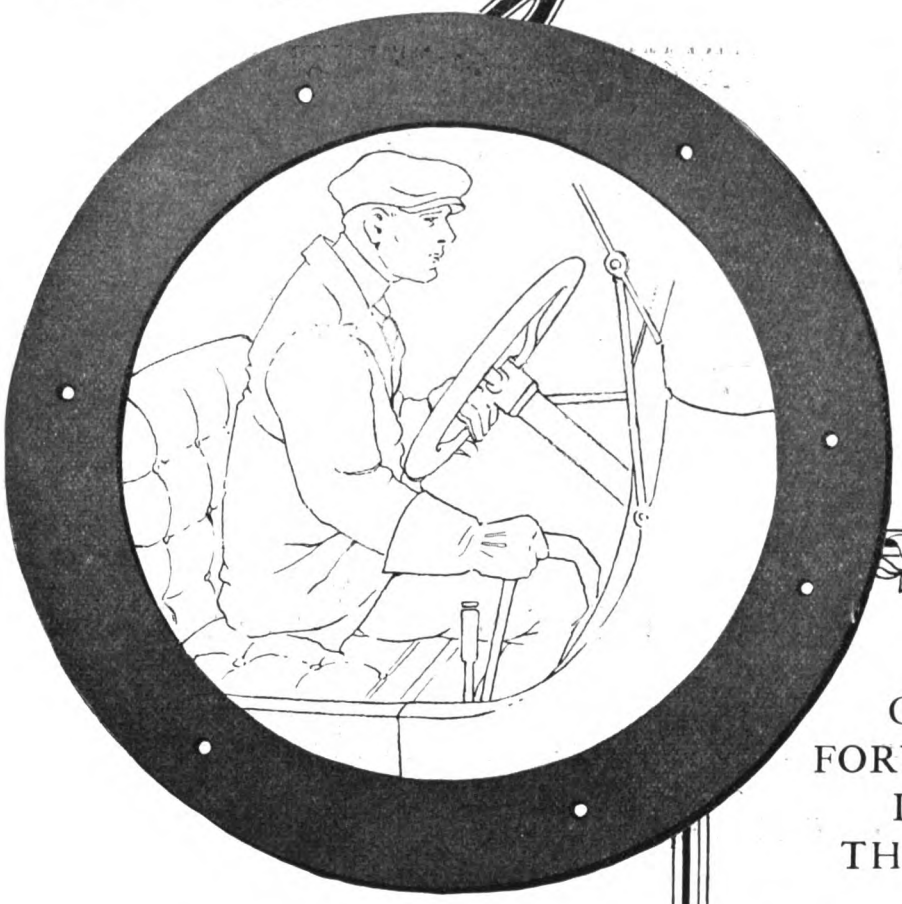

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GREATEST STEP FORWARD SINCE THE INCEPTION OF THE DISC CLUTCH

IN the production of this new facing, we have practically revolutionized efficiency of the disc clutch. Old-fashioned woven facing is now relegated to the scrap heap. Who can be content with obsolete practice when they can have Raybestos MOLDED Clutch Facing? The instantaneous response of engineers shows how urgently Raybestos MOLDED Clutch Facing was needed and how splendidly it fulfills all requirements.

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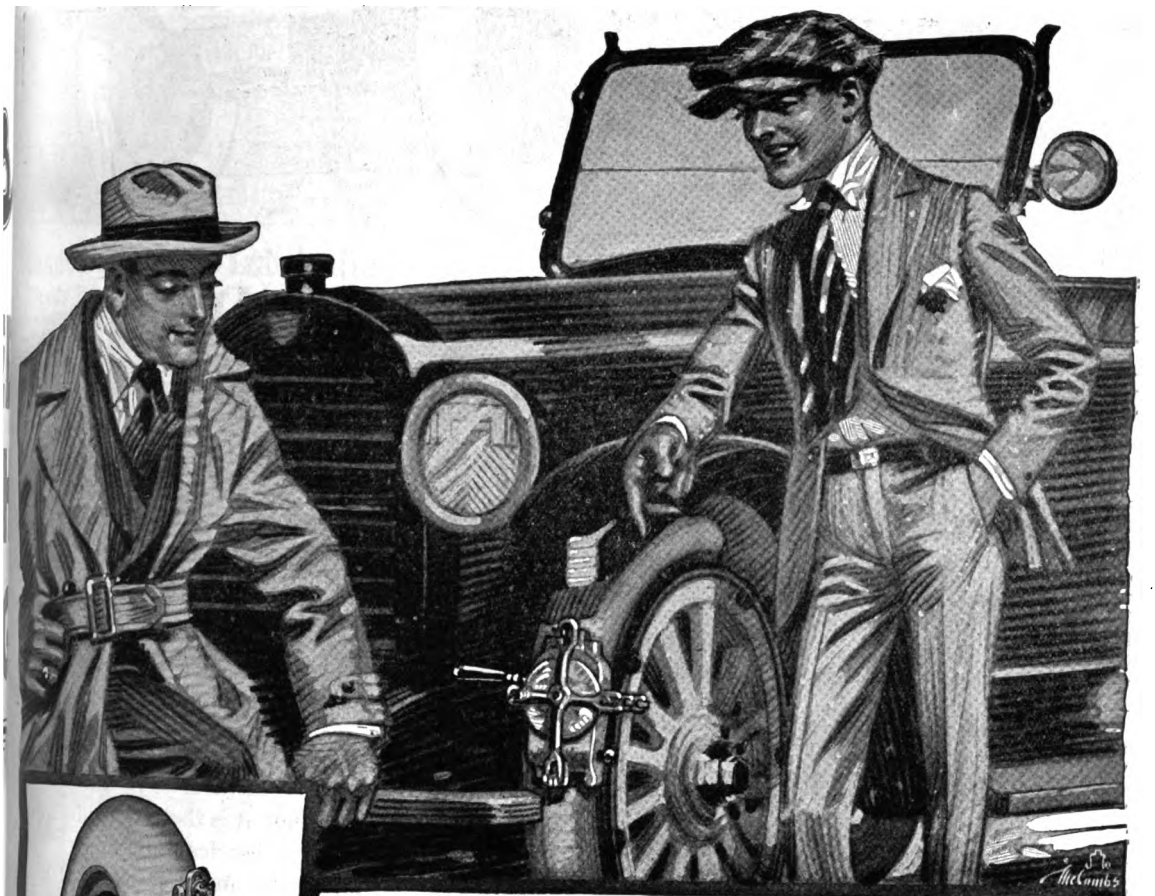

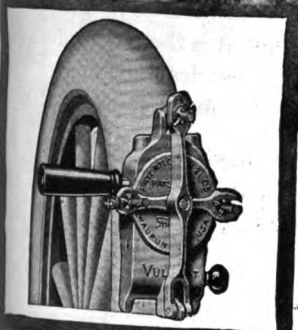

"—saves two-thirds of my Tire Expense"

"Once a week I go over my tires—and seal the little holes and cuts that ruin tires by permitting dirt, oil and water to reach and rot fabric. With the SHALER Vul-Kit I 'vulcanize' these holes with tough, new rubber that makes a lasting job of it. It takes only a few minutes—but keeps my tires good as new—prevents tire trouble—*doubles* my mileage—and actually saves ⅔ of my tire expense."

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It's easy to sell. Motorists are looking for a tire-saver like this. Their word-of-mouth endorsement of the SHALER to their friends gives you a chain of sales. The repair material they buy of you to use with this vulcanizer gives you "repeat" profits that come to you regularly—without effort. You make a good profit selling the Vul-Kit itself and big, steady "repeat sale" profits.

SHALER Vulcanizers are advertised regularly throughout the year. Motorists are now reading the large, dominant advertisements in the leading national and motorist publications. Every car-owner needs a SHALER Vul-Kit—sell it to him and make these big steady profits for your self. **Complete Outfit only $3.50.** Price slightly higher west of the Rockies and in Canada.

Order From Your Jobber Now—Write Us for Catalog

of the complete line of SHALER Vulcanizers for garages, tire repair shops and motorists' use.

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No matter in what part of the United States you are located there is a United Motors Service Branch or Distributor near you.

This means that you may obtain direct factory service on Delco, Klaxon or Remy electrical equipments within a few hours.

Glance down the list of branches to the left and note the one in or near your city—then make a mental note that it is there you will receive prompt, efficient service and genuine parts for the electrical equipment of your car.

United Motors Service Incorporated, is the only authorized service department for the manufacturers of Delco, Klaxon and Remy electrical equipments.

Send for Our Latest Organization List Which Will Give You Addresses of Our Authorized Distributors

Delco KLAXON REMY

MOTORS SERVICE TRADE MARK

UNITED MOTORS SERVICE

INCORPORATED

GENERAL OFFICES, DETROIT, MICH.

A BRANCH OR DISTRIBUTOR IN OR NEAR YOUR CITY

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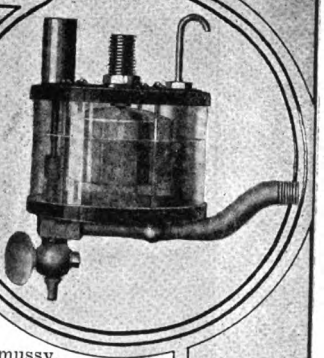
LET THE STANDEX EYE WATCH YOUR OIL!



Standex Automatic Lubricating System for Ford Cars

Spells ECONOMY—One quart of oil gives practically as much mileage as you now make on a gallon. An end to guesswork, waste and worry.

ENGINE EFFICIENCY—Oil for lubrication; not to make smoke and smell. Oil waste reduced to minimum. Smoother running motor, because lubrication is scientific. No more fouled spark plugs or carbonized cylinders.

CLEANLINESS—Reservoir and oil-gauge conveniently located under seat. No more mussy, underhood filling. No more soiling hands and clothes by "getting under" to try the pet-cocks.

What the Standex System Is and How It Operates

The System consists of A GALLON RESERVOIR, with built-in oil-gauge, easily accessible, under seat at end of gasoline tank—A FLEXIBLE COPPER TUBE which leads (making one turn around exhaust pipe to keep oil fluids at all temperatures) to THE AUTOMATIC CONTROL CHAMBER—"THE EYE THAT WATCHES YOUR OIL."

The Standex System feeds oil to crank-case only when motor is at rest. The moment motor starts, vacuum valve locks automatically; oil flow ceases. Whenever motor stops, feed valve opens, and all the lubricant that has been consumed while running is instantly replaced—whether it be an ounce, a quart, or a gallon!

One Filling of Reservoir Gives Traveling Range of 1,000 to 1,200 Miles without a Thought or a Worry about Lubrication

$10.00 Complete

LET THE STANDEX GASOLINE GAUGE METER YOUR FUEL!

JOHN D. ROCKEFELLER thought he was being cheated the other day—by a gasoline pump! So he made the garage owner test the pump to make sure.

¶ You may not be under the same necessity of practicing economy that Mr. Rockefeller is; but just the same you will find it a satisfaction to know that you get 5 gallons—not 4—when 5 gallons are what you pay for. ¶ And never to get stalled on the road for want of "gas"! Never to have to walk a mile—or three—or five—to beg a quart from a farmer! ¶ That mental ease is yours for only $2.50. **EQUIP YOUR FORD WITH A STANDEX,** the only accurate mechanically-actuated gauge made—the only gauge graduated to the contour of a cylindrical tank (not merely to depth).

Try One for 30 Days Under Our Money-Back Guaranty. Then you'll know—to the dot—how much "gas" you get for your money—and, at any moment, how much you have in tank to run on.

$2.50 your dealer or by parcel post prepaid

LET THE STANDEX REAR CURTAIN TRANSFIGURE YOUR FORD!

APPEARANCE counts. Are you as happy in old clothes as you are in your tailor-mades? Of course not! And you can't possibly take the same comfort in a commonplace, ordinary-looking Ford that you will when that self-same Ford is "dressed up." "Clothes make the man" or the motor, provided man or motor is O. K. underneath the clothes.

STANDEX REAR CURTAIN dresses up any Ford to look like the good, reliable car it is. RICH LOOKING FABRIC shows quality—a far better material than is found in standard equipment.

BRILLIANT WINDOW-LIGHT—a big, generous oval of beveled crystal plate glass, set in an unstainable frame of polished aluminum. A window you can SEE through! No dingy, yellow, crinkly, brittle celluloid! DURABILITY insured by patented interlocking construction of frame. Fabric forms a gasket between glass and metal, clamping the pane firmly.

ALL THIS for only $7.50! Any "custom topmaker" charges $16 or more for such a job. TRY ONE FOR 30 DAYS UNDER OUR MONEY-BACK GUARANTY. THEN YOU'LL KNOW ALL THE COMFORT OF RIDING IN A FORD!

$7.50

Standex Distributors everywhere are authorized to cover every Standex Motor Device with our guaranty—*Perfect satisfaction or your money back!*

Standex Manufacturing Cor'n, 341-345 E. Ohio St., Chicago, U. S. A

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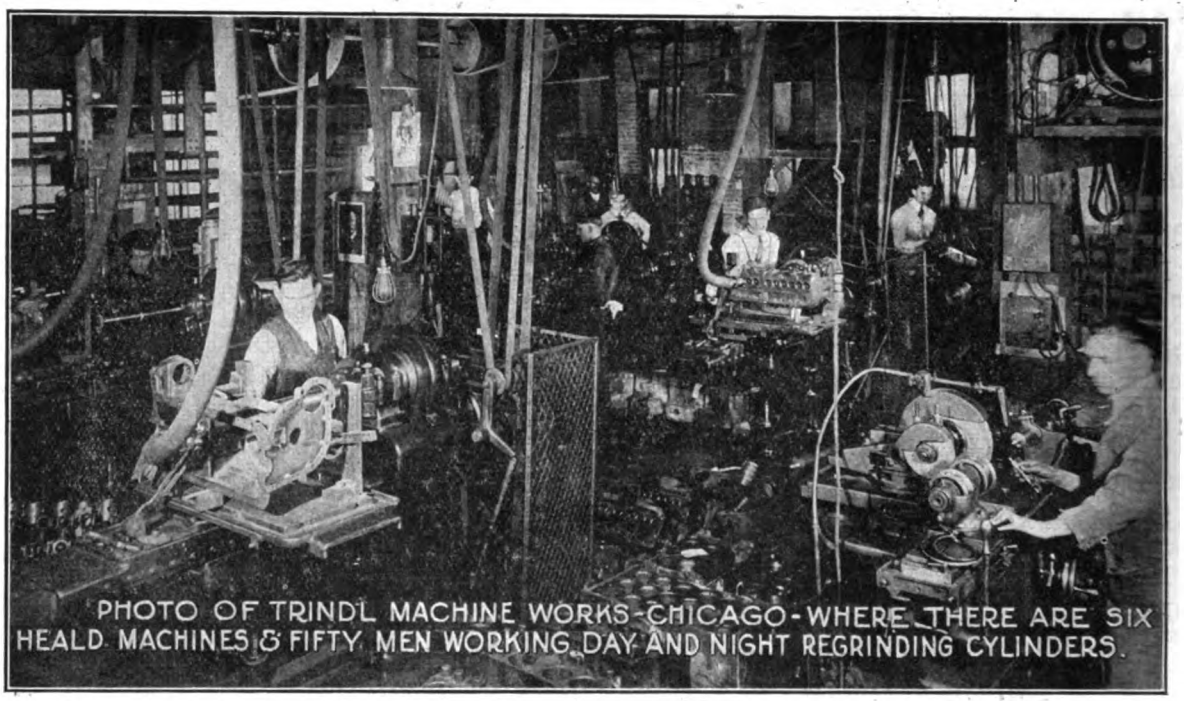


PHOTO OF TRINDL MACHINE WORKS-CHICAGO-WHERE THERE ARE SIX HEALD MACHINES & FIFTY MEN WORKING DAY AND NIGHT REGRINDING CYLINDERS.

How One Man Succeeded With Heald Grinders

Four years ago the Heald Machine Company sold their first cylinder grinder to Mr. Trindl. Since that time their business has increased with leaps and bounds until now they have six machines in operation day and night. Their whole business has been literally built up on Heald Grinders.

When Mr. Trindl bought his first machine he operated it himself. Today he employs fifty men and has a fine business, devoting his whole time to looking after the plant.

There have been many other concerns who have tried to induce Mr. Trindl to purchase so-called cylinder grinder machines or make-shifts for handling his work, but he has come to the conclusion that Heald Machines are the only accurate machines for turning out high class work such as his trade demands.

At the time these photographs were taken there were 200 cylinder blocks in the Trindl Machine Shop waiting to be reground and half as many were finished waiting for the checks to come in.

This is an example of the many opportunities in the regrinding of cylinders that are waiting for bright, up-to-date young men to go in business for themselves. Now is the time to start when automobiles are being overhauled and put in shape for next year.

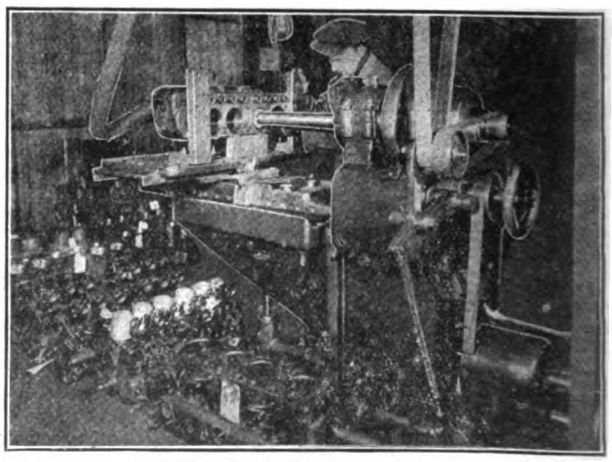
Grind with a Heald and be sure. Write for our Blue Bordered Bulletins, Series No. 6 for cylinder grinding up-to-date.

THE HEALD MACHINE CO.

Worcester, Mass.

New York, 839 Singer Bldg. Philadelphia, 1308 Commonwealth Bldg. Chicago, 26 South Jefferson St. Detroit, 401 Marquette Bldg. Cincinnati, 311 Provident Bank Bldg. Cleveland, 721 Engineers Bldg. Western Agents: Eccles & Smith Co., San Francisco, Los Angeles and Portland. Salt Lake Hardware Co., Utah and Idaho.

Foreign Agents: Alfred Herbert, Ltd., England. Societa Anonyme Alfred Herbert, France and Switzerland. Societa Anonima Italiana Alfred Herbert, Italy. F. W. Horne Co., Japan. Wilh. Sonesson & Co., Sweden, Denmark and Norway. The American Machinery Syndicate, Spain and Portugal.



200 cylinders were waiting to be ground with one-half as many finished ones when this photo was taken.

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Send for

a copy of this latest and most comprehensive piston ring size directory, if you have not already received one by mail. It is just off the press. We flatter ourselves that every automotive products dealer will realize the value of this book when he sees a copy. It is handy, full of information and the listing of the piston ring sizes is arranged in such a simple way that there is no difficulty in immediately locating the data on any ring desired. The book is FREE to automobile and accessory dealers and garage owners. To the public it is priced at 25 cents.

Remember that the Gill is the PERFECT ONE-PIECE PISTON RING, the ring with the double-step interlocking joint, a real attainment in piston ring construction.

The Gill Manufacturing Company
351 West 59th Street
CHICAGO, ILLINOIS

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"The LAFAYETTE" PORTABLE STEEL CRANE

THE ONE MAN CRANE

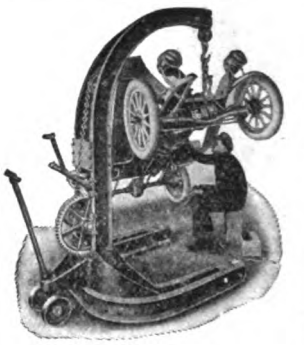
The Lafayette Portable Steel Crane will meet any requirement in any garage, repair or machine shop and service station.

When better and quicker work and the saving of time and labor are factors, there is no other shop equipment that can be operated at so great a profit. None used so constantly, or that has the utility. The Lafayette always saves, serves and earns.

It is an all-steel crane and doubled locked. It will not upset, or break, and it is absolutely safe in use. One man can easily raise the front or rear of the heaviest car in less than two minutes, and any boy can move it to any position, as it is mounted on roller bearings.

For tire changes it is quicker and easier to use than a jack. For under the car adjustments it makes all work accessible and takes the place of a pit or hoist. It makes a one man job when removing the motor or replacing it. It is 100% efficient and will last a life time. The first cost covers all the investment.

Let us tell you about the thousands of Lafayette cranes in use. How low in first cost, how enduring and their wonderful shop utility. Before buying any crane know the distinctive and superior features of the Lafayette.



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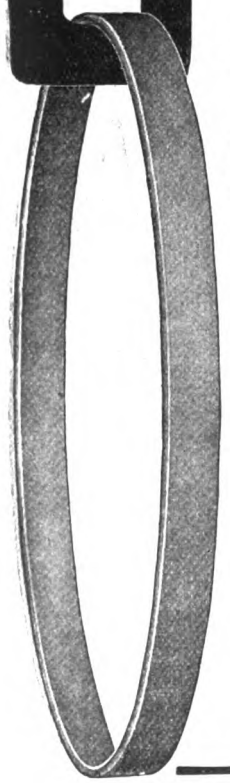
Guaranteed 10,000 Miles

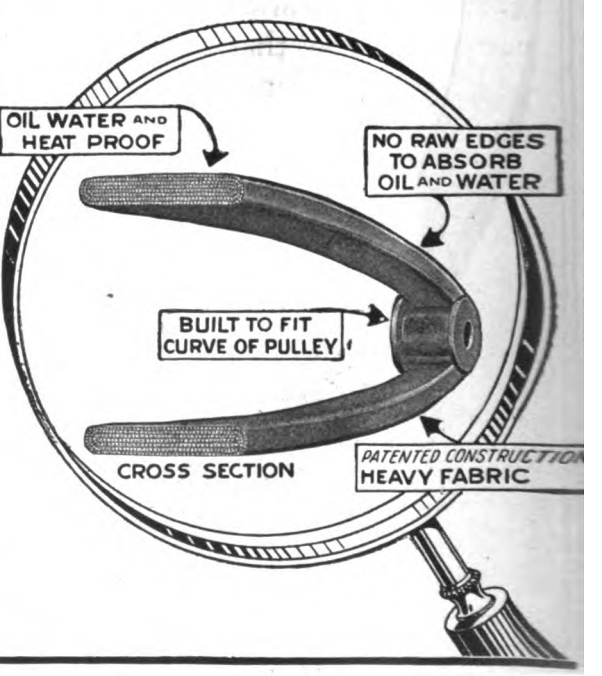
At last—a fan belt of known and guaranteed performance. DEALERS—This is the safe belt to stock.



FLEX-O-TYTE FAN BELT

Combines Flexibility With Tightness.

Made for all cars. Built of special Rubber Coated Fabric, vulcanized into a one-piece belt—wrapped cure process.



Dealers—Order Sample

The name of your supply house and 10c to cover postage and packing brings sample belt promptly. Our 32 page catalog FREE on request.

A. J. STEPHENS RUBBER CO.

1409 Chestnut St. Kansas City, Mo.

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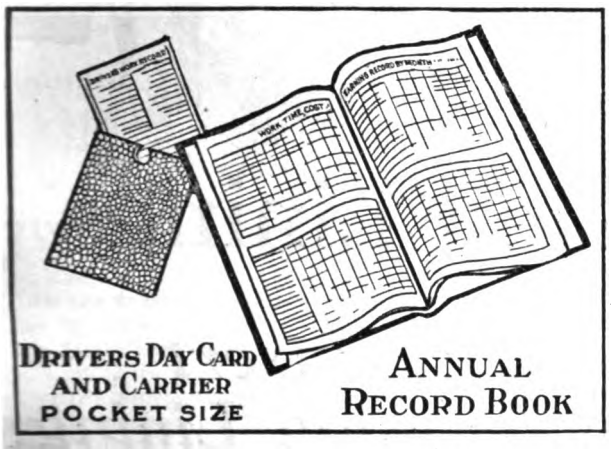
Know what it costs to Run your Truck

Learn what your Truck Earns

Know your Truck Profit and Loss

UNIVERSAL MOTOR TRUCK ACCOUNTING SYSTEM



The system includes an annual record book, 350 drivers' day cards, a day card carrier and full instructions.

Any owner can start this system at any time with an old or new truck of any make or type.

Any boy or girl clerk can maintain all records for one or a hundred trucks.

Each system is good for one year, nothing more is needed or necessary.

The records show at a glance any and all items entering into the earnings and cost of operation.

It is extremely simple. 100% complete and full working instructions are supplied with each system.

It is almost self-operating.

Price $10 — Delivered

Address Record Department

MOTOR TRUCK

Pawtucket, Rhode Island.

THE ACCESSORY AND GARAGE JOURNAL
Index to Contents

Published Monthly by the
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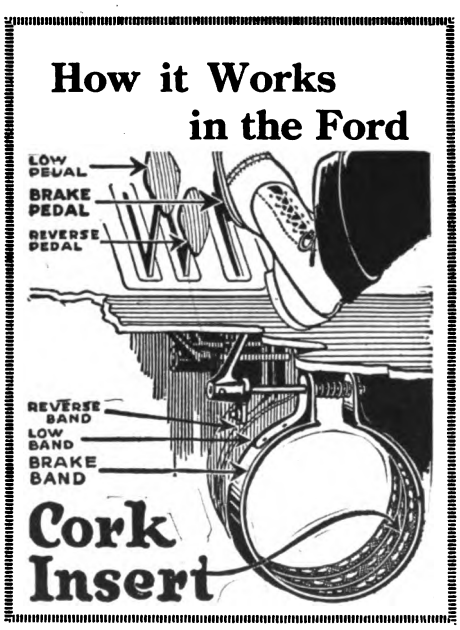
$3 per set of three
Rockies West, $3.25
Canadian Price, $4.50

They are the Best Ford Transmission Linings



Cork Insert Transmission Linings

take hold with a sure, smooth grip
—requires little pressure on the pedal
—make the brake safe
—stop vibration and stuttering
—save the Ford rear end
—give greater pulling power on low
—wear so long they're cheapest in the long run.

Be sure you get Advance Cork Insert Linings

Your garageman or repairman sells and installs Advance Cork Insert Linings. All wholesale houses handle them.

Over a million sets have been sold in only two years.

Advance Automobile Accessories Corporation
Dept. H3, 56 E. Randolph St., Chicago

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The ACCESSORY and GARAGE JOURNAL

VOL. IX. PAWTUCKET, R. I., AUGUST, 1919 No. 4

Shortage of Cars May Continue For Years

Manufacturers Are Spending Millions of Dollars for New Plants

WITH the demand for passenger cars keeping pace with increased production, there is every likelihood that the shortage will continue for many months to come. Car makers and dealers are fairly bubbling over with enthusiasm, and there appears to be at least a full year's prosperity in sight for practically everyone connected with the industry and trade.

Work calling for the expenditure of millions of dollars for new factories and additions to present ones has already been launched, and car production next year should reach staggering figures. Most of the manufacturers have announced their 1920 models, the demand for which guarantees capacity production for a long time.

Just how long the shortage will continue is problematical. One manufacturer states that he believes it will keep on for at least three years. The car makers have been building up strong export organizations and there is no doubt that a great many of the machines will be exported as soon as the domestic demand has been somewhat alleviated.

Several important facts indicate that the annual national shows will be the greatest in the history of the industry. The holding of the car and truck shows at the same time will insure a greater attendance.

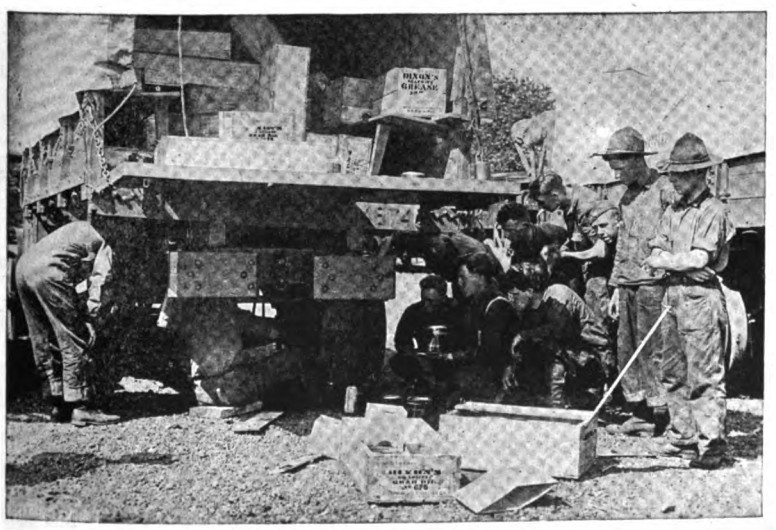
Says General Motors Is About to Distribute Auto Equipment

MAY SELL SPEEDOMETERS, HORNS, SPARK PLUGS, ETC., TO RETAIL DEALERS.

The Leader, the official organ of the Automotive Equipment Association, states: "It has been rumored quite frequently of late that the General Motors Co. is going to go into the business of distributing automotive equipment, and as a beginning will sell well known makes of horns, spark plugs, speedometers, etc. It is stated that branches are going to be opened in various cities, from where salesmen are to operate and sell to the dealers."

ARMY TRUCK TRAIN.

The Motor Transport Corps transcontinental truck train has arrived at Cheyenne, Wyo., where it was met by the governor. No serious mechanical troubles have been experienced. Dixon's lubricants are being used. The accompanying photograph was by Harris & Ewing.



Getting Truck Ready for Army Transport Caravan.

Truck Education Tour Proving Success

Demonstrates Great Value of Commercial Car to the Farm

SUCCESS is crowning the national motor truck development tour, which started from Chicago, Aug. 4. Seventeen pneumatic tired motor trucks are making the journey of 3000 miles through Illinois, Iowa, North and South Dakota, Minnesota and Wisconsin. The tour will run on a regular schedule and cover a period of 60 days, making several stops a day and in some cases staying in cities two or three days.

The tour is not run as a selling proposition, but solely to demonstrate to the farmer the value of a pneumatic tired motor truck for his farm. The trucks range in size from three-quarters of a ton to 2½ tons. City officials, truck dealers and others are cooperating at all points en route.

With the beginning of the second week the tour settled down to real business. On Sunday the tour impedimenta was transferred to as few trucks as possible in order that spare trucks might be loaded with from 16 to 20 tons of wholesale groceries, fruits, etc., from Grand Rapids wholesale houses for towns along route.

Each house sending out a consignment had a representative along. One wholesale concern much opposed to intercity hauling decided to let the present movement of intercity goods by the truck train be its criterion.

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N. A. C. C. Committees Are Appointed By Clifton

Charles Clifton, president of the National Automobile Chamber of Commerce, has appointed the following committees, which are to handle the activities of the business organization during the coming year:

PASSENGER CAR SHOW COMMITTEE.

John N. Willys, chairman, Willys Overland Co.; H. G. Root, Westcott Motor Car Co.; Harry M. Jewett, Paige-Detroit Motor Car Co.; S. A. Miles, show manager, National Automobile Chamber of Commerce.

PATENTS COMMITTEE.

C. C. Hanch, chairman, Maxwell Motor Co.; Windsor T. White, White Motor Co.; C. W. Churchill, the Winton Co.; Wilfred C. Leland, Lincoln Motor Co.; Wm. MacGlashan, Studebaker Corporation; Robert A. Brannigan, manager, National Automobile Chamber of Commerce.

LEGISLATIVE COMMITTEE.

H. H. Rice, chairman, Chevrolet Motor Co.; D. C. Fenner, Mack Bros. Motor Car Co.; J. I. Farley, Auburn Automobile Co.; J. I. Barrows, Lexington Motor Co.; David Ludlum, Autocar Co.

HIGHWAYS COMMITTEE.

R. D. Chapin, chairman, Hudson Motor Car Co.; W. E. Metzger, Columbia Motors Co.; Royal R. Scott, Willys-Overland Co.; S. M. Williams, Garford Motor Truck Co.; Geo. M. Graham, Pierce-Arrow Motor Car Co.; Pyke Johnson, secretary, National Automobile Chamber of Commerce.

TRAFFIC COMMITTEE.

William E. Metzger, chairman, Columbia Motors Co.; A. I. Philp, Dodge Brothers; F. C. Chandler, Chandler Motor Car Co.; William L. Day, General Motors Truck Co.; Geo. Dickson, National Motor Car and Vehicle Co.; J. S. Marvin, manager, National Automobile Chamber of Commerce.

ELECTRIC VEHICLE COMMITTEE.

W. C. Anderson, chairman, Anderson Electric Car Co.; Fred R. White, Baker R & L Co.; H. W. Suydam, Milburn Wagon Co.

MEMBERSHIP COMMITTEE.

C. W. Churchill, chairman, the Winton Co.; J. Walter Drake, Hupp Motor Car Corporation; Hugh Chalmers, Chalmers Motor Co.

FOREIGN TRADE COMMITTEE.

J. Walter Drake, chairman, Hupp Motor Car Corporation; Peter S. Steenstrup, General Motors Truck Co.; H. M. Robins, Dodge Brothers; Jay Rathbun, White Motor Co.; E. C. Morse, John W. Willys Export Corporation; J. P. Roberts, Studebaker Corporation; H. B. Phipps, Hudson Motor Car Co.; H. R. Cobleigh, secretary, National Automobile Chamber of Commerce.

CONSERVATION COMMITTEE.

W. C. Sills, chairman, Chevrolet Motor Co.; G. R. Lippard, Stewart Motors Corporation; M. Cook, Service Motor Truck Co.; F. E. Bradfield, Velie Motors Corporation; C. A. Baird, Jas. Cunningham Son & Co.

Heads Rural Motor Express Committee

James L. Geddes.

MOTOR TRUCK COMMITTEE.

Windsor T. White, chairman, White Motor Co.; Alvan Macauley, Packard Motor Car Co.; George M. Graham, Pierce-Arrow Motor Car Co.; Victor L. Brown, Sterling Motor Truck Co.; M. L. Pulcher, Federal Motor Truck Co.; R. H. Salmons, Selden Motor Vehicle Co.; D. C. Fenner, Mack Bros. Motor Car Co.; F. W. Fenn, secretary, National Automobile Chamber of Commerce.

RURAL MOTOR EXPRESS COMMITTEE.

James L. Geddes, chairman, Kelly-Springfield Motor Truck Co.; E. A. Williams, Jr., Garford Motor Truck Co.; O. H. Browning, International Harvester Corporation; A. T. Murray, Bethlehem Motors Corporation; Geo. D. Wilcox, Commerce Motor Car Co.; F. W. Fenn, secretary, National Automobile Chamber of Commerce.

TRUCK STANDARDS COMMITTEE.

David C. Fenner, chairman, Mack Bros. Motor Car Co.; Francis W. Davis, Pierce-Arrow Motor Car Co.; F. A. Whitten, General Motors Truck Co.; B. M. Sternberg, Sterling Motor Truck Co.; F. F. Beall, Packard Motor Car Co.

HAND BOOK COMMITTEE.

E. T. Strong, chairman, Buick Motor Co.; F. H. Akers, Reo Motor Car Co.; Geo. A. Kissel, Kissel Motor Car Co.; Wm. T. White, Mercer Auto Co.; Chas. Denby, Denby Motor Truck Co.

TRUCK COMMITTEE ON STANDARD REPAIR PARTS & SERVICE POLICIES.

E. T. Herbig, chairman, Service Motor Truck Co.; H. W. Drew, Packard Motor Car Co.; W. M. Ladd, Pierce-Arrow Motor Car Co.; A. B. Cumner, Autocar Co.; W. M. Britton, Republic Motor Truck Co.

Municipal Bus Service Planned by Hylan in New York

Mayor John F. Hylan of New York has a plan for establishing a system of city owned buses throughout the city to compete with the street car lines. He prophesies the doom of the street cars, and says it will not be long before the municipal buses will be operating in great numbers all over the city.

"A lot of people," says Mayor Hylan, "say that bus service might cost more than five cents. The answer to that is that I now have a proposition from a private concern to run five-cent buses. If a private concern can do it, I am sure that the investigation to be made by the Board of Estimate will demonstrate that we can have five-cent buses.

"Traction people will begin to have all kinds of objection to bus operation. They will probably tell us we will have tire trouble and that we will have to repave lots of streets. I expect them to be very insidious and active against me. But when we call the automobile people and the tire people in to help us solve these problems I am sure they will be mighty glad to see the biggest city in the world modernize its traction methods and they will wipe out all such objections."

The mayor believes that a bus express service could be established, the buses making long distance trips down town and up town during the rush hours without stopping except at long intervals.

Mayor Hylan says he noticed that the Broadway Association was in favor of bus lines and he thinks that it is very intelligent in this matter. He believes it would be a good idea if local associations would immediately begin studying the question and make suggestions to him about the needs of their districts. Speaking of service for ball games, he says:

"After a big ball game the crowd has a frightful time to get started home, and the last car, the one nearest the ball ground, cannot start away until the forward car is filled. A fleet of buses could be stationed all around the ball park to handle the crowd, and each bus could start as soon as it was filled."

Other crowds would be taken care of in the same way.

GARDNERS PLAN CAR.

The Gardner Motor Car Co., St. Louis, incorporated for $2,000,000, plans to make a small, moderately priced car, first models of which are expected to be ready for display in October. The 1920 schedule provides for 15,000 cars. The corporation is headed by Russell E. Gardner, Sr., and Russell E. Gardner, Jr., will be vice president in charge of sales.

Roger Babson, statistician and a director of the Bay State Railway Co., told the Federal Electric Railways Commission that automobiles were responsible for much of the street car traffic loss. With 5000 street cars in Massachusetts there are 186,000 automobiles running.

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Dealers Should Know About Trade Acceptances

Books Accounts Converted into Negotiable Paper and All Concerned Are Benefited

TRADE acceptances have been such a potent factor in mercantile transactions that it is essential that the automobile dealer be thoroughly acquainted with methods employed in connection with them.

A trade acceptance is a time draft or bill of exchange drawn by the seller of merchandise on the buyer for the purchase price of the goods and accepted by the buyer, payable on a certain date, at a certain place designated on its face.

A trade acceptance differs from a sight draft or a promissory note in that it constitutes an acknowledgment of a debt for merchandise, payable at a definite time.

Sight drafts drawn for the collection of open book accounts tend to injure the credit of the buyer, whereas a properly drawn trade acceptance, payable at a bank, represents a purchase of merchandise, implies credit standing on the part of the acceptor, and becomes an order on the bank to pay the obligation at maturity.

A promissory note is a promise to pay, but does not necessarily indicate the character of the underlying transaction, whereas a trade acceptance is an order to pay a merchandise debt, of which the instrument should give evidence on its face.

The use of trade acceptances benefits the seller of goods, the buyer of goods and the banker. The advantages to the seller include the following: Converts non-negotiable book accounts into acceptances which are negotiable and acceptable to the banks, thereby relieving the seller of the burden of carrying and financing his customers; encourages prompt payment at maturity, prevents the taking of unearned discounts and the abuse of sales terms, tends to check overselling, as credits will be more carefully scrutinized, and places seller in stronger position when applying for banking credit.

Advantages to the buyer include: Improved credit standing with seller because the acceptance indicates the buyer's intention to abide by the terms of the sale, better sales terms, as the seller is furnished paper which can be converted into cash, more efficient business methods due to the sense of responsibility for definite obligations and a check on overbuying, as the buyer's ability to properly finance his business will tend to control the volume of his purchases.

The advantages to the banker include the substitution of two-name paper, representing a merchandise transaction for the one-name paper which has been so generally in use and a better understanding of his customer's business policies.

Advantages to business in general include: The substitution of readily negotiable acceptances for non-negotiable book accounts, the introduction of an instrument which increases business capital by releasing funds tied up in book accounts, better and more conservative business methods and improved trade relations between buyers and sellers.

The operation of trade acceptances in business is simple. The goods are shipped by the seller to the buyer. An acceptance form draft of even date with the invoice, payable a certain number of days after date, is sent by the seller for presentation to the buyer or direct to the buyer, with or without shipping documents attached.

If the buyer wishes to avail himself of time he accepts the bill, which is returned to the seller, but if he wishes to receive the benefit of the cash discount offered he returns the draft unaccepted and pays the bill within the discount period. When the acceptance method is used the completed bill may be held by the seller until maturity or may be discounted at a bank. The buyer is expected to meet the bill at maturity.

An acceptance is better than an open account, as it is written evidence of a sale of goods. An acceptance may cover one or more shipments of goods and may be drawn at the time of shipment or within a reasonable time thereafter, 30 days being considered a reasonable time. Acceptances may be made payable to a third party and may be indorsed by holders to other parties. The question whether shipping documents should accompany drafts drawn for acceptances is a matter to be settled by the parties to the transaction.

A draft drawn for acceptance, payable a certain number of days after date or on a certain date, has the advantage over one drawn payable a certain number of days after sight, as in the first instance the maturity is clearly defined by the seller, and any delay in presentation will not affect the due date.

Preferential Rates.

While acceptances may be drawn for longer periods, the Federal reserve banks can only rediscount for member banks acceptances representing commercial or industrial transactions, maturing within 90 days from date of rediscount, or acceptances representing agricultural or live stock transactions, maturing within six months from date of rediscount. Preferential rediscount rates have been established by Federal reserve banks for trade acceptances having not more than 90 days to run.

The trade acceptance should have nothing to do with nor be employed in any class of transactions except that concerning the purchases and sales of goods. It should not be given for borrowed money or past due accounts, but should represent current transactions only.

The trade acceptance plan is not a new scheme or method, as it was used somewhat in the early history of this country. The Civil War disturbed the financial situation at that time and the risk and uncertainty attending the granting of long credits led to the introduction of offers of large cash discounts to insure prompt settlements in cash and gradually the open book account, with the cash discounts, superseded the use of trade acceptances.

In Great Britain and in many countries of continental Europe practically every commercial transaction is financed by means of a time draft, or bill of exchange. The draft is drawn by the seller of the merchandise and presented to the buyer, who, if he finds it satisfactory, writes across its face the word "Accepted," signs his name and returns the draft to the seller. It then becomes a trade acceptance—a sound circulating medium of

Specimen Form No. 1.

TRADE ACCEPTANCE

No. 126 New York, N. Y., July 3, 1919. $1,687.13.

Ninety Days after date pay to the order of OURSELVES one thousand six hundred eighty-seven 13/100 Dollars.

The obligation of the Acceptor hereof arises out of the purchase of goods from the drawer, maturity being in conformity with original terms of purchase.

To James Smith & Co.,
Rye, N. Y.

Due Oct. 1, 1919

THE JOHN DOE CO.,
By S. Marks, Treas.

Firm name can be printed here

Date July 5, 1919 (Date Accepted) ACCEPTED

Payable at RYE NATIONAL BANK (Designate bank or place of payment)

Location of Bank RYE, NEW YORK

Signature JOHN SMITH & CO. (Signature of Acceptor)

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interest and which the seller, if he desires, may discount at his bank.

Open Book Accounts.

Open book accounts, as assets, are neither quick nor sure. They are frequently slow and uncertain of realization. Even the best of them are seldom marketable for more than 50 per cent. of their face value. In the form of eligible trade acceptances, accounts can be converted in full into cash at a better rate of interest than is commanded by promissory notes.

A disadvantage of the open account system is the ease with which payment can be postponed, thus enabling purchasers to abuse their credit by putting off the settlement of their obligations for long periods of time without even paying interest. This results from the fact that since the time of payment is usually not fixed, the privilege of obtaining an extension is regarded as a matter of course.

If it becomes necessary to sue on an open account, in order to collect, the correctness of the book entries must first be proved. The buyer thereupon may raise objections which may cause much delay. The trade acceptance is an acknowledgment of the receipt of the goods and of a proper invoice, and is proof of the validity of the debt, since the debtor has already admitted the existence of a valid contract by his acceptance of the terms of the bill.

When an innocent third party becomes a bona fide holder of the paper, payment cannot be avoided by seeking refuge in the usual technical defences, since only the signature of the acceptor needs to be proved and no offsets or counter claims of any sort can be urged.

The open account is costly. The expense involved in collecting slow accounts, in extensions of the time of payment, and in trade discounts—all characteristic of the open account system—constitutes, in the aggregate, a heavy tax on business. All these disadvantages are eliminated by the use of the trade acceptance, which gives stability to commercial credit and transforms deferred obligations into definite assets and liabilities.

Conveniences Retained.

Conveniences of the open account are retained under the trade acceptance plan. The right to make partial payments may be arranged with the bank, and if the trade acceptance cannot be conveniently met by the customer upon its maturity, the merchant, if he desires to help him, may do so by taking the customer's promissory note with interest. Thus the merchant granting the extension does so without the loss of interest, which results under the open account system. Since trade acceptances are not given for renewals or for old accounts, they should be settled with notes which draw interest.

In the issuance of eligible trade acceptances there are three principal parties at interest.

The maker must be satisfied with the standing, credit and responsibility of the acceptor for the amount involved. For him it is a plain matter of extending credit to the acceptor, and up to what amount. When he secures the acceptor's signature on the bill he has a definite acknowledgment of debt by the acceptor, not subject to any further claim or offset, or to any request for delay or extension of payment. If the maker is particular in the selection of his customers and careful in extending credit facilities, he can expect to discount at his bank, when convenient, the trade acceptances held by him, and obtain the full value of his invoices, thus avoiding a lock-up of money until their maturity. He may also have the benefit of a preferential rate.

The acceptor should be careful to limit his total obligations through acceptances to an amount proportionate to his capital, to his volume of business and to the credit extended to him by the banks expected to buy his acceptances. Any good business man is jealous of his standing and knows that a default in meeting his obligations at maturity will ruin his credit for a long while and will almost destroy his chances of further success.

BIG ACCEPTANCE CORPORATION FORMED IN BOSTON

A NEW corporation, operating on original lines, to assist in the rapidly expanding field of financing the purchase of automobiles, has recently been organized. It is the National Acceptance Corporation, with headquarters in Boston and a Massachusetts charter.

It will be directed largely by Boston interests, thereby more actively identifying with the automobile business that section of the country, which hitherto has been little concerned with either the financial or the manufacturing side of the industry.

The officers of the new corporation will be: Edward Colton Boyce, president; Charles H. Keith, treasurer; Rodman Schaff, secretary. Mr. Boyce, who has had much experience in automobile financing in the West, acted as president of the Metz company on behalf of the government in execution of its contract for De Haviland four aeroplanes. The board of directors will include President Louis K. Liggett of United Drug Co., W. Cameron Forbes, former governor-general of the Philippines; President Percival S. Hill of American Tobacco Co. and Eugene W. Lewis, largely identified with the Timken-Detroit Axle Co. and with banking in Detroit.

The National Acceptance Corporation will start operations with a cash capital of $5,000,000.

The total of banking resources employed in its financing of sales of cars through use of trade acceptances is expected to reach $75,000 000. It will thus act as a financing link between banks in all sections of the country and the makers of standard cars, whose capital is now so fully employed in the manufacture of automobiles. Incidentally, through wholesale or lump insurance a saving will be effected that will bring the net total cost per car to the individual purchaser almost as low as that on an outright cash purchase.

The phenomenally rapid expansion of the automobile industry offers a wide field for such financing operations, and these in turn may be expected to facilitate a further expansion. Bankers nowadays have come to appreciate that the automobile is very largely a utilitarian rather than a pleasure vehicle. It supplies an essential business commodity—transportation.

The aggregate retail sales value of the country's annual output of cars has already reached $2,000,000,000. About $1,800,000,000 of this total is provided in cash by the buying public, and the balance of $200,000,000 by banks and financing companies. Aggregate wholesale selling value approximates $1.500,000.000, about $400,000,000 of which is financed by bank and other credit. There is abundant room here for well justified increase in credit expansion on both the manufacturing and the distributing ends.

The truck business in particular has risen by leaps and bounds; likewise the technical manufacturing progress. In five years the average life of a truck has risen from 14 to 21 months. It is an interesting incident of recent experience that trucks rebuilt at an average cost of 30 per cent. will outlast the first use of new cars, gaining a further active life of as much as three years. Another unappreciated development is the marked growth in inter-city business. In Boston alone there are 19 concerns now so engaged, and every day sees two lines of long-distance trucks plying between Boston and New York. During the war the movement between New York and Philadelphia reached a daily peak of about 600 trucks on the road.

It is the financing of this rapid expansion that the new corporation is designed to take an active part, on direct but conservative lines.

FULLER & SONS MFG. CO. OPENS NEW YORK OFFICE.

The Fuller & Sons Manufacturing Co., Kalamazoo, Mich., announces the opening of a New York office at 22 American Circle building, 1834 Broadway, with F. George Walker in charge. This company is making a complete line of motor car, motor truck and tractor transmissions.

SHERMAN HEADS FULLER TRUCK.

W. F. Melhuish, Jr., has been replaced as president of the Fulton Motor Truck Co. by George C. Sherman, president of the Universal Tobacco Machine Co. and the advertising agency of Sherman & Bryan. Carl Page has been elected vice president in charge of sales and advertising, and F. G. Saunders, San Antonio, is the new treasurer. Executive offices have been taken in the new Ford building, Broadway and 54th streets, New York.

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General News of Industry and Trade

Tusla, Okla.—Automobiles are to be manufactured in a plant which the Tusla Automobile Manufacturing Co. will build here. The enterprise is capitalized at $50,000 and the incorporators include R. M. McFarlin, R. O. Hollerine and A. H. Rogers, all of Tusla.

New Haven, Conn.—Messrs. Rubin & Krall have formed an automobile company to be known as the Cleveland Automobile Sales Co., and have acquired quarters in the Law Chambers building. They will handle the Cleveland car.

Little Rock, Ark.—Articles of incorporation have been filed by the Climber Motor Co., which is being organized to take over and merge with the Climber Motor Corporation of Poteau, Okla. The capitalization is $1,000,000. The incorporators include W. F. Drake, C. A. Roth and D. Hopson.

Norfolk, Va.—L. Berman has opened an automobile supply station at the old Berman livery stables on Liberty street extended. The building has been fitted for garage purposes.

Baltimore—W. T. Nishwitz, president of the Stutz Sales Co., local Stutz distributor, announces the opening of his company's new service station at 1018 Brevard street. Several new appliances based on factory principles have been installed.

Baltimore—C. C. Secrist, who has been in the service of Uncle Sam, recently returned and will manage the affairs of the Standex Sales Co.

Baltimore—The National Tire, Retreading and Vulcanizing Co., 900 North Gay street, has been opened by Frank Seidel and Frank J. Kraus.

Baltimore—William F. Bond recently rejoined the sales force of the Baltimore Republic Truck Co.

Baltimore—Allein W. Owens announces that he has completed negotiations with the Stewart Motor Corporation, Buffalo, to represent the Stewart line of motor trucks in this territory. The acquisition will not affect the Kelly-Springfield line.

Columbus, O.—W. E. Armacost has been selected as general manager of the Columbus Tire and Rubber Co., the new concern recently organized here and soon to start production in a new plant which the company is building on a 12-acre site at Goodale street and the Olentangy river.

Baltimore—A Hudson super-six on display at the salesroom of the Lambert Automobile Co. is being shown as an example of the effectiveness of Alcogas. It is said that the machine has gone almost 10,000 miles and that the piston heads, valves and valve seats are still practically free from carbon.

New York—The Martin-Parry Corporation, which is the consolidation of the Martin Truck and Body Corporation, York, Pa., and the Parry Manufacturing Co., Indianapolis, Ind., has completed the taking over of the Pennsylvania and Indiana corporations and the two operating companies have been dissolved. The New York company, the Martin-Parry Corporation, will henceforth be the sole company representing the business of the two former corporations.

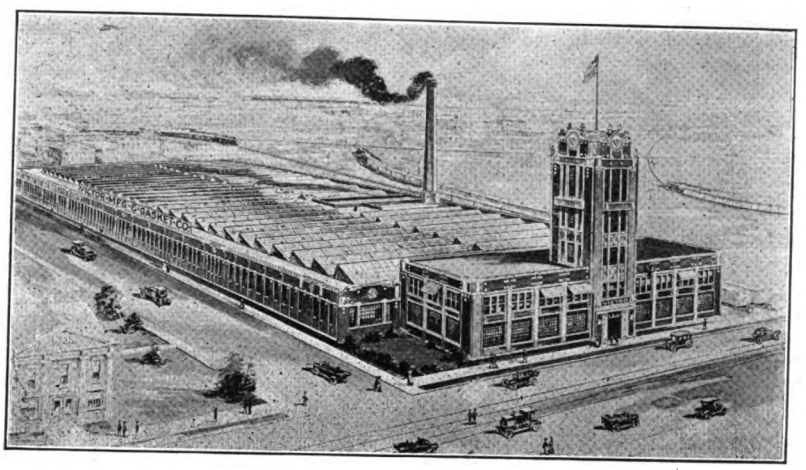
Brooklyn, N. Y.—George Lewis, president of the L. A. D. Motors, states that the corporation is negotiating for larger quarters for service stations.

Brooklyn, N. Y.—About 125 employees and friends of the New York and Brooklyn branches attended the outing of the Lexington Motor Co. at New Dorp Beach Casino, Staten Island. The New York nine won the baseball game. Charles Rogers, manager of the Brooklyn branch, has challenged the Gothamites to a return game.

New York—Capt. H. H. Hunnenwell drove the first new Cleveland car over the roads from Buffalo. He said that the car was assembled while he waited.

Lansing, Mich.—General Manager Durant of the General Motors Co. recently inspected the Lansing plant of the Olds Motor Co., which is now up to an unprecedented production of both cars and trucks. New factory groups are being built. The housing problem of Lansing is still largely unsolved.

New Haven, Conn.—A certificate of incorporation has been filed by the F. B. Markham Co., New Haven, which will engage in the automobile business with $25,000 capital. The incorporators are Harry Chaikind, Hyman A. Bettigole, Frederick B. Markham, Louis Feinmark, Aaron F. Apsel and Maxwell H. Goldstein, all of New Haven.



New Plant of Victor Manufacturing and Gasket Co.

The Victor Manufacturing and Gasket Co., Chicago, producer of high quality gaskets, better known as Victor Copper Asbestos Gaskets, is elevating its standards, as evidenced by its new manufacturing plant, now nearing completion. This plant, which is entirely modern in construction and design, will have more than four acres of daylight manufacturing floor space, which will enhance the company's facilities more than treble to those of the present factory.

The company renders a service that extends to all parts of the globe. The name "Victor" has been associated with the manufacture of gaskets for the automobile industry for many years and has attained world wide recognition as a never failing source of supply, which is the result of high ideals rigidly maintained and an excellence of service and product that has created an unprecedented insistence for Victor copper asbestos gaskets.

The new building, land and equipment when completed will represent an outlay of over $500,000. Several hundred thousand dollars have already been expended for various additional improvements, including restaurant, welfare and recreation quarters, a fresh air ventilating plant and circulating distilled ice water for the convenience of its employees.

Plans are under way for an authorized capital of $1,000,000, which is an advent in the automobile history and will be known as the only exclusive gasket manufacturer with such facilities.

The company has purchased enough additional land on its present site for a still further extension, where it has plans in mind for an eight-story, 100x300, warehouse and storeroom.

There has been no change in the company's executive personnel, and the following officers still preside: John H. Victor, president; Joseph B. Victor, vice president; Paul F. Victor, secretary-treasurer.

The company announces that it is enjoying the patronage of the majority of automobile, truck, tractor, aeroplane and gas engine manufacturers, and the ever increasing demand and popularity of the Victor product has necessitated this large plant, so that the reputation for quality and good service may be maintained. The new plant will be located at 5750 Roosevelt road.

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Personal News of the Industry in Brief

George G. Bailey, for several years years sales manager for the Brown-Lipe Co., Syracuse, N. Y., manufacturer of

George G. Bailey, Sales Manager, Hinkley Motors Corp., Detroit, Mich.

power transmission clutches and gearsets for automobile vehicles, has resigned to become associated with the Hinkley Motors Corporation, Detroit, manufacturer of gasoline engines.

R. C. Getsinger has been appointed sales manager of the Lincoln Motor Co. and will assume his new duties about Sept. 1. The company was organized less than two years ago to build Liberty motors for the government. The organization is now being readjusted to manufacture and market a product which has been in development since the signing of the armistice.

Clarence A. Triphagen, formerly manager of the Reo factory branch at Lansing, Mich., is now manager of the factory branch at Detroit.

E. B. McCoy, who for two years has been advertising manager of the Olds Motor Works, is now head of the sales promotion department, which is a new division of the sales organization.

Walter C. White, vice president of the White Co., has been made a chevalier of the Legion of Honor by the French Republic. It was conferred in recognition of the services rendered to France by the White Co. during the war.

Lucius French, advertising manager of the National Motor Car and Vehicle Corporation, has resigned to become secretary of the Western Oil Refining Co., Indianapolis.

H. M. Bacon is now connected with the McGraw Tire and Rubber Co. as general sales manager, with headquarters in Cleveland. He had been with the Diamond Rubber Co. for eight years.

H. A. Seiler, San Francisco, has taken over the distribution of Paige cars in Northern California. He has had great success as a distributor of trucks.

George Bell, formerly with the Remy Electric Co., as sales manager, is now assistant general manager of the Teagle Co., Cleveland, manufacturer of magnetos.

Ralph D. Webster has resigned as sales manager of the Wire Wheel Corporation of America to join the Fred E. Castle Co., distributor of Hayes wire wheels throughout the United States.

Earl W. McGookin has resigned as vice president of the Martin V. Kelly Co., Toledo and New York, to become a manufacturers' representative in Detroit. He will represent the Macbeth-Evans line of green visor lenses.

Otto T. Szekely has resigned as chief engineer of the Velie Motors Corporation, to become a consulting engineer, with headquarters in Rock Island, Ill.

F. George Walker is in charge of the New York office recently opened by the Fuller & Sons Manufacturing Co., Kalamazoo, Mich., to take care of the rapidly growing trade in the eastern district. The office is at 1834 Broadway.

A. L. Viles, formerly traffic manager of the Rubber Association of America, has become general manager of that organization, succeeding H. S. Vorhis.

James J. Harrington, formerly manager of the New England branch of the Ford Motor Co., has been promoted to take charge of the company's branch in Copenhagen. He was given a farewell dinner at the Boston City Club, at which he was presented with a diamond ring. R. P. Jones, formerly of Washington, is Mr. Harrington's successor.

Harold J. Vogler has been appointed general sales manager for the American Motor Truck Co., Newark, O. During the war he was an officer in the Ordnance

Harold J. Vogler, Sales Manager, American Motor Truck Co., Newark, O.

Department. Following the armistice he became general manager of the White service station at Philadelphia.

Homer L. Schneider has become a member of the truck sales department of the Grant Motor Corporation. Mr.

Homer L. Schneider, Western Salesman, Grant Motor Car Corp., Cleveland, O.

Schneider was for four years manager of the Republic Motor Sales Co., Cleveland, and prior to that was associated with Van Dorn Electric Co. for several years.

D. H. Torrey, sales manager of the Bearings Service Co., has finished his tour of inspection of eastern branches with his visit to Boston, and he complimented L. H. Dodd on the manner in which the business has increased and the improvement in the service.

Herbert L. Boehm, formerly connected with the Hudson Motor Car Co. of New York, is now with the investment securities house of E. H. Clarke, Inc., 27 William street, New York.

Col. Fred Glover, formerly chief of the motors division of the War Department has become assistant general manager of the Timken-Detroit Axle Co. Before entering war work he was vice president of the Emerson-Brantingham Co., Minneapolis.

Ralph B. Dort, recently discharged from the Marine Corps, has been appointed by the Dort Motor Car Co. as director of sales for Europe.

Fred C. Cole, Jr., has formed a company to handle United States trucks in New York and Connecticut. P. B. Haynes is secretary and general manager. Offices are at 236 West 54th street, New York.

Earl J. Moon has been elected vice president of the Moon Motor Car Co., St. Louis. He is the son of the late Joseph W. Moon, founder of the company, and is a graduate of Princeton.

Byron H. Riess is now associated with the Charles E. Riess Co. in the wholesale distribution of the Columbia car at 1737 Broadway, New York.

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Intimate Notes of Men in Automotive World

Mark Havenhill has been appointed regional agricultural director for the *southwest* by the Cleveland Tractor Co.,

Mark Havenhill, Regional Agricultural Director for Cleveland Tractor Co.

Cleveland, O. His headquarters will be at Oklahoma City, Okla. He is a graduate of and was formerly an instructor at the Iowa State Agricultural College, Ames, Ia. Mr. Havenhill is to cooperate with Cletrac tractor dealers and owners.

B. L. Combs has charge of the experimental laboratory of the Oakes Co., Indianapolis, manufacturer of radiator cooling fans for tractors, trucks and passenger cars. During the war Mr. Combs served for two years as an officer in the Signal Corps, A. E. F., and before entering the service was an assistant instructor in physics at the University of Wisconsin.

Fred W. Jones has been appointed advertising manager for the Holt Manufacturing Co., Peoria. He was formerly with the advertising department of the International Harvester Co.

W. E. Finney is now service manager for the Goodrich Tire and Rubber Co., San Francisco. He was formerly with the big Akron organization.

Ralph W. Cook has become general and sales manager of the Automobile Sales Corporation, Philadelphia.

H. F. Shepherd has joined the Baldwin Supply Co., Charleston, W. Va. This company enters the automotive equipment business as jobber. He was formerly manager of the automotive equipment department of the Toledo Rubber Co.

J. A. Massie has resigned as sales manager for the Hoyt Electrical Instrument Works, Penacook, N. H. He is succeeded by **M. T. Rogers.**

Harry D. Benner, formerly eastern district sales manager of the Federal Motor Truck Co. in New York, has joined the Federal Rubber Co., Cudahy, Wis., as manager of the accessory sales department.

S. R. Montgomery has joined the sales department of the General Motors Truck Co. He has had considerable experience in the truck field, having sold GMC trucks and Knox tractors in Arizona. During the war he served in the Motor Transport Corps.

Walter T. Sewell has left on a trip of six weeks throughout the West and will open branches along the Pacific coast and in the Northwest. He is treasurer of the Sewell Cushion Wheel Co., Cincinnati.

C. Fisher Hepburn is now the Republic Motor Truck Co.'s vice president and general manager. Frank W. Ruggles, the president, will devote his time to the development work in connection with all of the company's interests.

Roger L. Tennant has been appointed secretary, treasurer and sales manager of the Texas Battery Corporation, Dallas, Tex., succeeding Max Rothman. Mr. Tennant has been engaged in the automobile trade for a number of years and has covered all of Texas, Oklahoma and New Mexico.

Herbert T. Hare is now manager of the sales promotion and advertising of the Automobile Sales Corporation, Philadelphia.

Lieut. J. Lowcher, recently discharged from Camp Upton, has been appointed head of the accounting department of the Eisemann Magneto Co.

William L. Johnson is now treasurer of the St. Louis Automobile Manufacturers and Dealers' Association, succeeding W. S. Roberts of the J. I. Case Co. Mr. Johnson is associated with Johnson Automobile Co., one of the oldest Ford dealers in St. Louis.

J. L. Hibbard has returned from a three months' inquiry into trade conditions in Europe. He is the foreign sales

J. L. Hibbard, Recently Returned from Studying Trade Conditions in Europe.

manager for the Cleveland Tractor Co., Cleveland, O.

Wallace C. Hood is now general sales manager of the Standard Motor Truck Co., Detroit. Four years ago Mr. Hood

Wallace C. Hood, General Sales Manager of Standard Motor Truck Co.

held this same position. Just recently he was sales manager of the King Motor Car Co.

L. A. Shadburne is now the Olympian Motor Car Co.'s western district representative. He has had wide experience in marketing automobiles.

Arthur J. Haynes has resigned as sales manager of the Ford Motor Co., London, Ontario, to go to Windsor. He will become sales manager of the Champion Spark Plug Co. of Canada, Ltd. A new plant is being erected by the Champion company in Windsor.

J. C. McAdams, formerly connected with the Wyeth Hardware and Manufacturing Co., St. Joseph, Mo., has joined the Martin-Lumaghi Co., St. Louis. He will distribute gasolaters in West Virginia, New Jersey, New York, Delaware, New England and Canada.

E. G. Parsons has been appointed chief of engineering for the Dayton Wire Wheel Co., Dayton, O. At McCook Field, Dayton, Mr. Parsons was engineer at the airplane experimental station. He was formerly associated with the firm of Thomas & Thomas, consulting automotive engineer of Detroit.

Raymond A. Wiens has been elected secretary and treasurer of the Racine Manufacturing Co. Mr. Wiens has just been relieved from army service. He was formerly secretary of the old Mitchell Wagon Co., Racine, Wis.

Frank H. Jones has become president and general manager of the Jones Gear Co. The company is erecting a large plant in Cleveland. Mr. Jones was for many years in charge of the manufacturing and engineering department of Warner Gear Co., Muncie, Ind., and later superintendent of the company.

W. J. Lane has resigned as buyer for the Maxwell Motor Co. to become associated with the Trumbull Steel Co., Ford building, Detroit.

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TIRE INDUSTRY AND TRADE

The India Tire and Rubber Co., Akron, announces that William G. Lerch, for many years prominent in the rubber world as a production and research man, is now its superintendent. Among rubber men Mr. Lerch is perhaps best known for his work on cord tires of the Miller Rubber Co., of which he was assistant superintendent and in charge of production for nine years. Prior to his connection with the Miller company Mr. Lerch was with the Carnegie Steel Co. and the B. F. Goodrich Co. in the production and cost departments. The India Tire and Rubber Co. is expanding and will soon almost double its present production of tires. A new superintendent was wanted for the larger factory, and of all the men available in the Akron rubber district Mr. Lerch was chosen.

The Perfection Tire and Rubber Co., Ft. Madison, Ia., and Wabash, Ind., has contracted with the Nemours Trading Corporation whereby Nemours becomes the exclusive general sales department for world-wide distribution of the entire output of the Perfection brand of tires and tubes. This arrangement consolidates the former existing Nemours contract controlling the export trade of Perfection tires into one universal operation.

The B. F. Goodrich Co. has more than doubled the asset value behind its common stock in three years, entirely from earnings. Goodrich has put much of its earnings back into working capital. For the six months ended June 30 last, net profits after all charges, but before Federal taxes were $7,150,000. At the current rate earnings for the full year would approximate $15,500,000, which after preferred dividends would be equal to more than $21 a share on common before taxes. In view of the fact that tire makers look for increased business during the latter half of the year, it is not improbable that Goodrich will return substantially higher earnings for the full year than the present rate indicates.

The Bergougnan Rubber Corporation, Trenton, N. J., is having its tire mileage guaranteed by the National Surety Co., New York. "In order to remove all possible uncertainty as to the service to be expected from Bergougnan tires," states the Bergougnan announcement, "and to convince prospective purchasers that they will actually get the number of miles that we guarantee for these tires, we announce that arrangements have just been made with the National Surety Co. whereby that organization, which is the largest of its kind in the world, will guarantee our guarantee." Fabric tires are guaranteed for 6000 miles and cord for 8000.

WILLIAM G. LERCH.
New Superintendent of the India Tire and Rubber Co.

The Essenkay Products Co. announces that President Fran D. Mayer has left for England, where a gigantic new Essenkay is being erected to fill the demand for Essenkay tire filler, which is now world-wide, being especially strong in Great Britain, her colonies, dominions and dependencies. Mr. Mayer is expected home about Sept. 15.

The Pennsylvania Rubber Co. announces the election of George W. Daum as assistant general manager, and also that President-Treasurer H. Wilfred DuPuy has relinquished the title of treasurer in favor of A. H. Price.

The Goodyear Tire and Rubber Co. will have 30,000 spindles in its proposed cotton mill in Los Angeles, which will be used to make fabric for pneumatic tire casings. The enterprise will have $6,000,000 capitalization.

The United States Rubber Co. announces that the money derived from the proposed sale of the $36,000,000 common stock will be used "to pay off all current indebtedness that can be paid (certain accounts payable and acceptances will always exist), for new construction planned and in process, designed principally for the increase of the product of automobile and truck tires, for extension of rubber plantations in the East, and to facilitate the carrying of stock under profit sharing for benefit of our employees." The company during the first half of this year earned $10,815,750, after provision for all interest charges, depreciation, Federal taxes and reserves. These figures are contained in a letter to stockholders calling a special meeting to pass on the recently proposed capital increase from $120,000,000 to $300,000,000. Upon ratification of the plan $36,000,000 of the proposed increase in common stock will be issued.

The Madison Tire and Rubber Co. has been incorporated in New York state with $2,000,000 cumulative eight per cent. preferred stock and 220,000 shares of common stock without par value. The company will engage in the manufacture of automobile tires, with a plant at Buffalo. The corporation also will acquire and continue the business of the United States Rubber Reclaiming Co. The company has been supplied with $1,400,000 additional working capital, which, together with the quick assets of the rubber reclaiming company, gives the new concern current assets in excess of $2,242,000. The preferred stock is convertible at the option of holders into common stock at any time until July 1929, on a share for share basis.

The Savold Tire Corporation has concluded arrangements with the Finance and Trading Corporation of New York whereby the latter will assume the international management and control of the Savold tire business. The new interests also will supervise the general operation and business of the various state Savold tire companies.

The Pressman Tire and Rubber Co. plans to erect a six-story building in New York.

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The McGraw Tire and Rubber Co. announces the appointment of H. M. Bacon as general sales manager, with headquarters at the company's main office in Cleveland, O. Mr. Bacon comes from the Diamond Rubber Co., where he has been in charge of sales since 1914. He is well known throughout the tire and motor car industry. After a long experience in the motor car field he joined the Diamond Rubber Co. in 1911 and became its sales head three years later. The association of Mr. Bacon with the McGraw Tire and Rubber Co. is an evidence of this company's rapid growth into one of the big factors in the tire business. New branches have recently been opened in Boston, Baltimore, Detroit and Denver. According to information received from the company's sales officials, branches will open in several additional cities within 30 days.

H. M. BACON.
Newly Appointed General Sales Manager of the McGraw Tire and Rubber Co., Cleveland, Formerly in Charge of Diamond Tire Sales.

ATLAS TIRE CO. HAS MADE GREAT PROGRESS.

The Atlas Tire Co., 1777 Broadway, New York City, announces that it is selling tires as fast as it can make them, and is also getting a good share of foreign business. The company has made great progress. It started in business less than two years ago with one store in Philadelphia. A capacity business was reached almost at the start, and since then the company has been getting all the business it could handle. In Philadelphia the company did a wonderful business in rebuilt tires and seconds.

The Pressman Tire and Rubber Co., Philadelphia, which was recently incorporated under the laws of Delaware with $3,000,000 capitalization, has already leased several units of its proposed nation-wide chain-store system for retail distribution of tires, including Boston, Baltimore, WilkesBarre, Pa.; Scranton, Pa.; Reading, Pa.; Allentown, Pa.; Easton, Pa., and Harrisburg, Pa.

Other branches to be opened in the near future include New York, Chicago, Detroit, St. Louis, Cleveland and San Francisco. The Baltimore branch is located at 15 Mount Royal avenue.

The company has purchased for $500,000 three properties, 250-52-54 North Broad street, Philadelphia, in the heart of the automobile district. The officers of the new corporation are: President, and general manager, Herman Pressman; vice president and sales manager, William J. Ryan; comptroller and office manager, G. W. Manwaring; director, R. T. Moyer; general counsel, Michael F. Donahue.

The Pressman Tire and Rubber Co., through contracts, controls the output of three factories, a total of about 700,000 tires annually. Negotiations are under way for the output of other factories. The activities of the company embrace the entire tire field.

The principal factories now turning out tires for the company include the Sebring Rubber Co., manufacturer of the Omar tire; the New Castle Rubber Co., manufacturer of the Liberty tire, and the Universal Rubber Co.

Arrangements are being made for the establishment of distributing branches in all the principal countries of South America. Because of its mammoth business the company is enabled to sell tires at unusually attractive prices. Its sales are made under liberal guarantees.

Truck and Trailer Manufacturers

The Fruehauf Trailer Co. has bought a site in Detroit for a new factory.

The Commerce Motor Car Co., Detroit, has adopted the new Everyway body, made by the Highland Body Manufacturing Co., Cincinnati, O. This all-purpose body is made in three sizes for trucks of ¾, 1, 1½, 2 and 3-3½ tons capacity.

The Abbott-Downing Co., Concord, N. H., builder of Concord trucks, has been purchased by M. A. Sevigne, Boston, president of the National Wrapping Paper Co., who becomes president and managing director. The company will market a delivery truck for the bakery trade.

The American Motor Truck Co., Newark, O., which has just placed in production the new Ace truck, is erecting a concrete office building.

The California Trailer and Radiator Co., San Diego, Cal., has changed its name to the Marx Trailer Co., incorporated with $200,000 capital. The company is now specializing on the Komfy Kamping trailer.

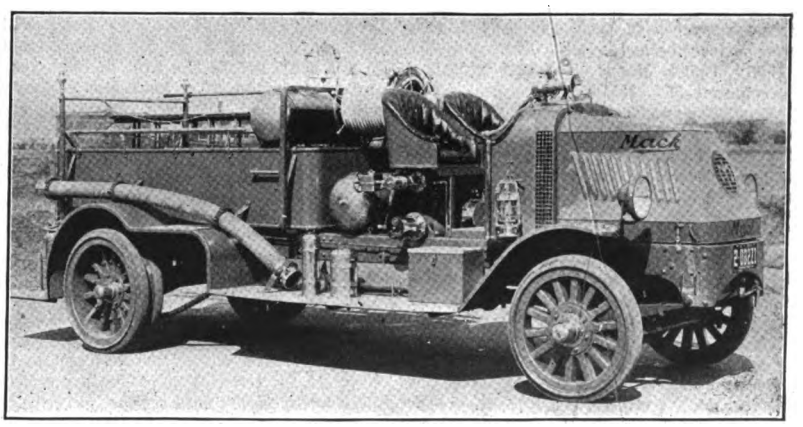
The Reliance Motor Truck Co., Appleton, Wis., has increased its capital from $500,000 to $1,000,000, and is to erect a plant addition to cost $160,000.

The Winther Motor Truck Co., Kenosha, Wis., has increased its capitalization by $1,000,000, and is bringing out new types of trucks. One is designed especially for telephone and telegraph companies. It is reported that the company will market a farm special truck of the quadruple drive type, combining the advantages of a farm tractor with those of a truck.

The Parker Motor Truck Co., Milwaukee, has brought out four new models, a four-cylinder two-ton, a six-cylinder two-ton and four-cylinder 3½ and five-ton trucks. Four-cylinder Wisconsin engines replace the six-cylinder Continental. A larger radiator, new hood and dash, a different transmission and a new design rear axle on the 3½-ton models are among the changes.

EQUIPMENT IMPROVEMENTS IN JUMBO TRUCK ANNOUNCED.

The Nelson Motor Truck Co., Saginaw, Mich., announces changes of construction along slightly heavier lines, making possible an increase in the rating of the Jumbo model D from 4000 to 5000 pounds. Several equipment improvements are announced, including installation of a new lubricating system. The chassis price has been increased from $2500 to $2700. Two new Jumbo models will be announced shortly, 1½ and 3½-ton sizes, each to be supplied in three wheelbase lengths.



Mack Truck Chassis Equipped with a New Type Rotary Fire Pump That Is Claimed to Be Entirely Free of Vibration, Designed Expressly for the International Motor Co.

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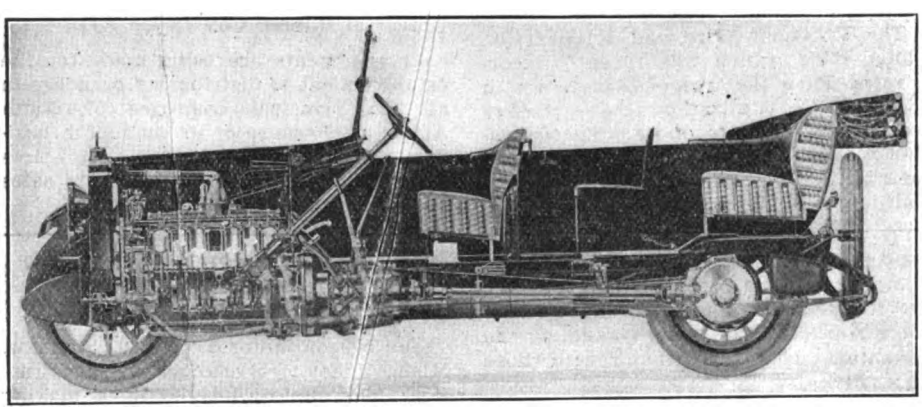
News of the Passenger Car Industry

The Grant Motor Car Corporation, Cleveland, O., has insured all of its employees in a group policy.

The Studebaker Co. is swinging into the second half year with production at the rate of 4200 cars a month, its best operating achievement since it resumed its normal manufacturing functions this year. For the full year Studebaker will probably turn out 40,000 cars, but on account of the revamping of its factory layout can hardly hope to better that mark very considerably. Next year should tell a different story.

The Continental Motors Co., it is reported, may be the next company to startle the automobile world with an inexpensive car calculated to compete with the Ford. Interests that dominate in the Detroit Steel Products Co. are said to have taken over a block of 450,000 out of the 1,400,000 shares of Continental at $12.50 a share.

The Moon Motor Car Co., St. Louis, is bringing out the 1920 model 6-66, which will sell for $2750. It will have a Continental motor, 3½x5¼, with piston displacement of 303 cubic inches, horsepower 29.40 S. A. E. and maximum brake horsepower 66, with 2275 revolutions per minute at maximum.



Cutaway of Packard, Showing Internal Working Parts and Other Features.

The Buick Motor Car Co. has made reductions of from 15 to 35 per cent. on parts.

The Paige-Detroit Motor Car Co. has made advances of from $40 to $90, the new prices being: Paige Linwood 39, $1595; Paige Essex 55, $2150; Paige Larchmont 55, $2255.

The Scripps-Booth Co. of California will erect a $1,500,000 automobile factory, beginning next spring.

The Hudson Motor Car Co. plans to spend $2,250,000 to build and equip a plant for the manufacture of the Essex cars. This year's schedule calls for 20,000 each of the Hudson and Essex cars, both of which are now made in the Hudson plant. It is expected that the new factory will be ready in October.

Dodge Bros. is reported to be preparing for tremendous expansion. The firm has bought a site, costing $2,085,000, for a new plant on the river front in the southern part of Detroit. The tract purchased extends from Zug Island to the Great Lakes Engineering Works, affording about a mile of frontage on the great waterway, and backward for about half that distance to the Detroit, Toledo and Ironton railroad. There are 287 acres. The development will require several years for its completion.

The Dort Motor Car Co. announces new prices as follows: Touring, $985; roadster, $985; sedan, $1535; coupe, $1535.

The Pierce-Arrow Motor Car Corporation, it is believed, will be managed by Geo. W. Goethals & Co., Inc., following the election of John C. Jay, Jr., as president. The Goethals firm managed the Wright-Martin Aircraft Corporation during the war. It is understood that new financing will be necessary for Pierce-Arrow. Pierce-Arrow's passenger car output is normally about 1200 a year. So great is the demand for these cars that twice this number could be disposed of this year if the company had the facilities for turning them out.

The General Motors Corporation is reported to have purchased the plant of the Hastings Consolidated Press and Tool Co., Hastings, Mich., the deal involving $1,000,000.

The Stutz Motor Car Co. of America has completed plans for doubling the capacity of its plant in Indianapolis. Work will be started immediately on the additions which, with equipment, will cost $800,000. The company states that it will increase the capacity of the plant at least 50 per cent. before the first of next year and that inside of a year the capacity will be doubled. Present operations are at capacity, or 3000 cars annually. Recently 25,000 additional shares of stock were issued, making a total of 100,000 outstanding. The present officers are: President, Allan A. Ryan, New York; vice president, Frederick E. Gunnison, New York; secretary, George F. Lewis, New York; treasurer and general manager, William N. Thompson. Harry C. Stutz resigned as president July 1.

The Franklin Motor Car Co. has begun the erection of a $400,000 addition to its plant in Syracuse, N. Y. The production plan is for 18,000 cars a year.

The Maxwell Motor Car Co., through its president, W. Ledyard Mitchell, has announced that the plant under construction on Oakland avenue, Detroit, when completed will cover close to 75 acres, will cost approximately $12,000,000 and will employ 15,000 men. This is one of the biggest industrial undertakings Detroit has ever seen and with its location there Dayton, O., loses the Maxwell shops. "It is our intention to reduce as much as possible work done in outside shops and bring it to the Detroit plant," said Mr. Mitchell. "This refers only to Maxwell branches which are manufacturing parts of our cars in other cities. We hope to make the Maxwell a self-contained company. Dayton shops are now doing most of our body work and making a large number of axles. All these departments will be replaced in our Oakland avenue plants. There are about 2000 employed in the Dayton branch." It was also stated that with improvements already contemplated the output of the factory has been increased from between 200 and 250 cars a day to 300 cars. Ultimately the company will have facilities for turning out 500 cars daily.

PARTS MAKERS

The Simms Magneto Co., East Orange, N. J., is enlarging its factory.

The Oliver Rim Co., recently organized with $1,000,000 capitalization, has begun construction of a factory in Atlanta, Ga. The company will make a split demountable rim.

The Roller-Smith Co., 233 Broadway, New York, recently held a sales conference at its Bethlehem, Pa., works, with the following present: G. L. Crosby New York, sales manager; M. Frankel Chicago, assistant sales manager; C. M Hunt, New York; C. G. Kahant, New York, export manager; W. G. Merowit Buffalo; C. H. Nicholson, Detroit; F. C Perkins, Philadelphia; W. G. Pieksen, St Louis; F. W. Ryan, Chicago; W. J. Shire New York, and J. E. Wood, Clevelan I. E. Hall, assistant works manager, an Superintendent W. H. Pugh entertaine the men at several social functions du ing the conference. The final sessio was in the company's New York office.

The Herbrand Co., Fremont, O., mak of drop forgings for automobile firm has purchased a 35-acre tract of land which it will build a new plant. T working force of 500 will be doubled.

The Piston Ring Co., Muskegon, Mic has begun an addition that will be tw thirds as large as the present plant. addition to the machine and a found more than twice as large as the prese one will be started soon.

The Kelsey Wheel Co., Inc., Detro will spend $1,000,000 to increase its ma ufacturing facilities at Memphis, w employment to 4000 workers. The co pany makes parts for Ford cars.

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The Detroit Pressed Steel Co. has announced the purchase of the large Carlton avenue plant, Detroit, recently operated by the Detroit Shell Co., and will take immediate possession, using it in addition to its present plant at 1800 Mt. Elliott avenue. This important acquisition, made necessary by the rapid expansion of business, and comprising 167,200 square feet of floor space, will be used exclusively by the wheel division of the Detroit Pressed Steel Co. Here will be concentrated the company's entire production of Disteel wheels for motor cars, an accessory which, although introduced on the American market only about a year and a half ago, has made such rapid headway that the main plant, busy with other products as well, no longer can spare manufacturing space and facilities equal to the demand for the new type of wheels. The Carlton avenue property was originally acquired and the factory built about four years ago for the Springfield Body Co. when that concern, known then as the Springfield Metal Body Co., decided to move to Detroit and expanded its operations for the manufacture of automobile bodies. The plans were not successful and the concern went into the hands of a receiver, the court appointing Byron F. Everitt. A little more than a year ago, when the government was eager for a quick production of munitions, the existence of this splendid plant, then idle, suggested its use for that purpose. Encouraged by a government official, who came to Detroit to inspect the property, a group of Detroit business men, gathered at a luncheon at the Detroit Athletic Club, formed the Detroit Shell Co. and took over the plant to manufacture munitions. When their contracts were completed and a settlement made with the government there was no further need to continue the company. Consequently its president, John Kelsey, offered the property for sale and it was almost immediately snapped up by the Detroit Pressed Steel Co. for the special use of its wheel division. The property comprises 27 acres, with a frontage of 2989 feet on Carlton avenue, 370 feet on Southern avenue and on the north side 547 feet, approximately 900 feet from Michigan avenue. There is an office building, 25x60, a one-story brick dry kiln, 50x100, and a main building, 316x500. With such space and facilities the Detroit Pressed Steel Co. will now be able to speed up production on its Disteel wheels to meet the pressing demand.

The General Motors Corporation has bought 63 acres of land in Janesville, Wis., adjoining its previous holdings of 200 acres. upon which is located the Samson tractor plant. Further extensions are planned.

SE-MENT-OL COUNTER DISPLAY.

Helping the dealer to make more sales and increase his business on Se-Ment-Ol is the object of a unique display stand furnished by the Northwestern Chemical Co., Marietta, O. The display stand clearly tells the purpose of the merchandise it displays. It is an actual reproduction of a leaking radiator holding one can of Se-Ment-Ol (powder and one can of Se-Ment-Ol (liquid) with the familiar slogan, "Finds the Leak and Fixes It." Being made entirely of metal this display stand is designed to give greater service and will not soil or become damaged

from use or handling like wood or cardboard stands. Counter displays such as this one have doubled sales on many products, their appeal being wholly in their power of suggestion and impelling action. Goods everlastingly displayed on a counter stand induce attention, create desire and lead to purchase. The impression created by advertising right in the dealer's store gives an impulse to buy, which is created right where the goods are, and can be conveniently and immediately satisfied. Dealers who are interested in this display for increasing sales should write to "Norwesco" at Marietta, O.

The Ohio Carbon Co., Cleveland, O., announces that it has outgrown its present quarters and has made preparations to move into a modern manufacturing plant within the next month or two. The new plant will consist of a number of up-to-date factory buildings equipped with the latest conveniences, both for manufacturing and for the help. The first unit of this installation is now well under way. In a period of four years the company has developed from a small beginning into one of the strongest factors in the carbon industry and "Ohio carbon products" are becoming well known not only in the United States, but also in foreign countries. The high standard of quality of the material produced by this company, combined with its efficient method of making deliveries and sound business principles, has resulted in a very rapid growth. The company specializes in the manufacture of carbon, graphite and metal-graphite brushes for all types of motors and generators, particularly brushes that are used on automobile electric starting motors and lighting generators. In its new plant the company will be in a position to carry out even further its policy of giving all of its patrons the highest standard of quality that can be produced in every brush that is manufactured and continue its customary high standard of service in the way of deliveries.

United Motors Service, Inc., with its 15 branches and 38 distributing stations throughout the country, has added the service of rims and rim parts of the Jaxon Steel Products Co., Jackson, Mich., to its accounts. The company plans to take over other new accounts which it will undertake to departmentalize so that specialization along various parts of the car may be accomplished by the organization. Arrangements for handling the Jaxon rim service were made when the Bearings Service Co., Detroit, decided to concentrate its entire energies upon bearings service exclusively. A. D. Trempe, who has had general supervision of the rims service of the Bearings company, will supervise the rims service of the United.

The Phoenix Manufacturing Co., Eau Claire, Wis., is building a new type of tractor under contract with the Yankee Boy Tractor Corporation, which is soon to enter the market. The Yankee Boy firm plans to have its own factory by the end of the year. The tractor is a three to four plow design, using kerosene.

The Bear Tractor Corporation, New York, has been chartered in Delaware to make and deal in farm tractors. The parties are H. A. Victor Crawford, J. L. Crandall and S. I. Donner.

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Great Britain Will Admit U. S. Cars

A large quantity of American motor vehicles, possibly 5000, may be admitted into Great Britain in the next few months, says the American Chamber of Commerce in London. This will include passenger cars, commercial cars and motorcycles.

Up to the present time importers have been rationed on the basis of 50 per cent. of their 1913 imports, in proportionate monthly quantities up to Sept. 1, 1919, at which time the British government's "transitional policy" is to be reconsidered. Those importers who established their business later than 1913 have not been getting anything at all.

Although it is only a temporary arrangement and should in no way be taken as an indication of the British government's trade policy on motor vehicles after Sept. 1, the news will be welcome to American manufacturers, who have had trouble up to the present in putting their cars on the British market.

OPPORTUNITIES IN PERSIA.

The American legation at Teheran, Persia, reports that there appears to be a considerable demand for low priced motor cars in Persia and suggests that American manufacturers send a supply of their catalogues to the legation to be put in the commercial reading room, where those interested could consult and obtain them.

MOTOR CARS IN HYOGO.

The number of motor cars in the Hyogo prefecture of Japan in 1918 was four, in 1912 there were 14, in 1916 there were 89, and at the end of 1918 there were 282 cars registered. The city of Kobe, which is located in this prefecture, is said to have 182 automobiles.

Foreign Trade Opportunities

(Reserved addresses may be obtained from the Bureau of Foreign and Domestic Commerce, Washington, D. C., or from district or co-operative offices.)

30,221—An agency is desired by a man in Algeria for the sale of agricultural tractors and motor cars. Quotations should be given c. i. f. Algeria. Payment against documents. Correspondence should be in French.

30,217—A firm in Algeria desires to secure an agency for the sale of automobiles, motor cars and tractors. Quotations should be given c. i. f. Algeria. Payment, cash against documents. Correspondence should be in French. Reference.

30,194—An export and import house in this country with agencies in India and England is desirous of communicating with dealers in gasoline and kerosene tractors, pleasure cars and motor trucks, with a view to securing agencies for selling in Morocco. References.

30,124—A firm in Italy desires to secure an agency for the sale of machinery, automobiles and accessories, rubber goods, electrical supplies and other goods needed in that country. Catalogues and price lists are requested. Correspondence should be in Italian or French.

30,133—The purchase and sole agency is desired by a firm in Czechoslovakia for the sale of motor trucks, passenger autocars, tractors and rubber tires. Payment to be made in United States currency. Reference.

30,183—Cash purchase with agency rights is desired by a firm in Syria for about 15 automobiles, 20 to 35 horsepower; five at $700 to $800; five at $1250 to $1500 and five at $1750 to $2000; and accessories and spare parts sufficient to stock an automobile repair and equipment shop. Quotations c. i. f. Syria should be given. Terms, cash against documents in New York. Further information may be had on application to the bureau or its district offices. References.

30,112—The purchase is desired by a firm in India of complete rubber tire and tube manufacturing machinery, hardware and mill stores, machinery and machine tools of all kinds. Quotations should be given c. i. f. place of destination. Terms, cash against documents. Reference.

30,189—The purchase and exclusive agencies are desired by an importer in Spain for agricultural machinery, tractors and lubricating oils. Quotations should be given f. o. b. New York or c. i. f. Spanish city. Payment, usual credit terms desired. Correspondence may be in English. References.

30,190—A business man in France wishes to secure the representation of exporters of agricultural implements, machines, automobiles, electrical implements and, in general, all industrial material. Correspondence should be in French.

29,812—The purchase and agency are required by a firm in Australia of all motor requisites, accessories, tires, cars, etc.; cycle and motorcycle accessories. Terms, cash against documents or 90 per cent. to 120 days after sight; also consigned stock to be paid as sold. Reference.

29,816—A firm in Trinidad with agents in this country desires to be placed in touch with manufacturers and exporters of automobile tires and accessories and cycles and accessories. References.

29,861—An importer in Belgium wishes to purchase and secure an agency and consignment of bicycles and automobiles. Quotations should be given c. i. f. Antwerp. Payment against credit guaranteed by bank. Correspondence should be in French. Reference.

29,871—A manufacturer's agent in Australia desires to secure an agency from manufacturers of hardware and motor car accessories.

29,833—Agencies are desired by a firm in Brazil for the sale of tires, rubber goods, machine tools, plows and agricultural machinery. Correspondence may be in English. Reference.

29,826—The representative of a firm in New Zealand, who is in this country for a short time, desires to be placed in touch with exporters of electric motors, gasoline and kerosene tractors, rubber goods and hardware. Reference.

29,879—The purchase of asbestos packing, piston rings, drills, files, magneto copper connections, wheels, automobile tools, parts, tires and automobile accessories are desired by a firm in Spain. Quotations should be given f. o. b. American port. Terms, cash against documents at destination. Correspondence may be in English. References.

29,885—A commission merchant who has resided in Turkey for several years desires to return to that country or to the near East as a representative for the sale of farm machinery and gasoline engines. Correspondence may be in English. References.

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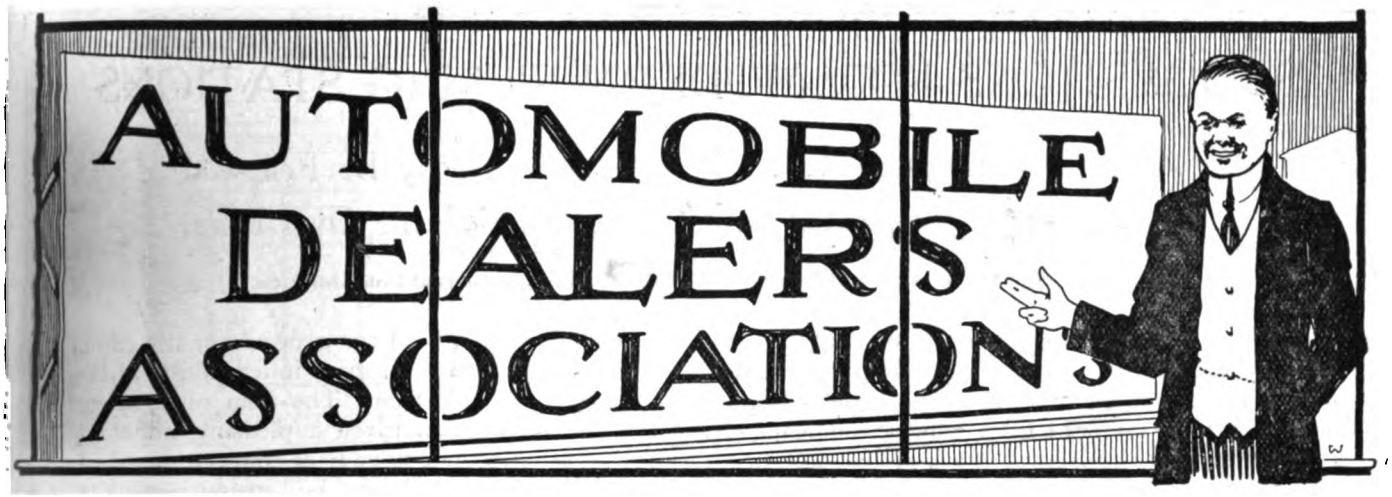

Illinois Dealers Must Not Deface Numbers

The National Automobile Dealers' Association has warned automobile dealers of Illinois not to deface motor numbers on cars under any circumstances, even though they have bought the cars and paid for them outright. The warning is the result of a decision by the Illinois Supreme Court that the motor vehicle law of 1917, forbidding the defacing of numbers, is constitutional.

The Topeka, Kan., Automotive Dealers' Association recently held its annual picnic at Tecumseh. Practically all garages and repair shops were closed for the occasion. The members were accompanied by their families and women guests. The dinner was a barbecue. Every man had been ordered to wear overalls. There were many amusing features, including the "arrests" of various members on grotesque charges. Harry G. Moock, secretary and business manager of the National Automobile Dealers' Association, praised the spirit of cooperation between dealers, garage and accessory men as exemplified at the outing.

The Greenville, Miss., Automobile Dealers' Association was recently organized, with these officers: President, J. F. Russell; vice president, J. E. Foster; treasurer, W. L. Shelton; secretary, Herbert Stanley. Plans are being made for a banquet, at which representatives of the Memphis Automobile Dealers' Association will be present.

The Baltimore Automobile Dealers' Association plans to buy property in which to establish permanent headquarters, with club features, including a grill and billiard and lounging rooms.

The Grand Rapids, Mich., Automobile Business Association's members have agreed to close nights and Sundays, with the exception of two in different sections, who will keep open to whom all customers will be referred for night and Sunday service. These officers have been elected: President, W. K. Philip; vice president, G. A. Belby; treasurer, E. H. Barstetter; secretary, M. D. Elgin.

The Union County, O., Auto Trade Association is holding monthly meetings, at which instructive talks are given by automobile experts.

The Ohio Auto Trade Association has established a speakers' bureau to supply the local associations with speakers for their monthly meetings. An accounting system for garages and repair shops is being worked out by a committee. The next annual convention will be held in Cleveland, Dec. 3-5 inclusive.

The Arkansas Automobile Dealers' Association, at its annual meeting, elected these officers: President, F. L. Reed; treasurer, F. L. Oilar; secretary, A. W. Parke. Under a change in the constitution each local organization will elect a vice president, who will be a member of the board of directors.

The Montreal Automobile Association, Montreal, Can., keeps its members informed on matters of interest by a weekly bulletin sent to them by mail.

The Wilmington, Del., Automobile Dealers' Association recently held a meeting to formulate some details of the future policy of the organization. Announcement was made that a charter would soon be applied for, with the present board named as directors. The board comprises Messrs. McDonald, Bixby, Ulrich, Norman, Merrick, Johnson, Loose, Howell and H. White.

The Milwaukee Automobile Dealers, Inc., will hold a three-day truck transportation demonstration beginning Sept. 8. It is planned to have 40 or 50 trucks loaded with merchandise, farm products and machinery hauled over a 1900-mile highway route in an efficiency test. The tour will be concluded with a review by Gov. Phillips at the State Fair. The caravan will consist of trucks that are exhibited in the automobile show at the fair.

The Louisiana-Mississippi Automotive Trades Association will hold its second convention at Jackson, Miss., Oct. 9-10. It is expected that 600 dealers will attend. The association was organized only a few weeks ago, but has had marked success in getting members.

The Boston Commercial Vehicle Dealers' Association is displaying interest in the proposed establishment of a statewide system of motor transportation and the creation of a similar system throughout New England, to be utilized in case the railroads are tied up by another strike. A committee appointed by the mayor of Boston has recommended this plan to Gov. Coolidge.

Show Building Ready Soon at Indianapolis

The Indianapolis Automobile Trade Association announces that the new Indianapolis show building, in which will be staged the 19th automobile show of the association, will be completed late this month. The show will be held during State Fair week, Sept. 1-6. The new building covers two acres and is being built at a cost of $12,000. At the four corners will be massive pylons, in which will be situated offices, telephones and public rooms.

The Philadelphia Automobile Trades Association supported the Cox bill, which has become a law in Pennsylvania. The law requires the registration of the sale of used cars.

The California Automobile Trade Association, at its annual meeting, elected these officers: President, George Haberfelde; vice presidents, Chester N. Weaver, R. O. Baldwin, Ralph L. Skinner and C. R. May; secretary-treasurer, Robert W. Martland.

The Waterbury, Conn., Auto Dealers' Association has appointed a committee to bring about better facilities for unloading automobiles at the freight yards in Waterbury. A conference will be held with railroad officials.

The Boston Commercial Vehicle Dealers' Association, the Garage Association of Greater Boston and other Boston and Massachusetts automobile organizations will work in cooperation with the Motor Truck Club of Massachusetts, which was organized recently by motor truck owners. The new club will endeavor through educational measures to reduce accidents. A frequent inspection of trucks is planned. Drivers will be given courses of instruction, and owners who wish to attend the lectures and work may do so.

The National Automobile Chamber of Commerce announces that General Manager Alfred Reeves and other officials of the chamber are convinced, following a conference with officials at Washington, that there is little hope of bringing about a withdrawal of the revenue tax on trucks. They were told that the government is in need of the money.

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SUGGESTIONS FOR MODERN FILLING STATIONS

Four Types Presenting Essential Features Which May Be Followed Throughout or Incorporated with Prospective Builder's Own Ideas.

(Designed by the Architectural Department of the Automobile Journal Publishing Co.)

THE accompanying sketches are suggestions for filling stations. The proposed structures are for brick or hollow tile stuccoed, also terra cotta, a material from which wonderful effects may be obtained. The aim has not been to produce drawings from which a contractor may build, but to bring out the essential features, which the prospective builder may follow throughout or incorporate with his own ideas.

In design No. 1 the building has been planned to fit a rectangular corner at the intersection of two important lanes of travel, an ideal location for a filling station. Because of its shape, some may think this idea is not practical, but it has been tried out to good advantage.

All that is necessary above ground is a shelter for the attendant, as the heart of a filling station is always buried beneath the surface, the only part visible being the pumps. Its size enables the handling of greases and supplies. The general dimensions are 16 feet wide at the rear and 18 feet long. On the ground floor two pumps are shown, also a show case for accessories and a storage space for greases. A stairway leads to the basement, where toilet and wash room are located. There is also accommodation for a boiler room and a small heater.

The elevation is of brick, trimmed with concrete stone of terra cotta. Large plate glass windows afford an abundance of light, while one may be pintled to swing so as to give plenty of air and ventilation.

The foundation is of concrete, at least 12 inches thick, with spread footing as shown. The floor is of tile laid in a good bed of concrete with a white mortar joint. The roof is of wood, covered with tar and gravel, providing fire regulations permit, and otherwise a reinforced concrete slab.

Gasoline pumps are shown on the sidewalk line, three in number, with air pumps as intermediate members. The approximate cost of this structure without equipment would be $1000.

In design No. 2 the size is 14 feet wide and 20 feet long, and the station is constructed to face an important highway. It is dignified in appearance. There are three oil pumps, a show case for parts, etc., and storage closets for supplies and greases. A stairway leads to the basement, where the toilet, boiler room and storage space are located. On the sidewalk are gasoline pumps, as well as an air pump.

Brick has been used for general construction, with eight-inch walls on three inner sides and 12-inch piers on front side. The trim of concrete stone or terra cotta gives a pleasing effect of light and shade. The floor is of concrete, finished with six-inch tile as shown, laid up with a white joint.

The roof is of concrete slab with tar and gravel finish, properly drained to insure dryness at all times. The foundation is of concrete, 12 inches thick, with spread footing as shown. This structure would cost about $1200.

A slight variation will be found in design No. 3, owing to the fact it is what is called free standing, permitting a treatment not always permissible in this sort of building. It has a pointed roof and overhanging cornice, supported on large wooden brackets.

The general dimensions are 12 feet wide and 16 feet long, with a frontage on a main street. The entrance is through two doors, one at either end. A large window affords an abundant supply of light, with transoms arranged for ventilation. The equipment includes three oil pumps.

A large show case for exhibiting parts and accessories is provided for, and in the basement there is room for storage purposes. The basement is reached through a trap door in the floor by descending a winding staircase or ladder. There is a toilet and washroom in the basement. On the sidewalk are two gasoline pumps with an air pump.

The construction calls for a concrete foundation, 12 inches thick with spread footing as shown. The floor is of reinforced concrete, covered with six-inch tile laid in white cement mortar. The super-structure is of brick, with 12-inch walls and eight-inch panels as shown on both sides of the doorways.

There is a concrete base course formed by extending the foundation above grade and finishing with concrete stone effect. There is a wood cornice with brackets and a copper roof on wood frame cast iron final. The approximate cost would be $1000.

In design No. 4 the station is circular in shape, giving it individuality. The general type of architecture is classic, with a combination of brick and terra cotta. The cornice is somewhat ornate, relieving a coldness that might arise without a slight play of shades and shadows, and this is executed in terra cotta. There is a pyramid roof. The approximate cost would be $2000.

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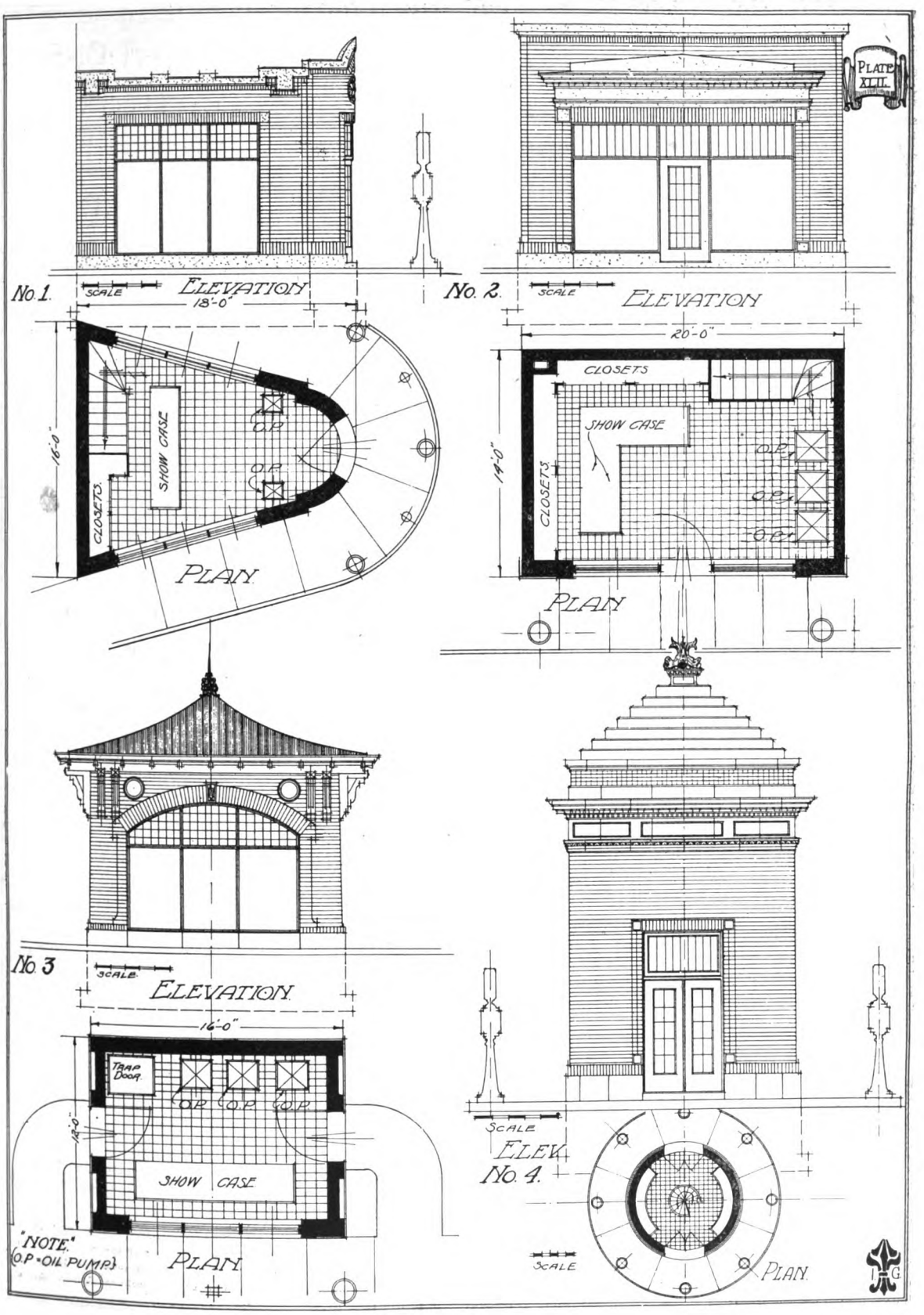
PLATE XLII.
No. 1.
SCALE
ELEVATION
18'-0"
No. 2.
SCALE
ELEVATION
20'-0"
16'-0"
CLOSETS
SHOW CASE
O.P.
PLAN
14'-0"
CLOSETS
SHOW CASE
O.P.
PLAN
No. 3
SCALE
ELEVATION
16'-0"
TRAP DOOR
O.P.
SHOW CASE
14'-0"
"NOTE."
(O.P.=OIL PUMP.)
PLAN
SCALE
ELEV.
No. 4.
SCALE
PLAN.

TYPES OF MOTOR VEHICLES TO BE RETAINED BY ARMY.

Brigadier General Drake, Motor Transport Corps, announces that the following types of trucks and passenger automobiles will be retained by the army for its use:

Type 1: Passenger cars: Medium, open, Dodge; medium closed, Dodge; heavy, open, Cadillac; heavy, closed, Cadillac.

Type 2: Light delivery truck: ½ ton light delivery, Dodge; ¾ ton, White; ¾ ton GMC.; 1 ton, White, Tebo.

Type 3: 1½ and 2 ton trucks: White, Garford, Packard.

Type 4: 3 and 4 ton trucks: Standardized "B;" Riker; Mack, 3½ ton trucks; F. W. D.

Type 5: Five ton trucks or over: Mack, 5½ ton trucks; Mack, Special Engineer.

Type 6: Motorcycles: Harley-Davidson.

Type 7: Ambulances: GMC.

Type 8: Trailers, cargo: Trailers, ¾ ton, tank, water, 180 gallons; trailers, ¾ ton, ration and spare parts; trailer, 1¼ ton, 2 wheel, light aviation; trailers, 1¼ ton, 4 wheel, cargo; trailers, 1¼ ton, 4 wheel special bodies; trailers, 3 ton, gun and cassion; trailers, 4 ton, 4 wheel, cargo; trailers, 4 ton, 4 wheel, special bodies; trailers, 5 ton, tire press; trailers, 10 ton, portable crane; trailers, 10 ton, tank corps with ramp.

Type 9: Trailers, kitchen; trailers, 1½ ton, 2 wheel, kitchen, A and B type.

Type 10: Trailers, machine shop: trailers, 4 ton, 4 wheel, machine shop, spare parts.

Bicycles: Westfield.

None of these machines will be placed in the surplus equipment. The statement says specifically that these cars are not placed as army standards at the present time.

APCO MANUFACTURING CO. BUILDING NEW PLANT.

Work has been started on a new machine shop and assembling building for the Apco Manufacturing Co., Providence, R. I., maker of the Apco equipment for Ford cars. The building is to be of fireproof construction with a maximum of light obtained by liberal use of glass set in steel frames. When this building is completed it will more than double the present floor space. It will be ready for occupancy early in October.

HOLT FIRST TRACTOR TO REACH PIKES PEAK SUMMIT.

The first tractor to make the ascent of Pikes Peak, the famed summit in Colorado, was a Holt "Caterpillar," which had been exhibited at the Denver Farm Tractor Demonstration, and driven from Denver to the top of the mountain and back to Denver, a distance of 235 miles. The last two miles of the ascent and for the same distance returning the tractor plowed through a snow storm.

New Twin City Truck Hauls Tractor to Wichita

What was probably the most novel introductory of a new truck ever attempted by a manufacturer without a campaign of advertising was made by the Minneapolis Steel and Machinery Co., Minneapolis, Minn., when a machine which the company is to produce commercially was driven from the factory to Wichita, Kan., loaded with a tractor that was exhibited at the National Farm Tractor Demonstration July 14-19.

The company has built farm tractors since 1910 and these machines are one of the standard makes of the industry. Tractor manufacturing is one division of the company's business, for besides building Twin City threshers it produces structural steel in large volume. That the company purposed to build trucks was unknown until recently, and thus far no statement has been made concerning the mechanical details of the machines.

As the company was one of the principal exhibitors at Wichita, and as its initial market for trucks will be in the Central West and Northwest, the national demonstration was believed to be the opportune time for interesting both farmers and dealers.

Then the plan determined was to deliver a Twin City 12-20 tractor, the 16-valve engined machine brought out last year, to each branch, beginning with that at Wichita. Another idea was to stimulate the interest of farmers in shipping by truck. The truck and tractor, as shown in the accompanying illustration, were sent out to make the drive by easy stages, the crew being instructed to make as many plowing demonstrations en route as were practical. The drive was without accident and Wichita was reached when the city was crowded with visitors.

The company maintains that the undertaking served three purposes, demonstrating the quality of the new truck and the utility of the tractor, and awakening interest in truck transportation.

REFLEX IGNITION CO. IS NOW IN NEW HOME.

The Reflex Ignition Co., maker of Reflex spark plugs, is now in its new plant on West 106th street, Cleveland, O. The factory is spacious and modern in every respect, and means still better handling of Reflex users and dealers' needs. Test benches and plug proving apparatus are placed in positions where this important work can be done with the best results. A spur on the New York Central truck line permits easy shipping.

Charles Clifton, president of the National Automobile Chamber of Commerce, has appointed the following truck show committee to handle the matter of commercial vehicle exhibits: M. L. Pulcher, Federal Motor Truck Co., chairman; David S. Ludlum, Autocar Co., and A. J. Whipple, Diamond T Motor Car Co.

NEW VESTA SERVICE STATION AT CHICAGO.

The Vesta Accumulator Co., Chicago, has purchased the building and land at the southwest corner of Michigan avenue and 29th street, now occupied by the Chicago Motor Club. The company will immediately begin the destruction of the present building and erect a service station, which will be the finest equipped and the most elaborate in the country.

The purchase was made necessary by the large increase in business during the past year. The company had to have more room at the factory, 2100 Indiana avenue, and the entire service department will be moved to the new location.

With a frontage of 145 feet on Michigan avenue and 180 feet on 29th street, there will be 23,100 square feet of space devoted entirely to battery service. More than 100 cars can be accommodated at once. Cars will drive in the large entrance, receive service and drive out through an exit, both of which will be on 29th street.

In addition to complete equipment for charging and repairing and rebuilding batteries, the new station will have rest rooms for motorists. Special quarters will be provided for the ladies, with telephones, stationary, magazines and other conveniences. These rest rooms and the large show rooms will front on Michigan avenue.

ENGINE CASTINGS CO. BUILDING.

The Motor Castings Co., Milwaukee, Wis., is breaking ground for a new foundry in West Allis. The new corporation is capitalized for $100,000 and was organized by Gustave Anderson, formerly works manager for the Wisconsin Aluminum Foundry Co., Manitowoc; Arthur C. Swallow and John S. Wilson. The concern will specialize in gray iron and semi-steel castings, the principal products to be cylinder castings, flywheels, crankcases and brackets. Work on the plant will start at once and be pushed so that the first metal will be poured about Sept. 1. One cupola will be provided with a capacity of 300 tons a month. The building will be 111x180 feet, leaving room for a second cupola later.

LEITELT IRON WORKS REORGANIZED.

The Leitelt Iron Works of Grand Rapids, Mich., has recently been reorganized with a capital stock of $250,000 and is about to incorporate. David C. McKay, who has been a member of the concern for the past four years, is president. The other officers include: Vice president, F. J. Zylman; secretary and general manager, F. H. Meyer; treasurer, G. W. Sachett. The directors will consist of the officers of the company and Charles B. Kelsey, chairman; A. L. Murray and S. O. Fink.

The Taplex Corporation, 87 35th street, Brooklyn, N. Y., announces that it has added to its lines a manifold heater for Ford cars and a radiator heater for all makes.

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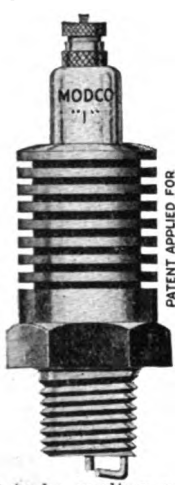
ACCESSORIES, EQUIPMENT AND TOOLS FOR THE GARAGE AND REPAIR SHOP

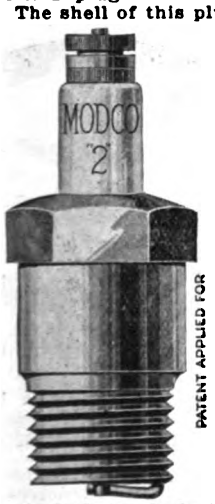
"Modco" Spark Plugs. "Modco" Spark Plugs differ from standard type plugs in their construction. The No. 1 plug is made in two parts, so the porcelain is as far as possible from the intense heat of the engine.

The grooves around the shoulder of the porcelain keep it at lower temperatures



and insure it to be cooling gradually. The spark points are high grade material tested to a melting point of approximately 2900 degrees Fahrenheit. The porcelains are renewable by unscrewing the two parts.

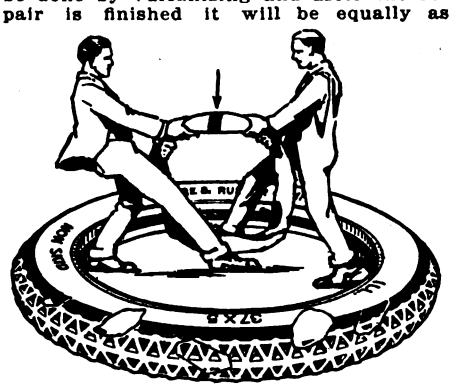
The manufacturer claims to have created a large demand for the plugs from automobile, truck and tractor engine manufacturers. No. 2 plug is a smaller plug than No. 1. The shell of this plug is made



of one inch stock, has a body that can be used in any make of engine.

Manufactured by the Modern Comb and Device Co., Dayton, O. Special prices to the trade upon request.

Superfix Rubber Repair. Superfix Rubber Repair is a cement-like substance contained in a can having an air tight cover. It may be safely carried in a tool box for use on the road or may be used by tire and tube repairers in shops. It is claimed by the manufacturer that it will mend punctures or blowouts. The work can be done by vulcanizing and after the repair is finished it will be equally as



strong as a repair made with a vulcanizer. It is claimed that neither tools, heat, acid or skill is required to use Superfix successfully and that friction, heat or cold does not effect it. The time required to use Superfix is from five to 20 minutes, according to the size of the tear or puncture, and a tube can be ready immediately for the road in the case of a small puncture and may be inflated at once.

Manufactured by the Superfix Rubber Co., Elyria, O. Price, $1 per can.

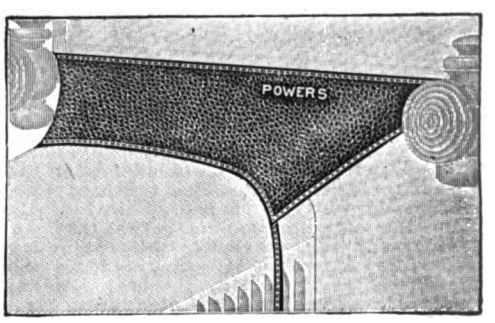
Dixon's Graphite Non-Leak Grease No. 680 and Gear Oil No. 675. Dixon's Non-Leak Grease No. 680 is prepared for use in differentials, and by its use the manufacturer claims that troubles such as grease working out around the hub bands and the brakes are prevented. The consistency of this grease is rather heavy and it should only be used in extreme cases where lighter greases or oils will not serve successfully. It cannot, however, be used in transmissions.

Gear Oil No. 675 is a very light bodied gear lubricant for use in transmission and differential cases designed for light oil lubrication. Generally speaking, it

should be used only in cases fitted with plain bearings. The manufacturer especially recommends this oil for worm drive trucks as it readily follows the gears and has unusual lasting qualities and will keep cool under heavy loads.

Manufactured and sold by the Joseph Dixon Crucible Co., Jersey City, N. J. Prices on application.

"Powers" Coil Protector for Ford Cars. The "Powers" Coil Protector for Ford cars consists of a suitable covering for the dash, fastened at the bottom of the windshield, by loosening the two screws, slipping the protector in place and tight-



ening the screws. The manufacturer claims that this shield will absolutely protect the coils and wiring in the event of rain. Once in place the protector remains a permanent fixture that adds to the appearance of the car.

Manufactured by the Powers Manufacturing Co., Waterloo, Ia. Price, 32-ounce rubber drill, $1.50; 28-ounce enamel drill, $1.25.

The Victor Gasket Assortment for Ford Engines. The Victor Gasket Assortment for Ford engines is put up in a neat show case carton, containing cylinder head gaskets, cylinder head outlet gaskets, cylinder head inlet gaskets, carburetor flange gaskets, inlet and exhaust pipe gaskets and transmission drain plug gaskets.

The Victor boxed gasket assortments for Ford cars have been sold on the market for several years and thoroughly meet

the requirements of dealers and garage repairers. The manufacturer claims these gaskets have become universally adopted.

The gaskets are fully guaranteed against all defects and imperfections. None are genuine unless stamped with the Victor trade mark, which insures their superiority and guarantees perfect fit for all models of Ford cars.

Manufactured by the Victor Manufacturing and Gasket Co. Troy and 21st Sts., Chicago, Ill. Prices and literature on application.

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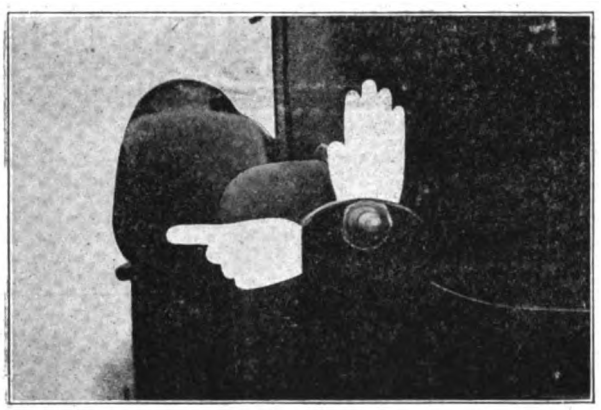
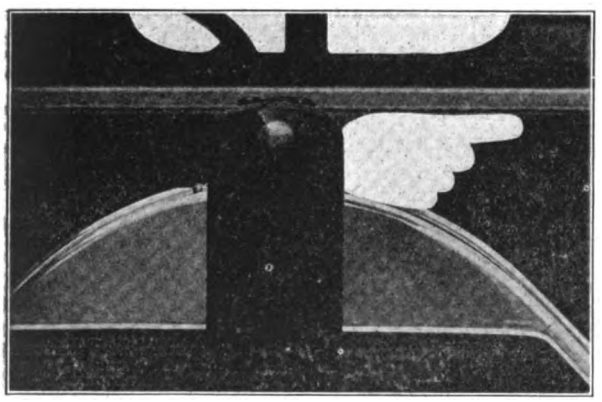
"Safdicator" Signal System. The "Safdicator" is a device for signaling; either at the front or rear of the car, or both. It consists of two boxes, one placed on the filler spout of the radiator, measuring 3¼ by 8½ inches and containing two hands, indicating the direction, right or left, for the benefit of a traffic officer, an approaching car or pedestrian. The other box, measuring 4½ by 8½ inches, is mounted on the left rear fender or on a bracket on the left rear side and contains three hands. Two of the hands indicate the direction right and left and work simultaneously with those in the front box on the radiator filler spout, being operated by a push and pull switch placed conveniently on the steering column. The third or stop hand is connected to the foot brake, and is automatically operated by the slightest pressure upon the brake, warning any car behind of an intention to stop.



In each box is a light, connected to the tail light circuit, and when the tail lamp is lighted the circuit is on in the "Safdicator." The lamp of the "Safdicator," however, does not light until the hands are thrown to an indicating position, when they are illuminated. The boxes are aluminum, finished in black enamel and the hands are aluminum, enameled white.

The hands are mounted on ball bearings and all lever connections are hardened roller bearings. The current consumption, the manufacturer claims, is less than that required for a side or tail light, as the device is only in operation while the engine is running.



A branch block mounted on the engine side of the dash handles all the wires necessary for the operation of the signal, and this branch block is amply equipped with the necessary fuses. Each of the hands, as well as the battery wires, are fused, and in case of trouble may be easily traced.

Manufactured by the Universal Safety Corporation, 624-28 East Cerro Gordo St., Decatur, Ill. Prices and literature on application.

Pronto Spark Plugs. Pronto Spark Plugs are made to a new principle for spark plug construction, the plug having an intensifier unit. The Pronto plug consists of a one-piece shell or bushing with the center electrode surrounded by a mica insulator, the mica being wound laterally instead of in sections. The intensifier is placed at the top of the electrode and is a part of the plug. It is claimed by the manufacturer that Pronto plugs and intensifiers are practically trouble proof and in the event of ignition failure the driver may forget the plugs and look for the cause elsewhere. With the intensifier the driver can note whether the plugs are firing without removing them from the cylinders. The plugs are from the best materials, in sizes and types for all cars, trucks and tractors.

Manufactured by the Pronto Manufacturing and Sales Co., 706 South 24th street, Omaha, Neb. Price, $1.50 each; tractor size, $2.

Shurnuff Spark Plug. The Shurnuff Spark Plug differs from other types of plugs in that an air inlet is provided at the side of the plug, for the admission of air on the downward stroke of the piston, supplying oxygen to the mixture. The manufacturer claims that this added air will lessen fouling of the plugs, increase mileage, develop power and decrease carbon. It is claimed that the air passing into the plug breaks a gas pocket which forms above the firing points, as it is the free oil in the unburned mixture that accumulates on the insulator, attracts free particles of carbon and causes other type plugs to foul. On the return stroke of the piston the flow of air is automatically shut off by a ball check at the inlet, which insures full compression.

Manufactured by the Shurnuff Manufacturing Co., 3147 Locust St., St. Louis, Mo., Dept. J. List price, $1.50 each.

Weaver Auto Oiler. The Weaver Auto Oiler consists of a self-measuring container having a handle for carrying and a spout for delivering the oil. With it the service station repairer can supply oil to motorists without waste and accurately measure the oil placed in an engine oil reservoir.

The spout is heavy brass and is adjustable to deliver oil at any angle. The oil is released from the container by a button located conveniently to the thumb of the operator. A slight pressure releases the oil and removing the pressure shuts off the flow, the spout automatically draining itself.

The volume discharged is accurately shown by a direct float gauge operating within a graduated brass tube. The height of the tube is adjustable and the figures may be read from either side. The Weaver auto oiler is constructed from heavy galvanized iron and has a capacity of two gallons. Shipping weight, 10 pounds.

Manufactured by the Weaver Manufacturing Co., Springfield, Ill. Price, f. o. b., $8.

Hart's Ford Locking Device. Hart's Locking Device for Ford cars consists of a heavy cold rolled steel bar that is attached to the spark and throttle levers and fastened by a padlock. An opening at one end of the bar is slipped over the spark lever and in the forked end holes are drilled, through which a padlock is locked. The manufacturer claims that should a thief try to cut a bar and steal a car he would be sure to attract attention.

The device is heavily nickel plated. They are packed in attractive boxes (containing 24 separate locks in separate cartons) for counter display. Padlocks are supplied by the manufacturer when desired, the price depending upon the quality of the lock.

Manufactured by Hart & Co., 3 Appleton St., Boston, Mass. Price, each, 75 cents without padlock.

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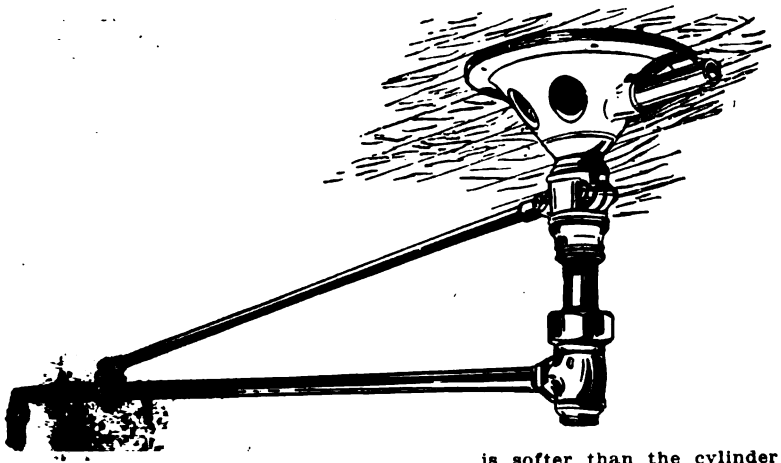
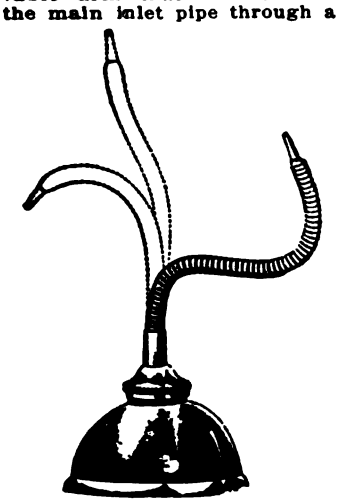


All-Way Oiler and the Deluxe Overhead Vehicle Washer. The All-Way Oiler is an oil can with a flexible steel spout that may be bent to any desired angle or position without breaking or obstructing the flow of oil. Simply bend the spout to the part to be oiled and use the can in the ordinary manner. The All-Way oiler is fitted with a device at the end of the spout with which it may be cleaned in a second. The same device prevents the oil flowing too freely, preventing waste. The All-Way Oiler is strongly made of copper-plated steel, in different sizes.

The DeLuxe Overhead Vehicle Washer is a fixture that can be fastened securely to the ceiling over a wash stand and has a movable arm that carries the water from the main inlet pipe through a suitable connection in the swivel joint to end of arm, at which point hose is attached.



The device is made of the best materials and is guaranteed by the manufacturer. Claim is made by the manufacturer that the swivel joint is positively non-leakable.

Manufactured by the Famasco Distributing Co., 604 Main St., Buffalo, N. Y. Prices and literature on application.

Steel Spring Piston Rings for Ford Engines. Steel Spring Piston Rings for Ford cars have steel spring inserts fitted under the rings in the grooves of the pistons. With this construction the manufacturer claims that a constant, even pressure is exerted on the rings which fit the cylinders tighter, insuring greater compression and preventing loss of compression.

In fitting the springs no filing is required and claim is made the 12 rings may be easily fitted in the piston grooves in 15 minutes. As the metal of the rings is softer than the cylinder walls, better bearings will result than where conventional rings are used.

Each steel spring ring takes care of .025 wear, making it the equivalent of six ordinary rings (zero, .0025, 005, .010, .015 and .025), and greatly simplifying the stock problem for the dealer as well as giving greatly lengthened service to the customer.

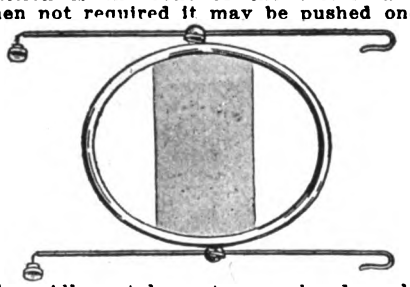
Manufactured by the Steel Spring Piston Ring Co., 2 Columbus Circle, New York City. Guaranteed absolute satisfaction or money returned. Prices and literature on application.

"Fracto" for Preventing Headlight Glare. Fracto units are constructed of glass and are attached to headlight bulbs at the rear, fit around the lower half of the bulbs. The side of the Fracto next to the bulb is plain glass, while the opposite side is a ribbed formation that will diffuse the light rays back and into the lamp reflector.

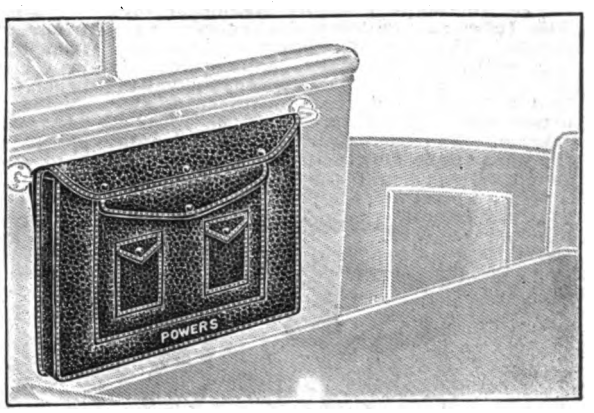
The manufacturer claims that when a bulb has been properly focused and a Fracto is installed the light rays pass through the Fracto as through a prism and are directed down and onto the road so that the light of the head lamp meets the requirements of the law.

Manufactured by the Fracto Specialty Co., 161 Massachusetts Ave., Boston, Mass. Prices on application.

Auto Antiglare. The Auto Antiglare is a device of glass and metal that is made to fit any windshield. It fits over the top of the shield and may be placed in any position desirable. When in use its logical position is in front of the driver and when not required it may be pushed one side. All metal parts are handsomely nickel plated and polished. Small vacuum cups hold the device firmly in place at the bottom and the glass may be raised or lowered to suit the convenience of the driver. May be used either on the right or left side as desired.



Manufactured by the Portland Sales Co., 15 Chardon Street, Boston, Mass. Price, $2.



"Powers" Robe Rail Pocket. The "Powers" Robe Rail Pocket is suspended from the robe rail of a car and serves for storage for small articles, such as calling cards, driving glasses, ladies' veils, gloves, etc. The case is made of a good grade of artificial leather and is bound with the same material, double stitched. Equipped with snap buttons and extra pockets. Size, 18 by 24 inches, with three-inch gusset. Weight, 1¼ pounds.

Manufactured by the Powers Manufacturing Co., Waterloo, Ia. Price, $6.

Twin Fire Spark Plug. Twin Fire Spark Plug electrodes are so made that a plug gives two positive sparks at the same instant. The center electrodes, through the porcelain insulator, is turned over in the usual manner. At the bottom of the insulator is an intermediate electrode or ring fitting the end of the porcelain. The point of the center electrode is separated from this intermediate electrode. The second or ground electrode is fastened to the shell of the plug and is separated from the intermediate electrode. When in operation the high-tension current passes down the center electrode to the bent point at the end, jumps the gap to the intermediate electrode and is carried across to the opposite side, where it jumps again to the electrode leading to the shell of the plug and to the ground of the engine. In this manner the plug fires in series order and gives two positive sparks.

The manufacturer claims that soot, carbon or oil will not prevent the plug firing and if by chance carbon should collect on the points it would be blown off by the second set of points firing. The lead pencil test is given as proof of this statement.

Manufactured by the Twin Fire Spark Plug Co., Detroit, Mich. Made in ½, ⅝, 18 regular and ⅝ extension sizes and metric. Price, $1 each in the United States. In Canada, $1.25.

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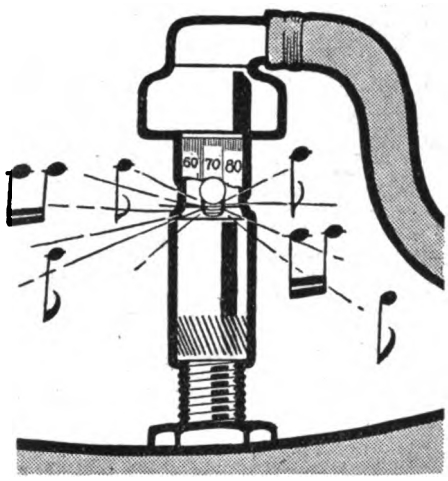
The Automatic Pressure Regulator for Tire Inflation resembles the ordinary tire gauge. The movable collar around the top, with which it is set for any desired pressure, controls a ball and spring valve that will not allow the admittance of air after the desired pressure has been reached. The excess air escapes through the port at the side, emitting a whistling sound, giving audible evidence that the

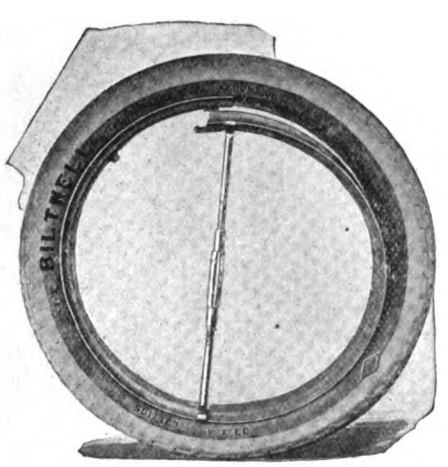


pressure is right. The maker states that after the regulator is once attached and set it needs no further attention. The hose connection is made in the usual manner.

The manufacturer claims that by using the pressure regulator many of the tire troubles so common may be eliminated, resulting in fewer blowouts, greater mileage per gallon of gas, longer tire life and lower repair bills.

Manufactured by the Automatic Safety Tire Valve Corporation, 1765 Broadway, New York. Prices and literature on application.

The Universal Split-Rim Contractor and Expander is manufactured for the use of passenger car owners and tire repairers. The manufacturer claims that with its aid it is possible to remove the most stubborn tire. The tool is in three sections and is carried in a neat roll in the tool



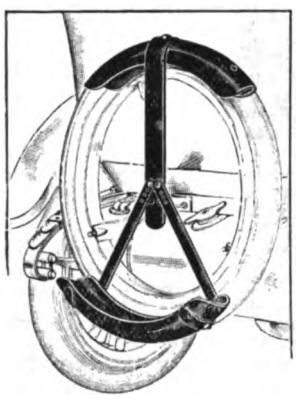
box. It consists of two rods, having one end of each threaded, the opposite end formed in the shape of a hook for inserting over the edge of the rim at opposite points.

A center section is screwed onto the threaded ends of the rods and acts as a turn buckle, drawing the two ends toward the center of the rim. This action causes the rim to be separated at the split portion, allowing the tire to be easily removed from the rim.

Manufactured by the Moss-Ochs Co., 9801 Manor Avenue, Cleveland, O. Price, $2.

2-R-3 Tire Carriers for Fords and Other Passenger Cars are manufactured from the best of material throughout and by their method of construction and suspension enable the motorist to carry a number of extra shoes. These carriers may be fastened at the rear of the car or placed upon the running board, and will hold one, two or three tires. The construction of the carriers is such that they may be disassembled and packed away in a comparatively small space.

The cradle sections fit about one-quarter of the circumference of the tires, and the carriers are adjustable for wider tires by



means of a suspension bar provided with a series of holes to receive the two narrow bars, thus allowing adjustment for any size tire. The carriers fit any car, the manufacturer claims, and provision is made for the carrying of one extra tire.

Manufactured by the International Stamping Co., 400-412 N. Leavitt Street, Chicago, Ill. Prices, model S, from $2 to $3.50; model Y, from $3.50 to $6. License brackets and tail lights extra. Running board side carriers for car or truck, from $4.50 to $8. Tire carriers and spring bumpers from $6.50 to $17.50.

Tipco Spark Plugs differ from the usual spark plug construction in that two porcelains are employed instead of one. The manufacturer explains that since the introduction of the internal combustion engine spark plug manufacturers have been working and experimenting in an effort to find a porcelain that would withstand two temperatures under pressure. It is claimed that the Tipco Spark Plug meets the two different temperatures with two different porcelains.

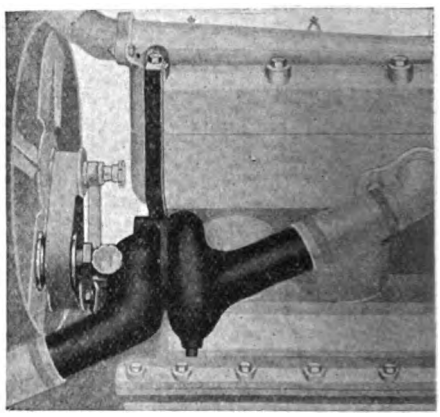
The shell of the plug is the regular threaded type made of steel. A threaded bushing screws into the top of the shell, having a porcelain insulator cemented to

its inner surface with the electrode passing through its center. Over this porcelain fits a porcelain shell, held in place by a set nut at the top of the porcelain and threaded to the center electrode. Provision is made for an air space between the upper and lower porcelains so that the temperature of the lower will not affect that of the upper.

Manufactured by the Ignition Plug Co., 1411 West Broadway, Louisville, Ky. Prices and literature on application.

The Fond Du Lac Circulating Pump for Ford Cars consists of a centrifugal water pump fastened by suitable brace iron to the top of the engine and the front of the base, rigidly supporting it at the side and in line with the hose passing from the radiator at the bottom to the water jacket intake at the side of the engine. It is driven by the fan belt from the crankshaft pulley, insuring, the maker claims, a positive and even circulation of the water while the engine is in operation.

The manufacturer states that the pump is constructed of the best of semi-steel and bronze, perfectly machined, and is fool proof. The parts are made to a templet and are interchangeable. The



pump is made specially for engines using kerosene, gasoline or tops. It is also constructed for use on stationary or portable engines, but made principally for the Ford engine. It is easily installed in a few moments time by any one handy with tools, as it is not necessary to bore holes for its installation. It weighs eight pounds.

Manufactured by the Fond Du Lac Tractor Corporation, Fond Du Lac, Wis. Prices and literature on application.

The O-So-Easy Hand Cleanser for the Motorist, the maker states, is made from a pure vegetable oil base, combined with products of the highest quality, and is for the use of the motorist after working about the car. The manufacturer claims that it will remove dirt, oil and grime without burning or scratching the skin or injuring it in any way, and that O-So-Easy contains no injurious chemicals that

clean by corroding action, but cleans because it is a soap.

It is also a cleanser for enamel ware, bath tubs, porcelain sinks, paint, floors and silver.

Other articles made by this company include nickel polish, a mohair top dressing, a brass polish, a leather top dressing, a cushion dressing, a tire paint and an automobile soap. All articles are guaranteed.

Manufactured by the Boston Blacking Co., East Cambridge, Mass. Prices to the jobbing trade on application.

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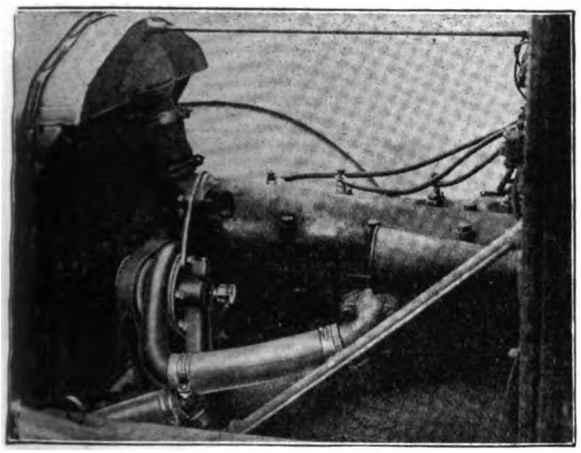
Atlas Special Pump for Ford Cars. The Atlas Special Pump for Ford cars is a centrifugal type that is attached to the water connection at the top of the engine by a bracket. To attach the pump the two screws that hold the water connection to the engine head are removed. The connection is slipped apart, the gasket taken out, the bracket put in place with a gasket each side and the water connection is rebolted with two special bolts supplied with the pump. The pulleys of the pump, fan and crankshaft should line up, as the same belt drives the fan and pump from the crankshaft. This may be accomplished by bending the brackets slightly till they line. Hose connections are made at each side of the pump.



It is claimed by the manufacturer that overheating is prevented by the use of this pump; that steaming and evaporation are reduced to minimum, and that higher percentages of anti-freezing solutions may be used. The pump is made of highest grade of materials and is equipped with bronze bearings.

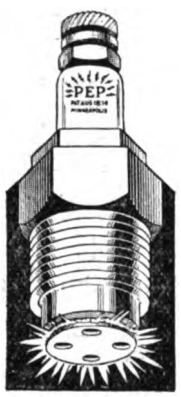
Manufactured by the Atlas Brass Foundry Co., Columbus, O. Prices and literature on request.

The Electric Spotlight No. 100 is a spotlight with universal bracket for attaching to the windshield of any car. It has a quickly adjustable focus, and a positive key switch in handle. It is equipped with a waterproof cord for attaching to the lighting system of the car and is fitted with a condensing mirror on the side of the lamp. It has a silver plated parabolic reflector, one-piece heavy steel body, bayonet type door nickel plated and made for either oval, round or square windshield frames.

The manufacturer claims that this lamp is handy for reading signs, or driving, etc., and may be quickly changed from one focus to the other by merely changing the focus adjustment.

Manufactured by the Jno. W. Brown Manufacturing Co., Columbus, O. Prices and literature on application.

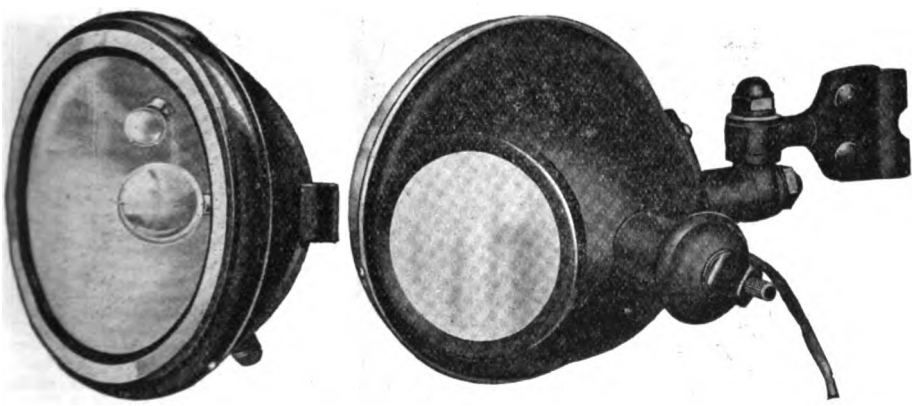
The Pep Self-Cleaning Spark Plug offers a new feature in spark plug construction, the manufacturer claims. The disc electrode, covering the lower end of the Pep, gives two inches of sparking surface, and the size of the disc causes the electric current to expand, giving it greater volume. The result, the maker states, is a ring of large hot sparks all around the outer edge of the disc, giving better combustion, even on a poor mixture or with a weak battery or magneto current. There is much less pull on the battery or magneto and the engine will show more snap and pep, according to the manufacturer.



It is further claimed that the Pep spark plug is self-cleaning because the ring of hot sparks all around the edge of the disc is constantly loosening ani burning away any particles of carbon which may form and because of the continuous back and forth movement of the gases from alternate compression and explosion, keeping the carbon and oil from stopping in one place long enough to become fixed.

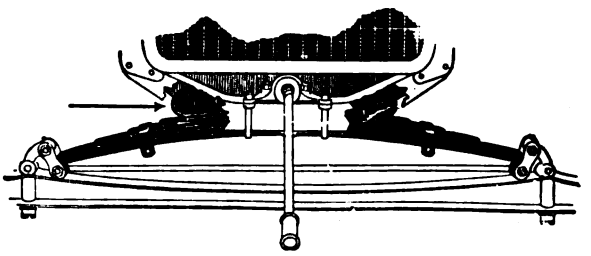
Manufactured by the Pep Spark Plug Co., 932 McNight Building, Minneapolis, Minn. Price, $1.

The Electric Side Lamp Model No. 510 for Ford Cars is an attractive side lamp of new design, harmonizing with the contour of the headlights. It consists of a heavy rolled door that is easily removed and has a positive set screw lock. The interior of the lamp is easily accessible, and is fitted with a polished silver plated reflector with adjustable focusing device and four candlepower 6-8 volt Mazda bulb. This lamp is usually supplied with a combination prop, but is regularly supplied with stud to fit 1915, 1916, 1917 and 1918 Ford cars. The regular finish is black enamel or combination black and nickel front.



Manufactured by the Jno. W. Brown Manufacturing Co., Columbus, O. Prices on application.

The Saveur Ford Front Spring for Ford Cars consists of the regular Ford front spring having an extra spring leaf attached at the center of the regular spring, with the ends bent in the form of a loop. When in use the springs take position at each side of the bottom of the radiator, their purpose being to help out the Ford spring when carrying heavy loads. When the spring is deflected three-fourths of its arc the open loop comes into contact with the V angles of the frame so that the open loops absorb the extra heavy thrust of the spring and, the manufacturer claims, prevent the spring from breaking.

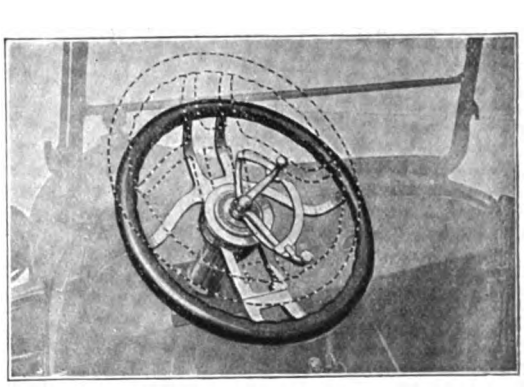


The Saveur spring is uniformly oil tempered from end to end by a new process, and graphite is placed between the leaves for lubrication. The spring is guaranteed against breakage and a new spring will be supplied if one is found faulty.

Manufactured by New Era Spring and Specialty Co., Grand Rapids, Mich. Prices on application.

The Monarch Auto Lock consists of a locking device attached to the steering post of the car, having a wheel that in the locked position is forward of the driving position. The lock is composed of a Yale cylinder and a pair of Yale keys. The lock is made of aluminum alloy, while the center piece, called the driving lug, is composed of red brass. The space between the jaws below the hub is much wider than between the driving jaws when the wheel is on center in the driving position. When the wheel is pushed forward the space being so much wider below, it cannot grasp the driving lug. In this manner the wheel is entirely disconnected from the steering post and it is impossible to drive the car when the steering wheel is pushed forward and disengaged from the steering post.

The only time that the lock can be disassembled is when the wheel is in the driving position. All bolts and nuts that secure the top cap are concealed when the wheel is in the locked position.



The maker claims that it is impossible to steal a car locked with the Monarch as with its method of locking a thief could not get away with the car either by towing or operating it.

The tilting wheel effect is claimed to be an advantage in the case of a stout person, as it allows a roomy passage behind the wheel when entering.

Manufactured by the Monarch Auto Lock Co., 357-367 Market Stret, Kenosha, Wis. Prices and literature on application.

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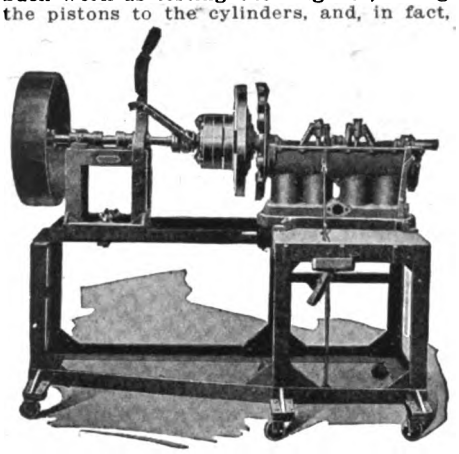
The F. & M. Burning-In Stand consists of a combination burning-in stand, engine work bench and differential stand all in one unit. By its use in a service station or garage much valuable time may be saved, the manufacturer claims. The stand is mounted on rollers so that it may be wheeled easily to any part of the shop when loaded, and when empty is light enough to be carried by two workmen. It is made from angle iron bolted and riveted and well braced so that it is unusually strong. It may be placed in front of the car when an engine is to be removed, the engine placed upon it and fastened, the stand and engine moved to the work bench, connected to the power and the bearings burned-in.

In work of this nature the stand is rigidly held to the floor by a special fastening, as is also the engine to the stand. Such work as testing the magneto, fitting the pistons to the cylinders, and, in fact,

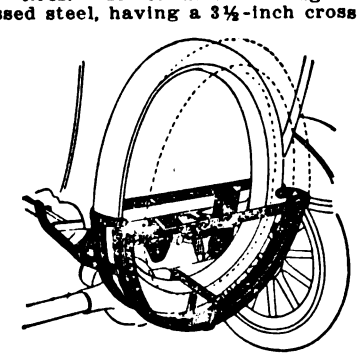


all kinds of work necessary in connection with the engine, may be done while the engine is on the stand.

For differential repairs, special brackets are provided that are placed at one end of the stand, including a drip pan for the oil, allowing the repairs to be done quickly and easily without the repairer having to move from standing position. The manufacturer claims that the stand is a time and labor saver, and that by its use more and better work may be turned out in a given time than by any other method.

Manufactured by the Hastings Manufacturing Co., Hastings, Neb. Prices and literature on application.

The New Era Cradle Carrier for Ford Cars consists of a steel frame easily attached to the running board of the car or at the rear, and will accommodate one or two tires. It is made throughout of pressed steel, having a 3½-inch cross sec-

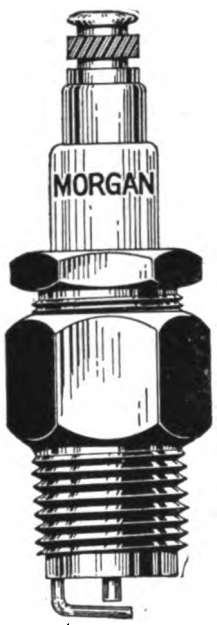


tion rolled to snugly fit the tread of the tire. It fits 30 by 3½-inch tires, plain or non-skid, and is suitable for tires mounted on demountable rims or casings only. The carrier is made either single or double. The rear carrier also provides for the attaching of the number and light bracket and is provided with a suitable cross bar suitable for locking the tire.

Manufactured by the New Era Spring and Specialty Co., Grand Rapids, Mich. Prices, No. 208, single, side, $4.20; No. 327, double, side. $6.30; No. 326, double, rear, $7.35; No. 207, single, rear, $5.25.

The Morgan Spark Plug for Passenger Cars is designed to meet the demand for a plug that has the desirable features, but not the faults common in spark plug construction. All shells and bushings are made from the best grades of cold drawn steel, machined and rigidly inspected many times during manufacture. The Morgonstone insulator is of a special grade of porcelain.

Electrodes are of the best grades of special heat resisting wire. The ground electrode, the maker states, is clinched into the shell from the inside in a manner that prevents motion, while the center electrode is firmly affixed in the insulator. The cap is attached to the insulator so as to be inseparable and forms a perfect

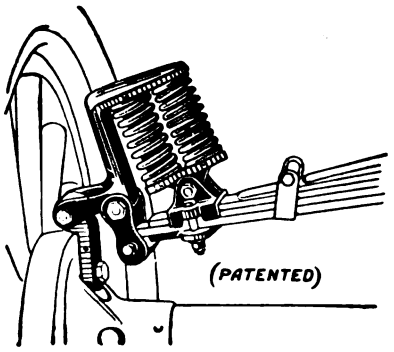


circuit with the center electrode. The terminals are closely threaded to fit the caps and the caps are easily placed with the fingers.

Manufactured by the Morgan Manufacturing Co., Inc., Keene, N. H. Price, "Standard" type, 75 cents; "400" type for passenger cars, $1; "500" type for trucks and tractors where a heavy duty plug is required, $1.25.

Champion Shock Absorbers for Ford Cars. Champion Shock Absorbers are a twin spring type and the manufacturer claims that by making use of eight coil springs instead of four he has prevented rebound, and that with this equipment a car rides as easily as a vehicle costing several times the price.

The Champion absorber is attached very easily and with practically no altera-

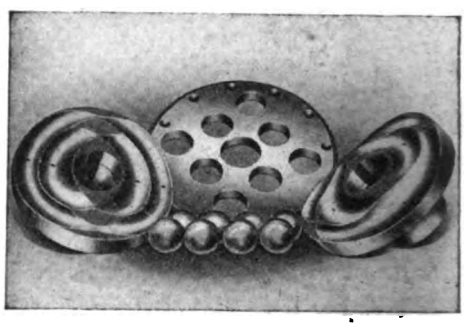


tions. Extra tools are not required for installing. The absorber is attached to the ends of the spring in the usual manner. A 10 days' trial is allowed and if not satisfactory the absorbers may be returned and the money will be refunded.

Manufactured by the Champion Shock Absorber Sales Co., Inc., Indianapolis, Ind. Prices and literature on application.

The Dorr Miller Differential for Fords and Chevrolet 490 Types is simple in design and construction. The danger of skidding is reduced because both wheels are locked when driving over slippery roads and the same amount of power is supplied to each wheel. In rounding corners the same effect is gained as when the regular differential is used.

The unit consists of a center disc having nine holes drilled in the face, into which are inserted nine steel balls. Fitting against this disc at each side is a grooved disc or camblock having an enlarged hub with key way for receiving the axle and key. The three discs and the balls are fastened together by retaining collars or casings and a flange for attaching the



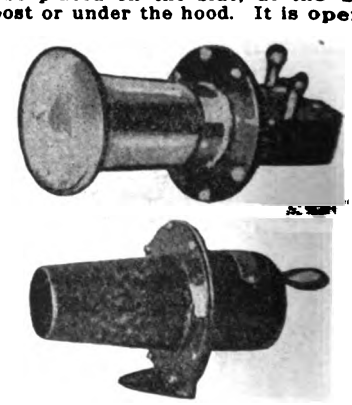
large bevel gear, making a unit that may be inserted in the housing of a Ford or Chevrolet 490 car with little labor.

The maker claims that the unit eliminates the necessity of differential replacements, that it is practically waterproof and also that greater tire mileage is possible as the wheels do not spin on slippery roads.

Manufactured by the Dorr Miller Differential Co., 90 West Street, New York, and Gas Building, Chicago; factory, Detroit. Price of unit, ready to install, $20 f. o. b. Detroit.

The Talking Horn is similar to the ordinary hand-operated horn, and is attached to the side of the car near the hand of the operator. Besides giving a clear warning sound, it may be manipulated so that its sounds will correspond somewhat to the human voice.

The company has added two new models to this line and they are known as the Torpedo No. 6 and the Leader No. 7. No. 6 may be placed on the side, at the steering post or under the hood. It is operated



by a strap and by using additional cord it may be blown by the occupants of the rear seat. It is equipped with suitable bracket according to its location.

No. 7 is made of solid brass, nickel plated or black enamel, and is also equipped with a universal bracket to fit any model car. A larger ratchet is used, having more teeth in the gears so that 420 strikes at the central diaphragm button are had at a single turn of the crank. The horn is 12 inches in length and the manufacturer claims that it is possible to make it heard for a distance of a mile.

Manufactured by the Talking Horn Co., Middletown, N. Y. Price, $15.

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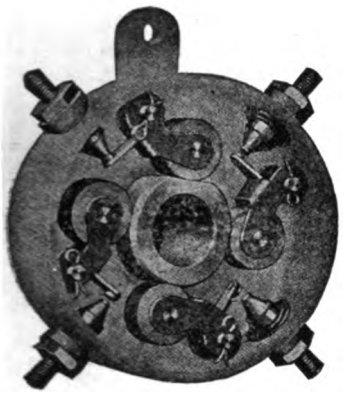
The Duntley Magneto Break Timer for Ford Cars. The Duntley Timer is built to have all roller contact on the cam, having four rollers, one at each contact, as shown in the cut. The rollers operate on a solid cam having a flat surface on one side, the tops of the rollers being fastened by suitable pivots to the case. From the top of each roller holder or caster a small arm is suspended that makes contact with the end of the terminal post at the edge of the timer case. The timer contacts are an alloy metal that will not burn and carry the current from the rollers through the arms to the contacts, and thence to the terminal.

It is claimed by the manufacturer that with this timer it is possible to start a

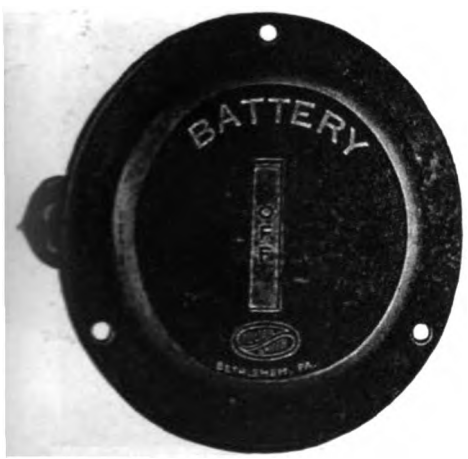


car easily in cold weather, as it delivers large sparks perfectly timed to all four cylinders; that no oiling is required and that it saves fuel and increases car mileage. It is guaranteed for the life of the car. Ten days trial is allowed and money is refunded if the timer is not satisfactory.

Manufactured by Jack Duntley, 1004 Michigan Ave., Chicago, Ill. Price, $5.

Universal "C. O. D." Indicator. The Universal "C. O. D." Indicator is designed to be placed on the dash of a car and shows at a glance whether the electrical system is operative. It may be used on any car with any system or any voltage is the claim of the manufacturer. It is a flush type, finished in black.

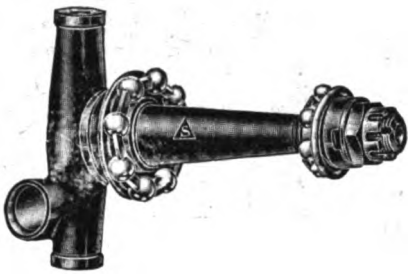
The outstanding feature of this instrument is its universal application. The ordinary indicator designed for lighting cir-



cuit work will not function when installed in a cranking circuit, as for instance, on cars equipped with single unit, single wire systems. This instrument is designed to fill this need and is especially suited for cranking circuit work. The C. O. D. Indicator is so-called because of the three indications on its movable barrel of "Charge," "Off" and "Discharge."

Manufactured by the Roller-Smith Co., 233 Broadway, New York City. Prices and literature on request.

Star Semi-Annular Bearings for the Ford and Chevrolet 490. Star Semi-Annular Bearings for Ford and Chevrolet 490 cars consist of two sets of ball bearings accurately spaced by a spacer, that are fitted to the front axles in the places of the regular bearings. The separator is punched from a single piece of stock and the openings for the balls are accurately



punched. After the balls are inserted in the spaces the lips of the spacer are turned in, holding the balls securely in place. The balls used are the Hoover chrome balls and are guaranteed.

It is claimed by the manufacturer that friction is reduced by the use of this bearing, that the car steers easier, that the balls are held in line better and do not zig-zag on the cones. It is further claimed that longer life to the cones is assured by their use, as the adjustment of the cones is better provided for.

Manufactured by Stevens & Co., 375 Broadway, New York City. Price, $2.50 a pair; $5 a set of two pair.

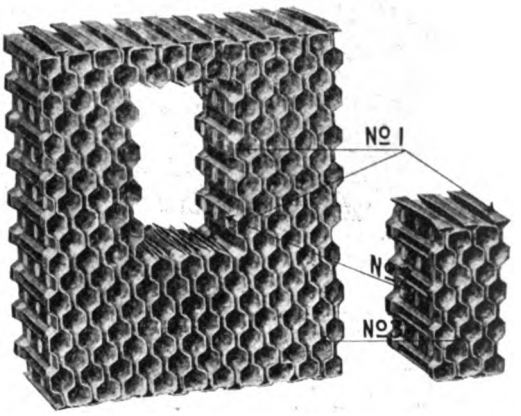
The "Jitlock" for Ford Cars. The "Jitlock" for Ford cars is a locking device that may be applied to the regular switch key used on the Ford switch. It is made of three pieces for 1918 or later cars and is fastened in place as follows: The regular Ford switch cover is removed and replaced with a switch cover provided in the device. The second section covers the first and is fastened by two screws at the top to the switch cover previously mentioned, this section being provided with a hinge at the bottom. The third section is the final cover and is placed over two lugs

extending upwards from the second section and the lugs snapped into place. A screw is inserted at the bottom fastening the three sections securely. To lock the switch the hinge is raised and slipped over the Ford switch key and a padlock inserted through the hole in the key. Special fittings are available for Fords earlier than 1918. Finished to match the metal parts of the switch and coil box. The manufacturer claims that it will prevent a car being stolen as thieves will rarely tamper with a car that is locked.

Manufactured by the Metal Specialties Co., Attleboro, Mass. Price, $1.50.

Wabash Honeycomb Radiators. One of the main features of the Wabash Radiator is the large cooling capacity. This is made possible by the arrangement of the corrugated brass sheets forming the water channels (No. 1). These channels contain small pockets, increasing the water capacity of the radiator to a great extent (No. 2). In this construction the distance is increased in which water must travel from the inlet to the outlet connection, thereby prolonging the time in which the water comes in contact with the radiator surface.

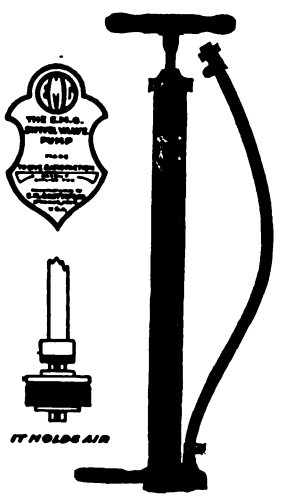
The Wabash core contains no dead channels, or so-called dead tubes, every channel containing water. Each channel is constructed of only one layer of brass and not several layers. Air rushing through



the roomy air passages (No. 3) between the channels, absorbs the heat rapidly from the water through the one layer of brass, the manufacturer claims. Wabash radiators are guaranteed to give satisfaction in every detail.

Manufactured by the Wabash Auto Radiator Manufacturing Co., 1117 Wabash St., Chicago, Ill. Prices on application.

The E. M. G. Swivel Valve Tire Pump. The E. M. G. Swivel Tire Pump consists of a single cylinder of 16-gauge steel tubing, 1¼ inches diameter and 20 inches long and screwed into a heavy malleable iron base, with folding foot rest. The plunger rod is heavy cold rolled steel with detachable handle. The tubing connection for the tire valve is 24-inch reinforced fabric rubber with screw connection to fit any standard tire valve. The pump is finished in baked green enamel. The pump is 24



inches over all. It has an extra heavy oil treated leather cup on the plunger and a special air valve on the side of the plunger rod insures a full pump load of air at each stroke. The plunger head rides straight from the top to the bottom regardless of any turning movement of the handle.

Manufactured by E. M. Gaut Manufacturing Co., Inc., Ethridge, Tenn. Sold by John E. Chumley & Co., Nashville, Tenn., sole selling agents. Price, $3.25.

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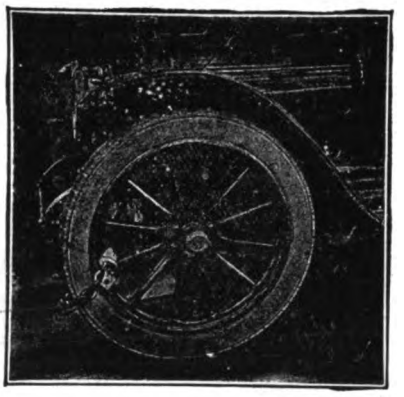


Blackhawk Combination Wrench Sets contain all tools necessary for the repairing or overhauling work in a garage or service station. The set consists of a nine-inch ratchet wrench, two extensions bars, pipe wrench, brace wrench, universal joint, two spark plug sockets, five open end thin wrenches, pliers, combination tee and offset handle, double end screw driver, valve grinding attachment, cotter pin puller, 16 hexagon sockets, sizes 7-16, ½, 9-16, 19-32, ⅝, 11-16, ¾, 25-32, 13-16, ⅞, 15-16, 31-32, 1 inch, 1 1-16, 1⅛, 1¼ inch, and 11 square machined steel sockets, sizes, 7-16, ½, 9-16, 19-32, ⅝, 11-16, ¾, 25-32, ⅞, 1 1-16 and 1 9-32. The case is a heavy wooden box, with hinged cover and finished in mahogany.

The company manufactures a complete line of wrenches of all kinds for the automobile and truck repairer, including Ford sets of various assortments, Buick, Cadillac, Cole-8, Chalmers, Chevrolet, Dodge, etc., covering practically all of the principal cars. These tools may be purchased in set form or separate as desired.

Manufactured by the American Grinder Manufacturing Co., Milwaukee, Wis. Prices vary from $18 for the set described to smaller sets selling as low as $3. Special prices of sets on application.

The Tirrill Headlight Regulator consists of a regulating switch having eight points of contact and a swinging arm attached. The switch is placed one-quarter of an inch below the hub of the steering wheel and fastened to the steering wheel post. It is placed so that the lever is at the right of the switch and within easy reach of the operator.

The purpose of the switch is to reduce the light through suitable resistance and

eliminate the glare of the headlights. The regulator may be attached to the lighting system when ordering. Adjustment within the switch provides for the no-glare position of the lever when used with different voltages.

The manufacturer claims that this device has been tried out successfully for two years and that it positively stops the glare of the headlights, and this when using the plain glass lens. The lever allows the operator to control the light so that it may be shifted from minimum to maximum easily and without damage to the lighting system.

Manufactured by Tirrill Manufacturing Co., Pittsburgh, Pa. Prices and literature on application.

The Woodworth Worth While Auto Lock consists of a heavy steel chain, having links two inches wide, made of one-half inch steel with a high grade Yale tumbler lock for locking the ends of the chain together around the tire and rim. The chain is covered with leather where it comes in contact with the paint of spoke and rim.

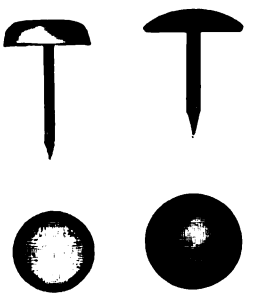
The manufacturer recommends that the lock and chain be used on the right front wheel. This lock does not prevent the car from being moved in case of fire, but effectively prevents stealing, as it causes such a bumping that the car cannot be run except very slowly and the chain makes such a clattering sound that the attention of the police would immediately be called to it if any one attempted to steal the car. The device is easily carried in the car, fits any style or size of wheel or rim, and is inexpensive. In emergencies it may be used as a mud hook, the manufacturer claims.

Manufactured by the Woodworth Manufacturing Co., Niagara Falls, N. Y. Price, chain and lock complete, $6; without lock, $2.50.

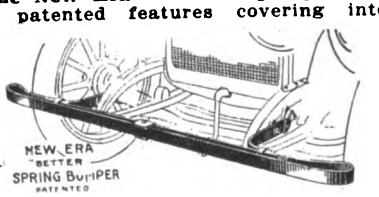
Lethermet Nails for automobile top upholsterers embody the desired qualities for this class of work. They come enameled, to match practically any shade of leather or upholstery in plain and Spanish effects. The stems are of steel burred, so that they will not pull out under ordinary stress, and the points are sharpened. The heads are made in one piece and will not pull away from the stems.

They are made in varying lengths and assorted sizes, according to the class of work for which they are to be used.

Manufactured by the Brewer-Titchener Corporation, Cortland, N. Y. Prices on application.



The New Era "Better" Spring Bumper has patented features covering inter-



changeable attaching arms, fastenings and separated double bars (always the full proper width), which create a drum like rebound if any severe blow is made. The bars are highly tempered spring steel and the attaching arms only semi-tempered. In case of a severe bump the arms will be the part that will suffer the most damage, the manufacturer claims.

The bumper is covered by a liberal guarantee and the manufacturer will make good all damaged or defective parts of the bumper when returned to the factory by any one not a dealer or jobber, when the express has been prepaid. The bumper is suitable for attaching to any passenger car or truck.

Manufactured by the New Era Spring and Specialty Co., Grand Rapids, Mich. Price, black, $10.50; nickel, $12.60.

The Safety Oiling System for Engines consists of an auxiliary oil tube passing from front end of the engine base to the top of the transmission cover. A special cover is fitted to the transmission case, having a filter attached, and the manufacturer claims that this is capable of catching fabric thrown off from the band linings, particles of metal, etc.

The oil is thrown upward by the balance wheel and transmission drums and is caught by the oil pan, shaped like a

shovel; filtered by the teeth of the filter and allowed to pass down and into the oil pipe extending to the front of the base of the engine. The object of using this device is to secure a positive flow of oil to the Ford engine.

The manufacturer allows a 30 days trial and will refund purchase price if the buyer so desires.

Manufactured by the M & M Co., 488-500 Prospect Avenue, Cleveland, O. Price, $5.

Mac-Lar Storage Battery. The Mac-Lar Storage Battery is new to the trade, and the claim of the manufacturer is that the plates or grids are treated by a special patented process which makes them extremely hard so that they have unusual capacity and recharging efficiency. The hard plates also insure longer battery life and a higher momentary discharge rate. It is further claimed that the Mac-Lar battery has a 25 per cent. greater capacity for the same plate area than a soft plate.

Tests have been given the battery by the manufacturer that are claimed would not ordinarily be met with in service and the results have shown it is superior to other batteries of the same type. The

battery is guaranteed by the manufacturer for 18 months service and claim made that it will endure longer than the guarantee.

The Mac-Lar battery is built in two standard shapes for replacement purposes and will fit 99 per cent. of all cars. The two shapes are built for six volt and 12 volt battery work, making four standard Mac-Lar models. Universal terminals are furnished with each battery so that they may be easily and quickly connected.

Manufactured by the MacLar Battery Co., Detroit, Mich. Price, six volt size, $25; 12 volt size, $36.

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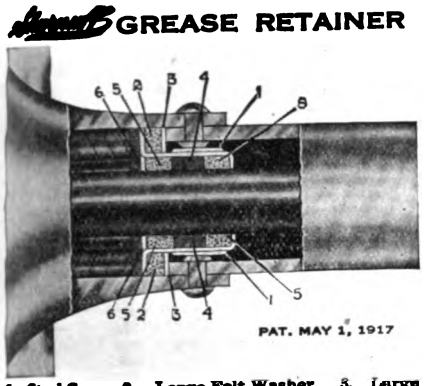
Shurnuff Grease Retainers for Ford Cars. Shurnuff Grease Retainers for Ford cars consist of three extra high grade felt washers, one rubber asbestos washer, a cold drawn steel cup and two retaining rings, placed in the differential housing at the end of the Hyatt roller bearings. By this method of placing the washers the manufacturer claims that the leaking of the grease from the differential housing



1. Steel Cup. 2. Large Felt Washer. 3. Large Steel Retaining Ring. 4. Asbestos Washer. 5. Small Felt Washers. 6. Small Steel Retaining Ring.

to the brake drums is prevented. The grease retainer is stationary and is held in place by the two rivets of the axle housing. The method of installing is very simple and directions are included with each pair.

For counter display by jobbers the retainers are packed six or 12 dozen pair in a carton.

Manufactured by the Shurnuff Manufacturing Co., 3147 Locust St., St. Louis, Mo. Price, 90 cents a pair.

Tubo Puncture Sealer. Tubo Puncture Sealer is a liquid that is to be placed in the tubes of tires and the manufacturer claims that by its use leaks in tubes are vulcanized as thoroughly as if with an outside source. Tubo Puncture Sealer is made by treating the finest and strongest mineral fiber with other materials that

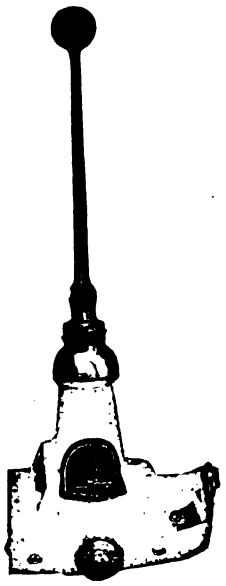
will seal punctures from the most minute size, even those that cannot be detected by immersion in a tub of water, to those of larger size, according to the rigidity of the casing. It is also claimed that it contains mineral preservatives of rubber and fabric which maintain the rubber of tubes in the same condition as when applied.

Manufactured by the Tubo Manufacturing Co., 611 N. Vandeventer Avenue, St. Louis, Mo. Price $5 per package, which makes three quarts of liquid.

The Johnson Automobile Lock for Pleasure Cars. The Johnson Automobile Lock is primarily a gear lock for pleasure cars having sliding gear shifts, consists of a locking lever that is substituted for and is exactly the same shape as the shifting lever originally used. It has but one moving part, the steel plunger that rides up and down on the lower portion of the shifting lever, within the transmission case.

When the car is to be locked a turn of a Yale key forces this steel plunger downward between the gear shifting forks. The locking device is entirely concealed. To steal a car equipped with a Johnson lock the thief must remove the transmission cover and substitute another shifter lever, is the claim of the manufacturer.

The lever, including the lock, is constructed from best grade open-hearth steel, drop forged and finished in nickel. Breaking the lever or any part of the locking device is impossible. Each lock



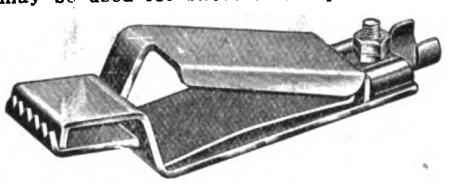
is carefully tested before shipment, and is sold with a broad guarantee.

The lock is installed by removing the shifting lever and replacing it with the Johnson lever, which is then locked in the transmission case. The entire locking device is a permanent part of the car, and the use of an electric drill and other shop equipment is necessary before it can be removed.

From a mechanical standpoint the manufacturer claims the locks are absolutely "trouble proof," and the roughest handling cannot in any way effect their utility.

Sold by the Edwards Sales Co., St. Louis, Mo. Prices and literature on application.

The No. 11-A Universal Battery Clip is made of copper, lead coated. The manufacturer claims that this clip is capable of carrying 100 amperes for a full day without getting too hot to handle, and may be used for short tests up to 200 or



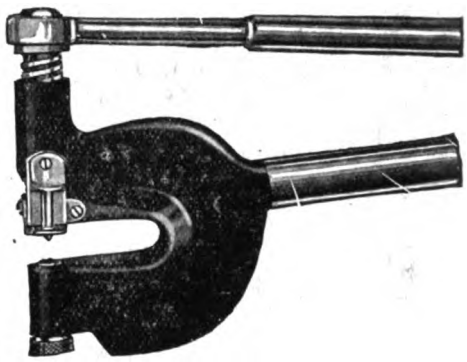
300 amperes and is therefore suitable for use in making the so-called "battery discharge test."

The clip has a jaw opening of one inch and a cleat at the rear, by means of which a comparatively heavy cable may be attached.

Manufactured by R. S. Mueller & Co., 423-425 High Ave., Cleveland, O. Prices on application.

"Jiffy" Speed Punch for the Tool Kit or Shop. The "Jiffy" Speed Punch is of powerful, compact type for punching holes in sheet metal up to 10 gauge thickness. It weighs five pounds and is 9½ inches long. It works in small space and will punch holes as follows: 5-32, 3-16, 7-32, 9-32 and ¼ inch, requires little oiling and no adjusting.

The punch is held and operated by hand,

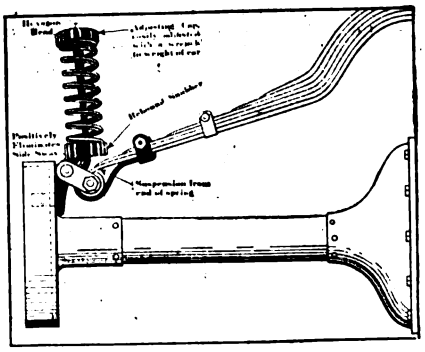


is very compact and is easily carried from job to job, or may be fastened in a vise. Punches are crowned, of the floating type, directing the power to the center. That the punch will not twist or turn while in operation and will not leave a burr on the metal after the hole is made is a claim of the manufacturer.

The Jiffy Punch, the manufacturer claims, will not tire the mechanic operating it, as the handles are short and the operator is close to the work. A half turn of the lever only is required to drive the punch through the metal. Punches and dies are easily changed from one size to the next. "Jiffy" Punches are fully guaranteed. Jiffy Speed Cutter for cutting holes in metal is also manufactured.

Manufactured by Paul W. Koch & Co., 19 South Wells St., Chicago, Ill. Price, $15. Punches, 5-32, 3-16, 7-32, ¼ inch, each, 35 cents; dies, 5-32, 3-16, 7-32 and ¼ inch, each, 35 cents. One punch and die furnished with each tool. Specify size wanted, otherwise 3-16 inch will be sent.

The Lanshield Shock Absorbers for Ford Cars are of a coiled spring type, mounted on special spring perches that replace the Ford perches. The absorber springs are seated on the perches and guide rods, clipped to the spring ends, pass through the spring shackles and extend upward



through the springs, the upper ends passing through caps secured with nuts.

The deflection of the main spring is taken by the seats in the spring perches, and claim is made that the reflection is absorbed by the coiled springs, the tension of which is adjusted by the nuts that retain the caps on the guide rods. The absorber is easy to install as there are no holes to drill.

Manufactured by the Lanshield Manufacturing Co., 510 First Ave., West Haven, Conn. Price, per set of four, $12.50. Unconditionally guaranteed that if customer is not satisfied the purchase price will be returned.

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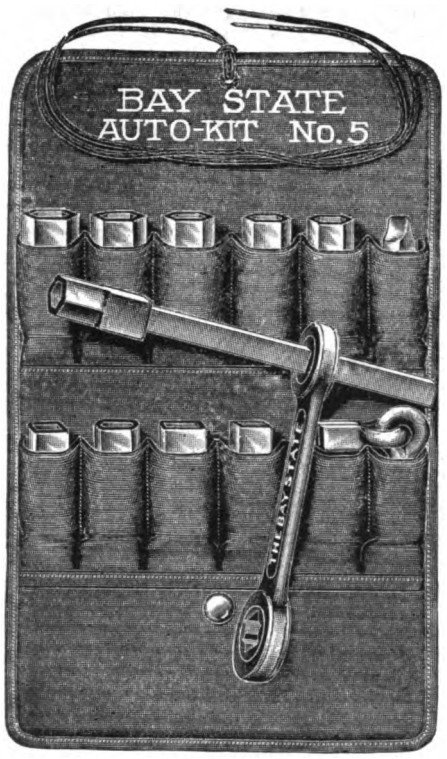
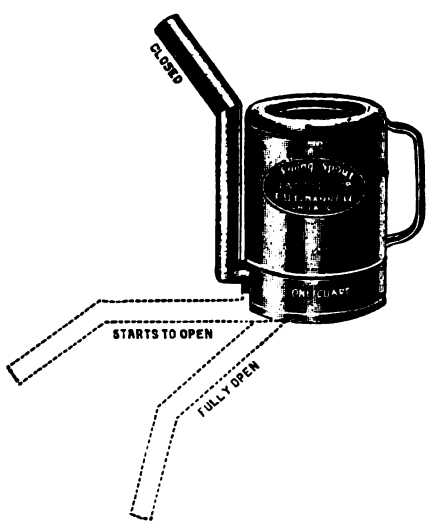


The Bay State "Autokit" Socket Wrench Set No. 5 consists of 10 heavy gauge steel sockets, case hardened, as strong and tough as it is possible to make them. The hexagon, square and oval are especially adapted for use on the Ford car, but are carefully selected so as to be available for any car. The set comprises a hardened steel screw driver, finely finished; a universal joint to reach the hard places, a seven-inch steel extension bar and a double end ratchet wrench which fits both the sockets and the bar and is reversible. The set is contained in a black cloth roll made of heavy drilling, not pantosote. The pockets in the roll are made to stand open when empty so that the insertion of parts is quick and easy.

Manufactured by the Bay State Pump Co., 100 Purchase St., Boston, Mass. Price, $5.

The Swing Spout Oil Measure consists of an oil can with a patented spout that closes and stops the flow of oil when in a vertical position, and when in a down or

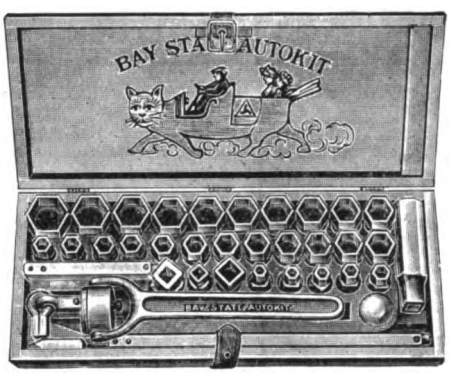


partially down position allows the oil to flow freely. It is made in one and two-quart sizes, of heavy material that will stand up under hard abuse. The spout has a patented shut off or valve with a ground fitting so that oil cannot leak, and is the proper length for supplying oil to such cars as the Buick, Mitchell, etc., and other cars where the filling spout is difficult to reach.

The Swing-Spout oil measure is guaranteed to the jobber in that if he buys a reasonable quantity and cannot sell them within 90 days, at the expiration of that time he may return them and receive his money back.

Manufactured by E. Edelmann & Co., Chicago and New York City. Prices on application.

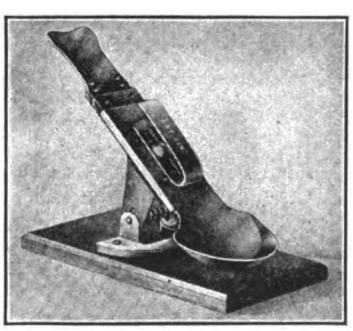
The Bay State "Autokit" Socket Wrench Set No. 1 consists of 31 socket wrenches, with swiveling reversible ratchet handle, several extension shanks, a universal joint and a heavy screw driver. By means of the various combinations of which these parts are susceptible it is easy to remove any one of the many nuts and cap



screws on a car by a ratcheting motion. One long socket fits the spark plugs, which can in this way be removed without danger of breakage. The set is packed in a neat wooden box with hinged cover, easily carried in the tool box of the car or truck and occupies but little space.

Manufactured by the Bay State Pump Co., 100 Purchase Street, Boston, Mass. Price, $12.

The Universal Accelerator Foot Rest consists of an appliance that is attached to the floor of the car, resting on the accelerator button. The foot rest is adjustable in four ways, height, length, distance from heel to instep, and the end of



the rest can be bent up or down to accommodate the foot. It is designed to accommodate all sizes of feet and may be attached to the accelerator pedal quickly. The device is made of high-grade pressed steel, polished and nickel plated.

Manufactured by the Joseph Pollak Tool and Stamping Co., 81-85 Freeport Street, Boston, Mass. (Dorchester District). Sold by Malton Specialty Co., 213 Columbus Avenue, Boston, Mass. Price, $2.

Van Briggle Carburetors. A new carburetor for Ford, Dodge and Maxwell cars employs what is termed an airplane principle in the method of carburetion. By this method, instead of sucking in more fuel at higher speeds of the engine, this carburetor actually decreases the fuel supply; in other words, the faster the car travels the less gasoline used, is the claim of the manufacturer.

There is only one adjustment, no venturi tube, no by-passes, no auxiliary air valves and no weights. The maker claims that the principle of the model P-F carburetor for Ford cars is such that an increased velocity of the air through the carburetor automatically decreases the gasoline coming out of the nozzle, and that vaporization is more complete owing to the whirl in the mixing, which breaks up the gas into minute particles. It is easily installed by any mechanic in a few minutes time without special tools. Satisfaction is guaranteed within 30 days or money will be refunded.

Manufactured by the Van Briggle Motor Devices Co., Indianapolis, Ind. Price, Ford, model P-F, $10; model P-D for Dodge, $18; model P-T for Maxwell, $15.

The Corbin-Brown Ford Special Speedometer consists of an instrument combining a speedometer with a maximum speed hand that indicates the highest speed attained during a trip and which is set back to zero by means of a tripping device, a luminous dial for night driving that plainly illuminates the dial, and total and trip mileage. The maker states that the material used in the construction of this instrument is of the best, no white metal

or die cast parts being employed. It is claimed that this device for Ford owners is accurate, simple in construction and may be installed by anyone in a few moments.

Manufactured by the Corbin Screw Corporation, New Britain, Conn. Prices and literature on application.

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THE MAKING OF A SPARK PLUG

Highly Developed Engineering and Scientific Methods of Production Insure Exceptional Efficiency from Red Head Products

PRIMARILY automobile vehicle propulsion depends upon two factors, the quality of the fuel and the manner of burning it. This statement may be applied to all internal explosion engines. The fuel is supplied through the carburetor and it is burned by igniting it with an electric spark generated in each engine cylinder.

Putting the Electrodes into the Insulating Cores and Filling the Bores with a Vitrifying Cement at 50 Pounds Air Pressure.

This statement may appear so elemental as to cause the reader to wonder why it has been made, but the object is to emphasize that acceptance of a fact does not mean that it is understood. For instance, the driver of an automobile may know nothing of automotive mechanics; he may have some theoretical knowledge or some practical experience with which he determines engine or vehicle operation with reference to his standard, but he may be incapable of making a trifling adjustment accurately.

Power Losses by Heat and Friction.

The carburetor and the magneto, timer or distributor are generally believed to be the sources or origin of the combustible gas and the electric spark that ignites it, and that upon them the efficiency of the engine and the vehicle depends. Both are carefully designed and perfected instruments that can be adjusted with reference to each other so that an experienced driver will be reasonably certain of obtaining dependable engine operation.

Engine Functioning Depends on Plugs.

But rarely does any motorist realize that the functioning of both the carburetor and the source of ignition depends upon the spark plug, which as a matter of fact is the only means of energizing the engine. The spark plug may appear to be extremely simple in design, in construction, in adjustment, and yet it is quite as important as the carburetor or the magneto. Because automobile owners and drivers assume they know is the principal reason why the spark plug and its relation to engine efficiency is ignored or disregarded.

Were spark plugs better understood there would be far greater fuel and lubricant economy, engines and vehicles would afford much more satisfaction, and there would be a surprising saving in bills that are incurred for "adjustments" that are absolutely unnecessary.

With reference to fuel consumption. Taking an engine that is "normal" on the testing stand, not one that has been more or less reduced in capacity because of neglect or ignorance, which applies to the engine found in the car or truck in ordinary daily use, a surprisingly small ratio of useful energy is produced when measured by the full value of the fuel. Without considering the possibilities of loss of energy other than those that are believed to be inherent in automotive practise, the best authorities are agreed upon these approximations of loss with reference to diffusion of heat—and the internal explosion engine is essentially a heat engine, which are shown in an accompanying tabulation.

Cooling Water	35.8	
Exhaust gas, direct radiation	35.6	
Exhaust pipes	1.0	
Muffler	1.2	
Total	73.6	73.6
The losses by friction are as follows:		
Engine friction	5.6	
Transmission friction	2.9	
Total	8.5	8.5
Losses in wheels and tires:		
Rear tires	3.7	
Front tires	1.1	
Front wheels	0.6	
Total	5.4	5.4
Total		87.5

Accepting these figures there is a total loss of 87.5 per cent. of the energy value of the fuel in delivering power at the rear wheels, and of the 12.5 per cent. that is delivered 7.1 per cent. is necessary to compensate for air resistance. This leaves 5.4 power available for crossing surfaces where the traction is poor or heavy and for climbing hills.

Obviously there is vital need of obtaining the largest practical degree of combustion in the cylinders of the engine, and this is not obtainable unless the spark plugs are perfectly set so that the ignition will take place at the time when the expansive force will most effectually develop power. Each spark plug creates a spark in a cylinder when the electric circuit is made and the current "jumps" or arcs at the points of the electrodes. The electrical energy originates in the magneto or battery and it is distributed to the different cylinders at the times when the pistons are at a certain position in them, the position depending upon a number of factors, including engine speed, the type of ignition system, the fuel and the temperature and volume of moisture in the air.

Combustion of fuel in the engine cylinders will take place with almost inconceivable rapidity. High speed engines have been driven to nearly 4000 revolutions a minute. Single-cylinder engines have been built in France that have maximum speed in excess of 3600 revolutions, which means more than 1800 separate piston impulses a minute or 30 a

The Electrodes and Insulators, After Drying, Are Placed in Ovens and Exposed to High Temperature to Bake the Cement, That Retains the Electrodes in the Bores.

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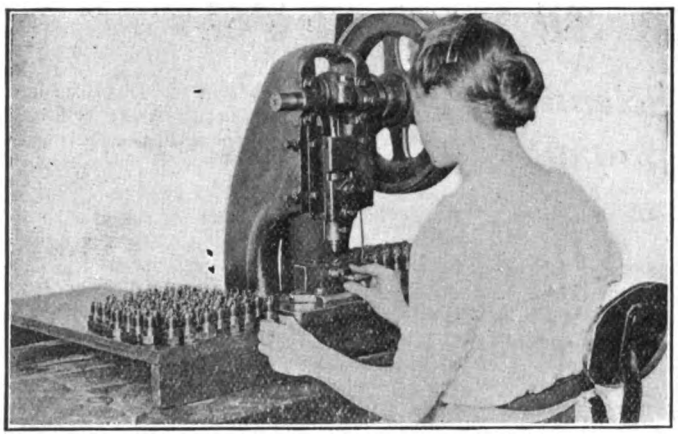


"Staking-In" the Fish Hook-Shaped Shell Electrodes Into the Spark Plug Shells—A Single Operation on a Specially Designed Power Press.

second, and there is probability that this number could be exceeded. This applies to a single cylinder, and as the number of cylinders is increased the number of impulses a minute for the engine increases in ratio.

This will be better determined by reference to the following tabulation:

No. Cyl.	Engine R.P.M.	Power Impulses a Minute	Ignition Sparks a Minute a Cylinder	Ignition Sparks a Minute an Engine	Ignition Sparks a Second a Cylinder	Ignition Sparks a Second an Engine
1	1000	500	500	500	8.33	8.33
2	1000	1000	500	1000	8.33	16.66
4	1000	2000	500	2000	8.33	33.33
6	1000	3000	500	3000	8.33	50.00
8	1000	4000	500	4000	8.33	66.66
12	1000	6000	500	6000	8.33	100.00

Combustion Heat Is Intense.

The heat generated in the cylinder at the instant of combustion is intense. The temperatures will vary from 3000 to perhaps 4000 degrees Fahrenheit, which intensity is illustrated by comparing the heat at which steel fuses, or about 2550 Fahrenheit. The mean temperature of the cylinder is much lower because it is reduced as the piston descends for the power stroke, is cooled somewhat by the exhaust stroke, and is cooled decidedly during the intake or suction stroke and to some degree while the cool fuel gas is being compressed.

While the engine is in motion these cycles are repeated. The tabulation shows that with engine speed of 1000 revolutions there will be an average of 500 power impulses for each cylinder, and an average of 8.33 ignition sparks created a second. This may appear to be comparatively slow, but from 1800 to 2400 revolutions a minute is not uncommon with standard automobile engines, and from 3000 to 3600 is sometimes reached with racing car engines. The maximum stated would be approximately 29 power impulses a second to a cylinder.

Great Rapidity of Combustion.

But the term power impulses does not represent the rapidity of the consumption of the fuel in the cylinder. Considering the period of combustion, if the engine is running 1000 revolutions a minute and each cylinder has 500 power impulses the time for each impulse revolution is slightly more than 1/6 second and if the spark is made 15 degrees advanced or before top center, and with 360 degrees for a revolution, the time for ignition would be 15/360, which allows 1/24 of the time for one revolution, or 1/144th of a second, for the gas to burn and create the expansive force within the cylinder. This is so brief a period that it is not possible to make comparison. Yet in that time the electric spark must create a flame that will spread through every part of the combustion head.

If the combustion chamber is irregular the flame will not be uniform in its progress in all directions from the electrodes of the spark plug, which is held to be the reason why L and T-head cylinder engines are either slower in action or develop less power than engines with valves in the heads of the cylinders.

What a Perfect Plug Will Do.

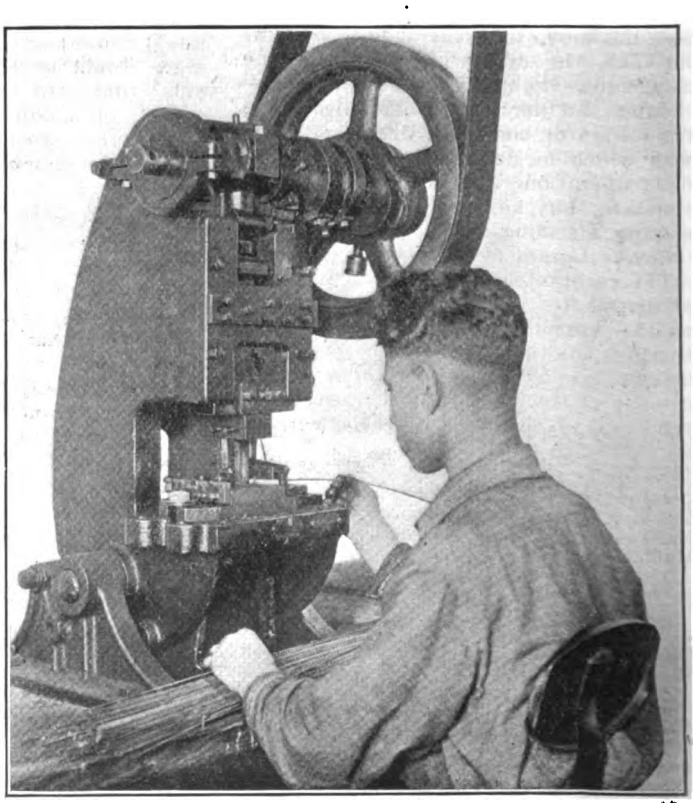
The functioning of the spark plug may be dependent upon numerous conditions. A perfect plug must be so constructed that it will deliver the full voltage developed by the magneto, the coil or the combination of the two at its electrodes. The electrodes must be so set that the spark created when the current "arcs" between them will have sufficient intensity to ignite the gas. It must be perfectly insulated. It must be so formed that oil will not accumulate on the shell and the insulation of the center electrode and, when baked or carbonized, will not cause a short circuit. It must not leak either at the bushing or the shell, for leakage will lessen compression and cause loss of power, carbonization and necessitate greater consumption of fuel. The insulation of the center electrode must be such a nature that it will not absorb oil and short circuits, will not crack under the extreme variations of heat and it should be so assembled that it may be cleaned readily.

General Spark Plug Construction.

The spark plug is usually constructed with a shell, so-called, which is either steel or brass or bronze, that is shaped at the upper section to seat a wrench. There may be other forms, but it ordinarily is hexagonal. The lower part of the outside of the shell is threaded to screw into the tapped bore in the cylinder head. Through the center of the shell is a bore, the lower part of which is smaller than the upper, and there is a shoulder surrounding the smaller bore on which is seated the insulation of the center electrode, which may be stone, porcelain, mica or other material that is not a conductor of electric current.

The bushing is either brass or steel and is a short section with a hexagonal collar that is a seat for a wrench, with the external length below it threaded to screw into the larger internal bore of the shell, and the bore of the bushing is such that it is a loose fit for the upper end of the insulation of the center electrode. The insulator of the center electrode is shaped to have a central collar at a point usually below the middle and at either side of this collar is placed a packing that seats against the shell and the bushing, so that when the bushing is screwed into the shell and seated there shall be no leakage past the gaskets of either air or gas.

The center electrode extends through the insulation, the upper end being threaded and the lower end either straight or shaped. On the upper end



Cutting the Center Electrodes from Nickel-Manganese Steel Wire, These Being in Two Types and Two Sizes of Stock, on a Special Press.

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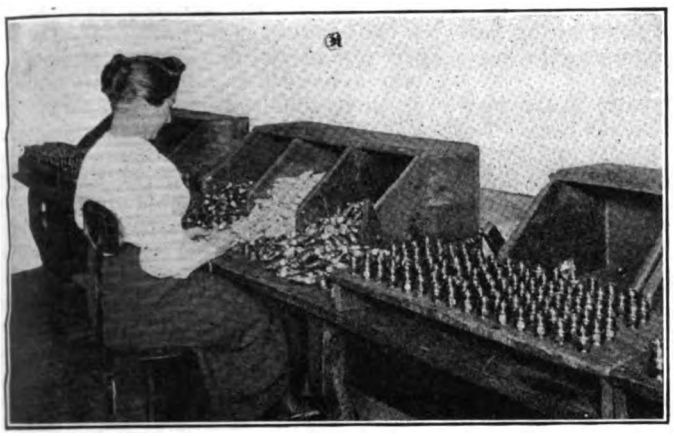


Assembling the Bushing, Shell, Insulator or Core Complete and the Gaskets After the Tests of the Different Parts to Insure Against Defects.

is generally placed a binding nut with a milled edge that is screwed tightly against the insulation. There is a small lock washer and a knurled nut that serves to retain the terminal of the cable or wire securely against the binding nut and the electrode. The shell electrode is a piece of round metal anchored into a bore or secured in a manner that will insure electric conductivity that can be adjusted with relation to the center electrode, so that the gap or space between them may be from 1/32 inch for battery current or from 1/50 to 1/64 inch for magneto current.

Many Types and Designs for Plugs.

What has been stated with reference to design and construction applies generally to any spark plug. There are, of course, many different types and the dimensions of the several members of the plugs will vary, and the materials will differ. There are special designs that are intended to meet the requirements of certain engines. As a rule manufacturers produce spark plugs to S. A. E. dimensions and special types and sizes which demand may justify.

The spark plug that will endure, that will have high electrical efficiency, will afford the greatest fuel economy, because it will cause the fullest consumption and produce the largest degree of power from a given volume. It will contribute to the satisfaction of the owner because with adequate power he will have ease of acceleration, flexibility of operation and smoothness of power delivery that will be superior to cars not so well equipped.

Again, there is the insurance against defects of ignition that are regarded as inseparable from electric systems, which cause annoyance and inconvenience and discomfort. There is material reduction of expense for adjustments and repairs of the car that originate frequently and require expert examination to determine.

Exclusive Qualities of Red Head Plugs.

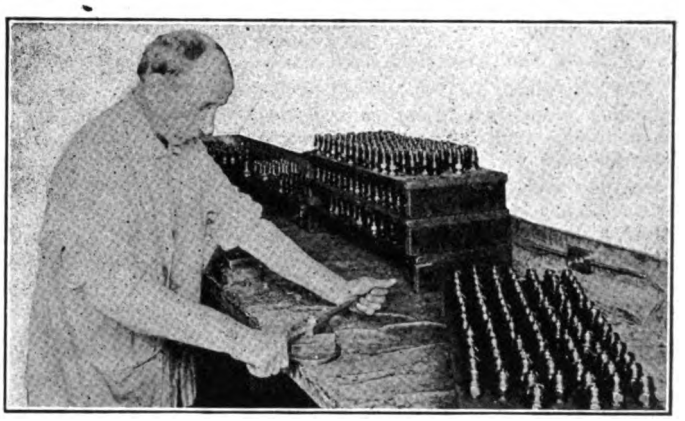
What is claimed to be a superior spark plug because of exclusive qualities of design and construction is produced by the Red Head Spark Plug Corporation, with offices at 261 Broadway, New York City, and factories in New York and at Newtown, Pa. This concern acquired the patent rights, material and general assets of the concern that formerly manufactured Red Head spark plugs.

In the production of this plug exceptional care is taken that it will measure up to mechanical and electrical standards, and the parts and the assembled plugs are subjected to inspections and tests that are regarded as being certain to detect defects of materials and faults of workmanship.

The corporation was organized to take over the business after very close examination had been made of the company's patents and the quality of the products that were practically productive under them had been established. The concern planned to largely increase the manufacturing facilities and better develop the processes of production, and to broaden and increase the scope of its sales department.

The company now operates two factories, that at New York City being given over to the production of plugs from materials manufactured in it, and the other at Newtown, Pa., where the insulation cores that carry the central electrodes are produced. The cores or insulators are made from a combination of clays imported from France, England and Belgium, and these materials are combined in proportions that have been found by innumerable experiments to have qualities that are claimed to be superior to any other type that is made. The insulators are maintained to be a synthetic stone that has a structure that differs entirely with that of porcelain and will endure the very wide changes of temperature and the vibratory stresses of the engine without fracture. The insulator material is known as Vitristone and the name is registered in the United States patent office.

Statement is made that this insulator is greatly superior to any other and that its endurance is far greater than any porcelain insulator made; that because of this endurance the life of these spark plugs is measured by years and a defective insulator is almost unknown because of the methods of manufacture and the care taken in testing and inspecting them.



Seating the Gaskets Between the Core and the Shell and Bushing—This Is Done by Hand to Obtain a Perfect Seat Without Stressing the Gaskets.

How Plug Insulators Are Made.

The process of producing these insulators is very interesting. The clays are mixed and in the slip house the mixture is passed between a series of magnets of such strength that all particles of iron are drawn from it, so that it is perfectly free of what might be conductors of electricity. The mixture of clays is then taken to the "throwing up house," where it is formed into what are known as "biscuits," which are pieces of the compound having cylindrical shape.

These "biscuits" are then given a rough turning in a machine that forms the collar or largest diameter and the two upper and lower diameters, and bores the hole through the center for the electrode. The pieces are then dried from 60 to 70 hours at room temperature, after which they are again turned in automatic machines that reduce the diameters to exact dimensions and finish the bores, and complete the "petticoat" or enlargement of the bore at the base of the insulator.

Kiln Firing a Long Process.

The pieces are again dried at room temperature for a considerable period

Inspecting the Plugs After Final Assembly and Test and Adjusting the Points of the Electrodes by Gauge to Be Certain of Positive Functioning.

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and then are placed in "saggers," or carriers, and are put into the kiln. The kilns have capacity for about 40,000 insulators for each firing. When the insulators are put into the kiln from four to eight test pieces are placed in different openings and by the effect of the heat on the test pieces the progress of the firing is determined. The test pieces are in the form of cones and these will gradually assume shapes by which the firing is judged. The kilns are fired with a special coal and the temperature will reach 3800 degrees Fahrenheit. The firing must be carefully watched else the contents of the kiln may be destroyed and be reduced to what are known as "duds," or, if burned, to "nigger babies." From four to six days is required for a firing.

The insulators are removed from the kiln and after cooling are subject to the glazing process, the glazing material being sprayed on instead of dipping them into the compound. After the glazing the insulators are decorated, this being with red, and consists of the trade mark and a narrow band at the top. They are next placed in the decorating kiln and again fired, this setting the glaze and the decorations.

Tests for Electrical Defects.

Each insulator is then tested to detect possible electrical defects and carefully inspected to find cracks or porosity. The electric test is made with a temporary electrode and an extremely high voltage is used. Statement is made that no other manufacturer makes so thorough a test of insulators, most of them testing a few of each lot as it is going through the plants.

The insulator plant at Newtown is maintained to be the most complete and the best equipped of the kind in the country, and that it was constructed with the view of producing insulators for the Red Head Spark Plug Corporation, alone evidences the care taken to obtain quality. This plant is large enough to produce all insulators that can be utilized by the New York factory for a considerable period, and its capacity can be increased when necessary to meet any requirement.

At the factory in New York the insulators are again tested for breaks and porosity upon receipt, each being examined before work is done upon it. This is exclusive of test made of the spark plugs as they are later on assembled. The center electrodes are made of nickel manganese steel wire that is made to specification and is in two sizes, .075-inch for the standard sizes and types of plugs and .125-inch for the "Big Boy" plugs, the latter being designed for specially high powered engines.

Making the Central Electrodes.

The wire is cut into lengths and is threaded at one end for the standard sizes, but the wire for the "Big Boy" plugs is not threaded. Instead, at one end a short piece of steel wire of larger diameter is electrically welded, this shorter section being threaded. Where the two pieces are joined a collar or flange is formed that serves to anchor the electrode in the bore of the insulator and also seats at a point in the bore that locates it with reference to exact projection beyond the ends.

The electrodes are placed in the insulators and they loosely fit the bores. The space between the electrodes and the internal bores of the insulators is filled with a thick paste formed principally of pulverized flint and silicon soda. The paste is forced into the bores under a pressure of 50 pounds, the locations of the electrodes being determined by the operative, those of the "Big Boy" plugs being forced into the bores until the collars of the electrodes seat. The threaded portions of the upper ends of the electrodes extend into the bores and that part within the bores is covered with the paste. This forms a firm anchorage for the electrode.

The insulators are then dried at room temperature for from three to seven hours and they are then placed in racks and put into gas heated ovens in which they are baked for 24 hours, when the paste has become as hard and as enduring as the insulator, adhering to both the electrode and the insulator.

Shells, Bushings and Shell Electrodes.

Both the shell and the bushing are automatic screw machine products, being very carefully produced and submitted to double inspection to determine accuracy of workmanship, the requirements being very exact. The single shell electrodes of standard types and the three shell electrodes of the "Big Boy" plugs are what is known as a "fish hook" design, having a straight shank that is fitted into a bore in the shell and extending downward and curving upward somewhat in the form of a fish hook, the bend being considerably below the firing point. Claim is made that should oil be thrown upon the electrode it will drain to the lowest part and will not accumulate where it will close the circuit and prevent the "arcing" of the current between the two electrodes.

The shell electrodes are nickel manganese steel wire and are the same diameter for all plugs, .055-inch diameter. The electrodes of this type are formed and cut at one operation and the shells are drilled by jigs of a special type. The electrodes are fitted to the bores in the shells so they may be seated in them by hand. The assembly is by jigs and the electrodes are "staked in" in punch presses that so constrict the bores that there is positive metallic contact and the electrodes are firmly anchored. The cutting and forming of the electrodes and the "staking in" are all automatic operations.

Gaskets a Special Type.

The gaskets, top and bottom, are copper asbestos of special construction, being the French or enclosed type. In assembling the binding nut is screwed on to the center electrode, a soft lead composition washer holding it firm, and in turn the lock washer and the knurled nut. Then the insulator and the gaskets are placed in the shells and the bushings are seated loosely by hand. The plugs are then taken to benches in racks and each in turn is placed in a fixture and the bushing is seated by hand with a two-handled special wrench. The object of hand fitting the bushing is to obtain a perfect gas tight seat without crushing and destroying the gaskets, and this has been found only certain with hand work. The expert operator can determine precisely when the bushing and gaskets have been seated by the "feel" of the lever, which obviously is not possible when assembly is in any other manner. The bushing and shell will expand in ratio to the heat to which they are subjected and the insulator will vary but little with varying temperatures. The gaskets must be sufficiently elastic to contract and expand and maintain the perfect contact that will insure against leakage, no matter what the pressure.

Tests for Service Qualities.

The insulators are all tested for electrical conductivity and resistance to excessive voltage, and in the final inspection the perfect concentricity of the insulator to the bushing and shell is determined, after the complete plug has been tested for leakage with 150 pounds air pressure, for upon this depends very largely the endurance of the plug. The adjustment of the electrodes is to gauge, so that the spark gap will be uniform. All details of construction are up to the United States specifications.

When the plugs have been finally passed upon they are packed in cartons, a carton containing 10 plugs or 100 plugs, the metric count being adopted because of its greater convenience in keeping stock.

Statement is made that the company now has four times the space that was occupied by the factory of the Emil Grossman Manufacturing Co., which produced Red Head plugs and from which the patents covering the manufacture of these plugs was purchased.

The Red Head Spark Plug Corporation has no connection with the former manufacturer, but is a new organization that will specialize spark plugs only Because of its factory equipment and facilities it can make deliveries immediately. This is a fact of considerable importance to buyers.

HART-PARR DISTRIBUTORS.

A. H. Grover and Byron Snyder have opened a distributing house at Dallas Tex. They were formerly connected with the Northern Hart-Parr Co., Minneapolis Recently they sold their interest to M Warner, the third partner, and contracted for southern Oklahoma and the State of Texas, excepting the panhandle and the extreme southwest. Mr. Grover will directing the sales at the Northern Hart Parr Co. and Mr. Snyder the office. The Texas Hart-Parr Co., as the new firm has been named, has leased a good location at Main and Houston streets, in the machinery section of Dallas, and already has tractors on the ground. As there are many old Hart-Parr 60's in Texas, the new firm will not find the name Hart Parr unknown.

It is understood that Fiat is making arrangements to manufacture or assemble in America for the American market

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NEW CONCERNS RECENTLY INCORPORATED

Monthly Record of New Business Houses for which Charters Have Been Issued in the Various States and Classified According To Nature of Business.

NEWLY ORGANIZED MANUFACTURERS OF CARS, TRUCKS AND TRACTORS.

Wilmington, Del.; Bethlehem Motors Corporation; $13,000,000; to manufacture, sell and deal in automobiles.

Wilmington, Del.; South Bend Motor Co.; $1,500,000; L. M. Horty, M. C. Kelly, J. D Frock.

Chicago, Ill.; Liberty Auto Truck Co.; $200,000; Samuel C. Sood, Arthur M. Brody, L. B. Phillips.

Ipswich, Mass.; Boulais Tractor Co.; $50,000; Wilfred Boulais, Edward J. Macorelle, Ovela H. Rathe.

St. Louis, Mo.; Von Arx Automobile Co.; $15,000; to manufacture and deal in automobiles, gas engines and accessories; Victor A. Von Arx, Oscar G. Roeder, Charles H. Diel.

Buffalo, N. Y.; Commercial Aeroplane Co., Inc.; $100,000; general commission merchants, selling agents business; Idaho Hamilton, Eugene N. Hickey, Glenn W. Simpson.

Columbus, O.; Columbus Oldsmobile Co.; $150,000.

New York, N. Y.; Kell Motor Co.; $300,000; Max Kell, Isadore Kell, Samuel Jacoby.

New York, N. Y.; Supreme Auto Trucking Co.; $5000; D. Nachman, B. Nathan, E. Nathan.

New York, N. Y.; Tube Motor Corporation; $500,000; James J. Flannery, L. S. Dumnesil, H. D. Benner.

Syracuse, N. Y.; Onondaga Truck Sales Co.; $12,000; L. Meadvin, J. Crimmin, O. E. Hermen.

PARTS AND FITTINGS MAKERS.

Birmingham, Ala.; U. & J. Carburetor Sales Co.; $12,000; J. M. Hughes, L. B. Gammill, Cranshaw Chamberlain.

Dover, Del.; Electro-Lyte Storage Battery Co.; $200,000; R. F. Hansell, E. M. MacFarland, J. Vernon Plimm.

Dover, Del.; Liberty Auto Lock Co.; $200,000; to manufacture automobile locks and safety devices; T. L. Croteau, P. B. Drew, H. E. Knox.

Dover, Del.; Tantburetto Rim Wheel Co.; $1,000,000; M. L. Horty, M. C. Kelly, S. L. Mackey.

Petersburg, Ill.; The Cornell Motors Corporation; $20,000; to manufacture gas and steam engines; C. W. Shopley, W. J. Ramsey, H. S. Haughton, George C. Power. C. L. Nollis, F. A. Golden, S. A. Thompson.

Indianapolis, Ind.; Collapsible Auto Rim Adjustable Tool Manufacturing Co.; $100,000; Edward D. Bauman, Dave Yover, Paul P. Scharffin.

Boston, Mass.; American Spark Plug Co.; $150,000; to deal in spark plugs; Albert L. Cole, Elizabeth F. Uniac, Richard W. Hall.

Rutherford, N. J.; Standard Auto Parts Co. of America; $1,000,000; general manufacturing business, engineering.

Brooklyn, N. Y.; Better Auto Service, Inc.; $1000; to manufacture engines and other machinery; William P. Willetts, C. Willetts, Charles N. Dauphin.

Buffalo, N. Y.; Class Auto Top Corporation; $50,000; J. Amick, C. P. Amick, J. W. Bradley.

Fort Worth, Tex.; Packard Auto Livery Co.; $25,000; J. L. Johnson, E. M. North, A. P. Mitchell.

Richmond, Va.; Automobile Safety Lock Co. Inc.; to manufacture and sell automobile safety locks; W. F. Jenkins, Frank Merano.

Fond du Lac, Wis.; Engel-Romaine Co.; $20,000; to deal in farm tools, automobiles, tractors and trucks; H. L. Engel, L. W. Romaine, Henry Habak.

ACCESSORIES, EQUIPMENT AND SUPPLIES.

Birmingham, Ala.; Murphy-Jones Auto Supply Co.; $15,000; W. E. Murphy, C. V. Jones.

Dover, Del.; Logan Tire Co. of America, Inc.; $500,000; E. R. Hansel, E. M. MacFarland, J. Vernon Pimm.

Macon, Ga.; The Hamilton Motor Sales Co.; $100,000; to handle accessories and automobiles; W. L. Harvey, L. B. Hamilton.

Macon, Ga.; Square Deal Garage Co.; $2000; to conduct a general automobile repairing business; H. D. Washburn; J. E. Cunningham.

Chicago, Ill.; Decatur Tire Corporation; $3000; Charles K. Schwarts, Ulysses S. Schwarts.

Chicago, Ill.; Midco Tire Co., Inc.; $10,000; Edward H. Trocst, Henry Trocst, Clara Dorstewitz.

Chicago, Ill.; Perfection Auto Repair and Supply Co.; $10,000; Frank J. Nichols, Frederick Y. Nichols, Adolph W. Winkel.

Chicago, Ill.; Sagless Auto Seat Co.; $2500; George R. Duce, Gustave E. Beerly, Mae Gilseram.

Peoria, Ill.; Faultless Tire Manufaoturing Co.; $2500; Charles William Stumptner, Henry Bartholomew, S. Samuels.

Peoria, Ill.; The Reardon Co.; $25,000; to manufacture automobile accessories; W. L. Reardon, A. W. Lewis, H. D. Morgan.

Ft. Wayne, Ind.; Roussey-Centivre Rubber Co.; $100,000; to deal in automobile tires and tubes; A. J. Roussey, Carl Centivre, Charles Centivre.

Indianapolis, Ind.; Charles C. Phillips Co.; $10,000; to deal in automobile accessories; Charles C. Phillips, Elizabeth R. Baer, Harry A. Groff.

Boston, Mass.; Eagle Auto Supply Co.; W. Halpern, Moses B. Gilbert, B. Gilbert.

Cedar Rapids, Ia.; The Cedar Rapids Tire and Rubber Co.; $1,010,000; H. D. Ferguson, C. B. Klopfenstine, A. L. Archer, R. B. Carberry, O. C. Brinker.

Buffalo, N. Y.; Add-a-Tire and Supply Corporation; $100,000; S. J. Ciacluch, W. Miskonia, C. Johnson.

New York, N. Y.; Mercer Tire Corporation; $50,000; C. Dantin, F. C. Doehler, J. W. Mercer.

New York, N. Y.; Northwestern Tire Corporation; $25,000; J. Jacobs, S. Bernheim, W. Loewenthal.

New York, N. Y.; Triplex Tire Corporation; $260,000; J. Martin, G. Martin, J. E. Ankus.

Rochester, N. Y.; Roadmaster Motors, Inc.; $25,000; to deal in automobiles, supplies and accessories; A. Holley, A. J. Tischer, R. K. Chase.

Cleveland, O.; Durable Tire and Rubber Co.; $10,000; John F. Singleton, E. G. Guthery, B. J. Guthery, H. M. Kodet, R A. Lammers.

Cleveland, O.; Great Northern Tire and Rubber Co.; $1000; L. M. Sewell.

Cleveland, O.; Knox Tire and Rubber Co.; $1000; L. M. Sewell.

Toledo, O.; Ever Tire Co.; $5000; Herman Saxon, James M. Latham.

Harrisburg, Pa.; Dauphin Tire Service Co.; $10,000.

Pittsburgh, Pa.; Bigelow Tire Co.; $10,000; M. B. Schiller.

Memphis, Tenn.; Memphis Service Garage; James W. Lyle, H. S. Harrison, W. E. Graves, O. K. Steuwer, A. J. Calhoun.

Roscoe, Tenn.; The Roscoe Auto and Supply Co.; $20,000; Joseph H. Underwood.

Houston, Tex.; Savage Tire Co.; $15,000; W. S. Curtis, W. H. Crawford, Gus Dreyling.

Sugarland, Tex.; Republic Tire Co.; $25,000; G. E. Blohm, F. W. Stepleton, D. R. Viel.

GARAGES AND REPAIR SHOPS.

Washington, D. C.; N. and J. Carburetor Sales Co.; $20,000; John L. Newbold, Ernest Zimmerman, Charles H. Beck.

Chicago, Ill.; Public Service Garage and Motor Co.; $10,000; Sherman W. Griselle, Hargrave A. Long, Emmett J. McCarthy.

St. Louis, Mo.; United States Auto Repair Co.; $10,000; Henry Obermeyer, Charles Palazzolo, Mike Martio, Roy C. Kayes.

Newark, N. J.; Lindeman Garage, Inc.; $10,000; Frank Lindeman, Bernard Ryan, Harry Lindeman.

Newark, N. J.; The Unique Garage; $25,000; to conduct a general garage and automobile business.

Passaic, N. J.; The Passaic Individual Garage Co.; $50,000; to operate garages.

Brooklyn, N. Y.; Guilfoil's Garage, Inc.; $50,000; Merritt C. Guilford, Rodney T. Martinsen, Alice F. Guilfoil.

Brooklyn, N. Y.; Robinson Street Garage, Inc.; $6000; H. C. Gorrfried, O. Scheer, H. Olson.

New York, N. Y.; Cosmopolitan Garage Corporation; $500,000; F. A. Weber, Jr., H. H. Brandeth, J. Brandeth.

New York, N. Y.; East 54th Street Garage; $10,000; P. O. Shapiro, G. Levy, W. E. Goldman.

New York, N. Y.; Giant Garage, Inc.; $25,000; M. Albert, S. Albert, M. S. Albert.

New York, N. Y.; Gray Motor Garage Corporation; $17,000; J. P. McCann, T. A. Cooke, Sr., T. A. Cooke, Jr.

New York, N. Y.; Junction Motor Car and Repair Co.; $10,000; F. Miano, N. Miano, J. Miano, G. S. Miano.

Waxhaw, N. C.; The Sims Motor Co.; $25,000; to conduct a garage business.

Akron, O.; Beeman Garage Door Co.; $50,000; C. J. Beeman.

Pittsburgh, Pa.; Grant Garage and Service Co.; $50,000; G. A. Yeager.

La Crosse, Wash.; La Crosse Motor Co.; $25,000; to conduct a garage and general automobile business; Victor Dessert, J. C. Johnson.

DEALERS IN AUTOMOBILES, MOTOR TRUCKS AND TRACTORS.

Birmingham, Ala.; Automotive Corporation; $2000; J. S. Lewis, W. W. Stillson.

Dover, Del.; Bafue-Eustice Co.; $10,000; to deal in automobiles; C. L. Rimlinger, P. B. Drew, H. E. Knox.

Dover, Del.; Consolidated Motor Manufacturing Co.; $250,000; to deal in automobiles and parts; William F. O'Keefe, George C. Steigler, J. H. Dodell.

Dover, Del.; Cole Motor Car Sales Co.; $25,000; Harrison W. Howell, Clarence H. Ratledge, M. M. Toner.

Georgetown, Del.; Georgetown Auto Co.; $50,000; to manufacture and repair automobiles.

Dover, Del.; United States Automotive Corporation; $35,000,000; Frank B. Anted, Frederick I. Barrows, Leroy Hanson.

Wilmington, Del.; Arcadia Auto Service, Inc.; $25,000; to establish and maintain an automobile service business.

Chicago, Ill.; Kedzie Auto Sales Co.; $2500; Lillian Dreifus, Anna Andalman, Fred H. Shapiro.

Chicago, Ill.; Illinois Motor Co.; $250,000; Walter Morross, Ludwig W. Harjes, Harry C. Kinne.

Chicago, Ill.; Petroleum Motor Co.; Glen B. Graves, John H. Cross, Terrence G. Jackson.

Chicago, Ill.; West Side Motor Car Co.; $15,000; Jewett G. Massey, Wiley D. Reid, Eugene E. Gaertner.

Springfield, Ill.; Automobile Sales Corporation; $4000; Irwin H. Wystone, Michael Eckstein, Frank Oppleman.

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Peoria, Ill.; Peoria Motor Sales Co.; E. C. Leisy, W. A. Hoerr.

Indianapolis, Ind.; Barth-Keith Motor Car Co.; $600,000; Jacob S. Barth, Charles A. Barth.

Indianapolis, Ind.; McGee Motor Sales Co.; $10,000; William T. McCullough, Harry C. McGee, Edwin C. Boswell.

Des Moines, Ia.; Des Moines Motor Car Co.; $20,000; J. E. Burbank, C. F. Reid.

Mason City, Ia.; Chaffin-Jamison Motor Co.; J. O. Jamison, Earl Manbeck, Earl R. Chaffin.

Boston, Mass.; Flan-Sha Co.; $50,000; to deal in automobiles; Bert W. Flanders, Louis Ainsley, George M. Faulkner.

Lowell, Mass.; The Automobile Equipment Co.; $10,000; J. Harvey Gamble, Clara B. Clapp, Laura B. Gamble.

Worcester, Mass.; The E. J. Kehoe Co., Inc.; $50,000; to deal in automobiles; Edward J. Kehoe, George H. Humphrey, Rith E. Carlson.

Newark, N. J.; Interstate Motor Corporation; $100,000; to deal in automobiles; D. J. Hall, I. H. Colton, J. E. McCann.

Orange, N. J.; Ecometer Manufacturing Co.; $25,000; to sell automobiles; Thomas A. Edison, Jr., Beatrice Edison, Edward B. Woodward.

Brooklyn, N. Y.; The American Auto Service Co.; $10,000; Fred Leonhardt, John H. Aimee, Joseph M. Aimee.

Brooklyn, N. Y.; A. D. S. Motor Sales Co., Inc.; $20,000; Walter S. Dreifuss, Joseph R. Silverman, I. H. Alfandri.

Brooklyn, N. Y.; Atlantic Auto Service; $10,000; W. Barnes, A. Barnes, R. E. Sanford.

Brooklyn, N. Y.; Bell Brothers Motor Sales Co.; $20,000; H. C. Bell, J. A. Bell, A. R. Bell.

Brooklyn, N. Y.; Lipschitz & Zimmer; $10,000; David Lipschitz, William Zimmer, Nathan Rodner.

Buffalo, N. Y.; Ellicott Motor Service Corporation; $200,000; R. R. Mitchell, A. W. Lytle, F. J. Maguire.

Buffalo, N. Y.; Olympian Motor Sales Co., Inc.; $10,000; to deal in motor vehicles; Jacob Nusbaum, John R. Golt, Edward F. Peterman.

New York, N. Y.; Club Motors, Inc.; $10,000; to deal in automobiles; M. J. Moon, F. O. Beattle, A. K. Strasser.

New York, N. Y.; W. J. Maxwell, Inc.; $20,000; to deal in automobiles; W. J. Maxwell, Charles Kriser.

New York, N. Y.; Standard Taxicab Co.; $5000; C. J. Campbell, J. F. Vail, M. Winburn.

Rochester, N. Y.; Auto Quip Manufacturing Co.; $60,000; J. Woerne, R. Wirth, C. E. Wirth, E. R. Wirth.

Troy, N. Y.; Laporte & Voelxen, Inc.; $10,000; to deal in motor vehicles; Joseph A. Laporte, Marie K. Laporte, James J. McGulgan.

Troy, N. Y.; Motor Inc.; $25,000; J. C. Caldwell, L. W. Houston, E. A. Coons.

Charlotte, N. C.; The Southern Motor Co.; $50,000; to conduct a general automobile business.

Smithfield, N. C.; Scotten Motor Co.; $100,000; to conduct a general automobile business.

Akron, O; Community Auto Co.; $25,000; C. W. Mather.

Cleveland, O.; Auto-Motive Engineers Co.; $8000; I. F. Schreck, Anton O. Pfister, Clarence C. Wedge, Wallace E. Cole, Z. S. Hammond.

Cleveland, O.; Re Vere Motor Sales Co.; $20,000; J. A. Elden.

Toledo, O.; The Abbott Motor Co.; $10,000; A. M. Abbott.

Youngstown, O.; Youngstown Motor and Service Co.; $10,000; Paul S. Clark, John W. McMinn, John E. Wirt, Frank R. Quirk, B. F. Wirt.

Zanesville, O.; Zanesville Taxicab and Sales Co.; $5000; I. A. Souders.

Charleston, S. C.; The Motor Accessory Co.; $25,000; to conduct an automobile business.

Greenville, S. C.; Greenville Nash Sales Co.; $25,000; to conduct a general automobile business.

Mullins, S. C.; The Mullins Motor Car Co.; $25,000; to conduct a general automobile business.

Winston-Salem, S. C.; Southside Motor Co.; $100,000.

Greeleyville, S. D.; The Enterprise Mercantile Co.; $21,000.

Kirbyville, Tex.; Kirbyville Auto Co.; $15,000; George Markley, Garland Smith, W. B. Powell.

Houston, Tex.; Dwight-Means Motor Co.; $12,000; Ben H. Dwight, R. B. Means, J. B. Thomas.

Houston, Tex.; McDill-Elmer-Ransom Co.; $15,000; to deal in automobiles; H. McDill, G. D. Elmer, R. J. Ransom.

Newton, Tex.; Newton Auto Co.; $15,000; George C. Markley, N. G. Allbeitton, W. B. Powell.

Palacios, Tex.; Palacios Auto Co.; $20,000; G. M. Booth, D. W. Cooley, J. L. Koerber.

Memphis, Tenn.; Chicamauga Motor Co.; $50,000; W. L. Huntley, Jr., C. W. Goyer, R. H. Peoples, Fred H. Peoples, James M. Buch, Jr.

Memphis, Tenn.; Service Motor Co.; $10,000; T. J. Harwell, Fannie Lee Harwell, J. B. Whitman, B. J. Mason, G. F. Anderson.

Galveston, Tex.; Excelsior Motor Car Co.; $20,000; L. R. Jones, O. R. Jones, R. E. Jones.

Palacios, Tex.; Palacios Auto Co.; $20,000; J. J. Booth, D. W. Cooley, J. J. Koerber.

Falls Church, Va.; Falls Church Auto Corporation; $50,000; to conduct an automobile business; George B. Fadely, Carrell V. Shreve.

Fredericksburg, Va.; Fredericksburg & Northern Neck Motor Transportation Co.; $25,000; K. Sweetzer, S. M. Janney, F. L. W. Green, J. B. Debnam.

Norfolk, Va.; Lennon-Wright Corporation; $10,000; to conduct a general automobile business; Thomas B. Wright, Bryant S. Lennon.

Portsmouth, Va.; Morse Motor Supply Co.; $25,000; to conduct a general automobile business; W. Wry Morse, C. S. Morse.

Chetek, Wis.; Chetek Auto Co.; $10,000.

RECORD OF BUILDING OPERATIONS FOR AUGUST

Contracts Made and Plans Contemplated for Alterations or Erection of Garages, Repair Shops, Service Stations and New Plants.

CONTEMPLATED PLANS AND SPECIFICATIONS.

Tuscaloosa, Ala.; W. F. Fitss & Son; one-story fireproof garage, 115x117.

Ft. Smith, Ark.; Armbruster & Co.; one-story garage, 52x140.

Ft. Smith, Ark.; Texas Oil Co.; one-story brick filling station; $6000.

Murfreesboro, Ark.; Wallace Garage; one-story garage, 40x100; $25,000.

Bakersfield, Cal.; W. F. Hubbard; one-story garage and repair shop; $30,000.

Bakersfield, Cal.; J. L. Bruce; one-story garage; $30,000.

Fresno, Cal.; H. A. Seller Co.; one-story garage and salesroom, 80x150; $30,000.

Fresno, Cal.; Don Lee Automobile Co.; one-story garage and sales room; $160,000.

Richmond, Cal.; Charles G. Baron; one-story garage; $25,000.

Sacramento, Cal.; J. D. Laupe; two-story garage; $19,900.

Stockton, Cal.; Joseph Losekann; one-story garage, 100x150; $16,000.

Denver, Col.; Stanton & Son; one-story garage, 50x185.

Durango, Col.; C. E. Moore; one-story garage, 65x75.

Longmont, Col; T. J. Wallace; one-story garage, 80x100; $25,000.

Hartford, Conn.; Colonia Auto Co., 1279 Main street; two-story public garage, 60x160; $55,000.

New London, Conn.; Raymond & Alexander Lumber Co., Howard and Hamilton streets; one-story garage, 79x113; $18,000.

Washington, D. C.; C. C. West; two-story garage, 40x80; $30,000.

Washington, D. C.; E. R. Keene, 3453 Holmead place, N. W.; one-story public garage, 100x118; $30,000.

Washington, D. C.; B. Frank Meyers, 1033 Park road; one-story public garage, 25x95; $15,000.

Jacksonville, Fla.; O. P. Woodcock; one-story garage; $4600.

Miami, Fla.; Bert R. Corliss, box 7; one-story concrete garage, 50x75.

Ormond, Fla.; M. L. Crews; one-story hollow tile and brick veneer garage, 50x100.

West Palm Beach, Fla.; George W. Fowler Co.; one-story garage, 97x115.

Atlanta, Ga.; W. M. Dixon and Vaughn Dixon; one-story garage, 102x133; $70,000.

Atlanta, Ga.; James Prichard Motor Co.; one-story garage, 90x150; $18,000.

Atlanta, Ga; F. G. Corker, Dublin, Ga.; two garages and show rooms, 64x180 and 55x170; mill construction gravel roof, cement and wood floors; $75,000.

Savannah, Ga.; Franklin Motor Car Co.; one-story concrete service station; $35,000;

West Point, Ga.; West Point Iron Works; two-story brick garage, 60x190; $50,000.

Boise, Ida.; Western Ignition and Battery Co.; one-story service station; $13,172.

Idaho Falls, Ida.; G. O. Wright; one-story garage, 120x140.

Chicago, Ill.; Max Cohn, 1131-35 S. Troop street; one-story public garage and repair shop, 50x125; $12,000.

Chicago, Ill.; T. J. Goldberg, 1350 N. Leavitt street; two-story garage, 25x80; $10,000.

Chicago, Ill.; Harry I. Dalsey, 2321 W. North avenue; one-story public garage, 40x48; $15,000.

Chicago, Ill.; George Tanon, 4637 West End avenue; one-story garage, 20x30; $5000.

Chicago, Ill.; Jens C. Hansen, 5101 W. Grand avenue; one-story garage, 73x165; $16,000.

Chicago, Ill.; Gustav Johnson, 7217 S. Champlain avenue; one-story public garage, 125x125; $25,000.

Chicago, Ill.; William Bergstrom, 435 W. 59th street; one-story public garage, 50x125; $14,000.

Chicago, Ill.; A. L. Stracham & Son, 2209 West 63rd street; one story garage, 25x82; $10,000.

Chicago, Ill.; B. G. Jannsanskas, 3329 S. Halsted street; one-story garage and salesroom, 75x135; $15,000.

Chicago, Ill.; G. W. Crawford, 6310 Campbell avenue; one-story public garage, 49x110; $12,000.

Chicago, Ill.; Joseph Zidek, 4021 W. North avenue; one-story private garage, 24x49; $4000.

Chicago, Ill.; William Wrigley, Jr.; one-story garage, 119x976; $25,000.

Chicago, Ill.; Ryan Brothers, 1849 S. Racine avenue; one-story garage, 92x95; $14,000.

Benton, Ill.; Dimaon Brothers; two-story garage, 120x180; $60,000.

Decatur, Ill.; Dr. George W. Weyl, 225 Park place; one-story garage; $15,000.

Grayville, Ill.; Frick & Skies; one-story garage, 50x150.

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Murphysboro, Ill.; Herbert Ritter; one-story garage, 60x175.

Oak Park, Ill.; Olcese Motor Car Co., 720 W. Madison street; one-story garage and service station, 50x119; $20,000.

Somonauk, Ill.; Bruening & Bischoff; one-story garage, 44x100.

Akron, Ind.; S. R. Thompson; one-story garage, 44x110.

Aurora, Ind.; Weddle Motor Car Co.; two-story garage, 53x106.

Bluffton, Ind.; William Dowty; one-story garage, 80x140.

Contesville, Ind.; Heavin & Peer; one-story garage, 50x60.

Clay City, Ind.; John Schwuwecker; one-story garage, 32x100.

Columbia City, Ind.; H. N. Miller; one-story garage, 75x150.

Gary, Ind.; G. O. Verplank; one-story garage; $20,000.

Gary, Ind.; Carl D. Baker; one-story garage, 60x125; $20,000.

Goshen, Ind.; Standard Oil Co.; one-story service station; $50,000.

Hammond, Ind.; Smith Brothers; one-story garage and repair shop, 53x125.

Huntingburg, Ind.; Friedman & Kunkel; one-story garage, 68x208; $15,000.

Indianapolis, Ind.; Progress Realty Co.; one-story garage, 110x195; $32,000.

Indianapolis, Ind.; Alfred Hoberg, 208 American Central building; one-story garage, 40x195; $15,000.

Indianapolis, Ind.; B. W. Bannon, 4832 Park avenue; two-story public garage, 50x109; $20,000.

Liberty, Ind.; Smith Mitchell; one-story service station; $5000.

Liberty, Ind.; Harry Harlan; one-story garage, 50x60.

Mishawaka, Ind.; H. M. Plotner; one-story garage, 45x85; $1200.

New Castle, Ind.; W. F. Chamber; two-story garage, 50x122.

Osgood, Ind.; L. Kestler; one-story garage and repair shop, 43x90.

Rensselaer, Ind.; J. J. Eddie; one-story garage, 50x150.

Swayzee, Ind.; Carl Rudy; one-story garage; $7000.

Warsaw, Ind.; W. S. Felkner; one-story garage, 50x110; $25,000.

Walcottville, Ind.; F. P. Sanders & Sons; one-story garage and salesroom, 60x140.

Wolcottville, Ind.; Charles Heign; one-story garage, 40x160.

Woodburn, Ind.; William Reichart; one-story garage, 60x110.

Council Bluffs, Ia.; George Schuler; one-story garage, 50x100.

Des Moines, Ia.; E. L. L. Loyd. Sixth and High streets; two-story public garage, 65x135; $40,000.

Des Moines, Ia.; Superior Auto Repair Co.; one-story garage, 40x82; $35,000.

Des Moines, Ia.; Sunset Park Land Co.; four-story garage, 32x132.

Oelwein, Ia.; Oelwein Auto Co.; one-story garage; $75,000.

Fredonia, Kan.; Singleton Motor Co.; one-story garage, 50x150.

Kansas City, Kan.; George F. Porter, 646 State avenue; one-story garage, 100x120.

Le Compton, Kan.; Harry Sutton; one-story garage, 50x70.

Holyrood, Kan.; G. L. Baker & Son; one-story garage; $25,000.

Nescotah, Kan.; James Talbert; one-story garage, 58x70.

Topeka, Kan.; Don Miller, Eighth and Commercial streets; two-story garage; $36,000.

Topeka, Kan.; J. C. Holland & Son, 609 Kansas avenue; two-story garage, 100x151; $60,000.

Wamego, Kan.; D. N. Biddinger; one-story garage, 25x120.

Wichita, Kan.; L. H. Kayfman, 811 Carter street; one-story garage, 50x140; $10,000.

Wichita, Kan.; Murdock Estate, care Caldwell-Murdock building; one-story garage, 25x120; $6500.

Wichita, Kan.; Arnold Auto Co.; one-story garage; $64,000.

Alexander, Ky.; Clifford B. Gosney; one-story garage, 53x70; with wing, 6x30.

Covington, Ky.; Len Keller; one-story garage; $10,000.

Lexington, Ky.; Phoenix Garage Co.; three-story garage; $200,000.

Louisville, Ky.; J. R. Waltier; one-story garage; $8000.

Louisville, Ky.; Muldoon Brothers; one-story garage; $12,000.

Louisville, Ky.; Mattingly-Hubbard Motor Co., 914 S. Third street; one-story fireproof service station, 170x200; $125,000.

Louisville, Ky.; Roy E. Warner Co., 905 Third street; two or three-story brick and concrete garage and auto supply station, 54x200; $75,000.

Petersburg, Ky.; Holloway & Riley; one-story garage, 40x60.

Sedalia, Ky.; Wilford & Crawford; one-story garage, 35x70.

Sebree, Ky.; Sellers Motor Co.; one-story garage, 50x100.

Crowley, La.; Oila Brothers Co.; one-story fireproof garage; $25,000.

New Orleans, La.; Crawford, Jenkins & Booth; three-story brick garage, 60x120; $90,000.

New Orleans, La.; Lyons-Barton Motor Co.; two-story garage and salesroom; $50,000.

Shreveport, La.; Stamm Motor Co.; one-story garage; $15,000.

Aberdeen, Md.; Harry E. Aaronson; one-story garage, 35x87.

Baltimore, Md.; H. S. Delaney, Charles street and Mallory lane; two-story garage, 30x35.

Baltimore, Md.; J. C. Cremen, Magnolia and Rogers avenue; one-story garage; $5000.

Baltimore, Md.; George A. Bald, 2527 Shirley avenue; 82 one-story garages, 10x19 each; $16,000.

Baltimore, Md.; David W. Bridges, 325 E. Oliver street; one-story garage, 150x400.

Baltimore, Md.; J. Abner Saylor; one-story garage, 16x208.

Baltimore, Md.; G. Richard Ford; one-story garage, 50x75.

Baltimore, Md.; E. Cronch and Morris Lesser; one-story garage, 81x200; $25,000.

Baltimore, Md.; Continental Investment Co.; one-story garage, 50x169.

Baltimore, Md.; Colonial Garage and Repair Co.; one-story garage, 80x200.

Baltimore, Md.; Irwin D. Basto; one-story garage, 47x80; $15,000.

Baltimore, Md.; Charles J. and Lewis C. Scheffenacker, 2725 N. Charles street; 33 garages, each 10x20, brick; $7000.

Baltimore, Md.; Universal Garage Co.; one-story garage, 98x350.

Baltimore, Md.; H. S. Eastman, care P. C. Morgan, 12 E. Lexington street; one-story garage, 100x200; $25,000.

Baltimore, Md.; Hillery Auto Co., Pulaski and Lexington streets; one-story garage, 60x100; $15,000.

Baltimore, Md.; Zell Motor Co., 15 E. Mt. Royal avenue; three-story reinforced concrete garage, 60x70; cement floors.

Baltimore, Md.; Pimlico Development Co., care Jacob Levin, 613 Munsey building; one-story garage, 50x93; $10,000.

Baltimore, Md.; Philip Woodarek, 1716 Fleet street; one-story garage, 60x160.

Baltimore, Md.; Frank M. Krasmer, 100 Dolphin street; two-story repair shop, 26x78.

Baltimore, Md.; Consolidated Engineering Co.; three-story brick garage, 45x112.

Baltimore, Md.; John Gerken, northeast corner Pulaski and Lexington streets; one-story brick garage, 30x60; $5000.

Frederick, Md.; L. V. Young; one-story garage; $40,000.

Hagerstown, Md.; Lewis Meyers, 332 Washington street; one-story garage, 76x200.

Harve de Grace, Md.; Lee J. Hecht; one-story garage, 50x86.

Fall River, Mass.; Albert Blakesley, 89 Mason street; one-story public garage; $12,000.

Medford, Mass.; Bernard Atlas; one-story garage, 50x96x85; $45,000.

New Bedford, Mass.; Alex A. Petit, 1956 Purchase street; one-story public garage, 76x100; $15,000.

Newton, Mass.; P. H. Shirberg; one-story private garage, 25x33.

Ann Arbor, Mich.; Benj Brothers; one-story garage, 60x150.

Crystal, Mich.; Blackwick & Flint; one-story garage, 36x80.

Eaton Rapids, Mich.; Charles W. Oliver; one-story garage, 40x60.

Pontiac, Mich.; A. S. Widrig, Oldsmobile auto agent; one-story garage and salesroom, 120x140.

Dawson, Minn.; R. M. Aarestad; one-story garage, 50x120.

Little Falls, Minn.; E. A. Berg & Co.; one-story garage, 25x80.

McHenry, Miss.; McHenry Automobile Co.; one-story garage, 60x100; $7000.

Burlington Junction, Mo.; R. H. Rees and R. N. Barber; one-story garage, 75x100; $12,000.

Kansas City, Mo.; J. W. McMurray, 511 R. R. Exchange building; two-story garage, 75x161; $100,000.

Kansas City, Mo.; W. B. Weaver, 304 Commerce building; one-story garage, 60x130.

Kansas City, Mo.; Maslin Mining and Realty Co., 809 Republic building; two-story auto salesroom, 100x115.

Kansas City, Mo.; J. A. Miller, 2814 Prospect street; one-story brick and concrete garage, 50x129; steam heating plant; concrete floor; $12,000.

Kansas City, Mo.; George Bliss Construction Co., 1206 Commerce building; one-story garage, 33x111; for L. Goodman.

St. Joseph, Mo.; Horigan Realty Co., 4th and Sylvaine streets; one-story garage, 80x120; $25,000.

St. Louis, Mo.; W. H. McNicol, 4725 McPherson street; one-story garage; $18,000.

St. Louis, Mo.; C. F. May, Merchants and Laclede building; one-story garage, 80x120; $20,000.

St. Louis, Mo.; Columbia Taxicab Co.; one-story garage, 128x200; $100,000.

Warrensburg, Mo.; Fred Semands; one-story garage, 90x150.

Gilman, Mont.; Mahood Brothers; one-story garage, 50x80.

Omaha, Neb.; Glen Gerkin; one-story garage, 60x78; $6500.

Omaha, Neb.; A. C. Arend, 601 Brandeis building; one-story garage, 60x140; $20,000.

Omaha, Neb.; Western Motor Car Co.; six-story garage and salesroom, 132x136 $335,000.

Omaha, Neb.; Edward T. Heyden; one-story garage, 99x115.

Rosalie, Neb.; J. E. Jenkins; one-story garage, 75x120; $20,000.

Montclair, N. J.; John Blondel & Sons, 98 Ridge avenue; one-story private garage; $15,000.

Newark, N. J.; Sam Trugman, 61 Hunterdon street; one-story garage, 28x41; $4500.

Newark, N. J.; ReKeen & Farnofsky, 535 S. 17th street; one-story garage, 30x100 and 20x25; $10,000.

Newark, N. J.; John Regner, 389 New York avenue; one-story public garage, 25x99; $4000.

Newark, N. J.; L. Bobnik, 169 Bigelow street; one-story public garage, 18x130; $4000.

Newark, N. J.; Alfred Schmidt, 74 Garrison street; one-story public garage, 26x115; $4000.

Newark, N. J.; State Garage, Inc.; one-story garage, 40x300; $150,000.

Newark, N. J.; Bonnell Motor Car Co.; one-story garage and salesroom, 60x200; $40,000.

Paterson, N. J.; Isidore J. Keggan, 527 Madison avenue; one-story public garage; $7000.

Albany, N. Y.; G. P. Gleason, 255 Hudson avenue; two-story public garage, 60x68; $35,000.

Brooklyn, N. Y.; Morris Goetz; one-story garage, 60x119; $45,000.

Brooklyn, N. Y.; Stone Realty Co.; one-story garage, 100x100; $25,000.

Brooklyn, N. Y.; Abraham Webbosky; one-story garage, 120x160; $60,000.

Brooklyn, N. Y.; S. Ageloff, 126 Reid avenue; one-story garage, 100x125; $20,000.

Brooklyn, N. Y.; J. V. Camardella, 215 Montague street; one-story garage, 100x125; $30,000.

Brooklyn, N. Y.; John J. Snyder, 65 Snyder avenue; one-story garage, 50x85; $10,000.

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Brooklyn, N. Y.; Grace L. Werdain, 68 Bay 29th street; three-story garage, 28x31; $5000.

Brooklyn, N. Y.; H. Brown, 115 Glenmore avenue; one-story garage, 57x100; $15,000.

Brooklyn, N. Y.; L. Schmatz and A. J. Long, 743 Flatbush avenue; one-story garage, 125x200; $35,000.

Brooklyn, N. Y.; Estate John Feusch, 321 Barley street; one-story garage, 75x100; $15,000.

Brooklyn, N. Y.; Nathan Krantz, 26 High street; two-story garage, 43x75; $20,000.

Brooklyn, N. Y.; Rosevale Realty Co., 189 Montague; one-story garage, 50x100; $20,000.

Brooklyn, N. Y.; Tabenson Realty Co., 1404 Eastern Parkway; one-story garage, 100x100.

Brooklyn, N. Y.; Weingold Realty and Construction Co., 112 Dumont street; one-story public garage, 95x100; $25,000.

Brooklyn, N. Y.; John Cartin, 162 Bedford avenue; one-story garage, 28x56; $3500.

Brooklyn, N. Y.; M. Shidlusky, 1813 Broadway, New York; one-story garage, 75x100; $15,000.

Brooklyn, N. Y.; Emil Lazansky, 254 Carlton avenue; one-story garage, 50x107; $15,000.

Brooklyn, N. Y.; South Side Building Co., 237 Vermont street; five one-story garages, 17x17 each; $4000.

Brooklyn, N. Y.; Saba Construction Co., 491 E. 16th street; one-story garage, 100x120; $35,000.

Brooklyn, N. Y.; Harry Crimmins, 1954 84th street; one-story garage, 50x107; $25,000.

Brooklyn, N. Y.; E. E. Destefano, 715 Lorimer street; one-story garage, 50x100; $25,000.

Brooklyn, N. Y.; B. A. Realty Corporation, 1527 43rd street; one-story garage, 100x150; $30,000.

Brooklyn, N Y.; Iner Iverson, 559 E. 34th street; two-story garage, 20x74; $6500.

Brooklyn, N. Y.; N. Gadni; one-story garage, 80x100; $18,000.

Brooklyn, N. Y.; Joseph B. Sillman, 1511 Emmons avenue; two-story garage, 75x102; $45,000.

Brooklyn, N. Y.; Montrose Garage, Inc.; 575 Green avenue; one-story public garage, 75x100; $20,000.

Brooklyn, N Y.; Meyer Motor Car Co.; one-story salesroom; $50,000.

Buffalo, N. Y.; Zuale Garage Co., Inc.; one-story garage; $40,000.

Buffalo, N. Y.; Frederick Relberer, 26 W. Bennett street; one-story garage, 42x105; $20,000.

Buffalo, N. Y.; A. F. Winegar, 2480 Seneca street; one-story public garage, 64x64; $12,000.

Clayton, N. Y.; St. Lawrence River Motor and Machine Co.; one-story concrete block public garage, 50x150; $15,000.

Forest Hills, L. I., N. Y.; Sage Foundation Homes Co.; 2½-story garage, 30x41; $12,500.

Hollis, L. I., N. Y.; Robert Miner, 28 Gay street, Brooklyn; one-story garage, 61x90; $20,000.

Lockport, N. Y.; Lewis & Hill, Brisbane building, Buffalo; one-story garage, salesroom and service station, 60x150; $20,000.

Long Island, L. I., N. Y.; Louis Gold, 44 Court street, Brooklyn, N. Y.; two-story public garage, 50x75x185; $100,000.

Long Island City, L. I., N. Y.; Anthony Capono, 428 Patter avenue; one-story garage, 35x114; $16,000.

Millerton, N. Y.; E. C. Smith, 39 Market street; two-story garage, 97x103.

New York, N. Y.; A. M. Cinnes; one-story garage, 50x87; $8000.

New York, N. Y.; J. M. Jones Estate; one-story garage; $200,000.

New York, N. Y.; J. H. McManus; one-story garage, 50x100.

New York, N. Y.; Jacob Gobe, 649 Courtland avenue; one-story garage, 50x100; $12,000.

New York, N. Y.; Clara Faithon; one-story garage, 20x50; $3000.

New York, N. Y.; West 50th Street Garage, Inc., 412 West 38th street; two-story garage, 50x100; $18,000.

New York, N. Y.; Randolph Realty Co., 238 William street; two-story garage and storage station, 25x96; $98,000.

New York, N. Y.; John P. Peterson, 1794 Prospect avenue; one-story garage, 49x91; $8000.

New York, N. Y.; Daniel Meenan, 1966 Broadway; six-story garage, 87x100; $200,000.

New York, N. Y.; Frederick Munnich, 260 E. 140th street; one-story garage, 75x100; $30,000.

New York, N. Y.; Jules J. Deiner, Madison avenue; one-story garage, 25x45; $8000.

Ozone Park, L. I., N. Y.; Patrick Boccio, 679 Liberty avenue, Brooklyn; one-story garage, 25x50; $3000.

Ozone Park, L. I., N. Y.; C. Napolitano; one-story garage, 25x112; $6000.

Port Richmond, L. I., N. Y.; Victor Perosa, 275 Morning Star road; one-story garage, 50x100; $25,000.

Schenectady, N. Y.; William Fairloo and R. Van Wormer, 1515 State street; one-story garage; $5000.

Syracuse, N. Y.; P. D. Skohen, 200 Stolp avenue; one-story commercial garage, 80x98x15; $4500.

Troy, N. Y.; C. W. Frear; two-story private garage; $2500.

Utica, N. Y.; Dr. Samuel Rheinhard, 18 Washington street; one-story public garage, 60x100x120.

White Plains, N. Y.; E. S. Hessle, 34 Martine avenue; one-story garage, 50x60.

Asheville, N. C.; McArthur Tire Co.; three-story garage and salesroom; $50,000.

Charlotte, N. C.; N. J. Sherrill; one-story garage; $20,000.

Hendersonville, N. C.; Hendersonville Garage Co.; one-story garage; $50,000.

Salisbury, N. C.; S. E. Williams, Lexington, N. C.; two-story concrete block and pressed brick garage, 73x176; $25,000.

Shelby, N. C.; Reviere Drug Co.; two-story brick garage salesroom, repair and paint shop, 75x135; $20,000.

Shelby, N. C.; Banton Brothers; one-story garage; $75,000.

Winton-Salem, N. C.; J. F. Somers; one-story garage; $30,000.

Winton-Salem, N. C.; J. W. Hanes Estate; one-story garage; $11,000.

Fargo, N. D.; T. L. Berry; one-story garage, 66x110.

Fargo, N. D.; T. L. Berry; one-story garage; $25,000.

Mandan, N. D.; Western Auto Co.; one-story garage, 100x140; $40,000.

Sentinel Butte, N. D.; Henry Lehman; one-story garage and repair shop, 62x110.

Wishek, N. D.; Edward Wolf; one-story garage, 28x60.

Canton, O.; S. W. Chasner Motor Car Co.; one-story garage, 50x198; $75,000.

Cincinnati, O.; D. M. Stapp; one-story garage; $25,000.

Cincinnati, O.; James G. Mathias, 5608 Woodbine avenue; one-story garage and salesroom, 49x54; $5700.

Cleveland, O.; J. A. Vad; one-story public garage, 30x70; at 2345 Central avenue; $8000.

Columbus, O.; J. M. Davis, 923 Franklin avenue; two-story garage and storage station, 21x37; $3000.

Dayton, O.; G. W. Shroyer; one-story service station, 50x100; $30,000.

Dayton, O.; F. B. Heathaman; one-story garage and service station; $20,000.

Dayton, O.; Dayton Buick Motor Car Co.; one-story garage, 78x184.

Greenville, O.; Knuff Auto Co.; one-story garage; $20,000.

Kenton, O.; Willard Storage Batterv Station; one-story service station, 22x70.

Portsmouth, O.; Albert S. Maier; one-story garage, 67x107.

Sandusky, O.; Central Garage; one-story garage, 35x132; $15,000.

Zanesville, O.; Wilking & Son Co.; one-story garage; $25,000.

Blackwell, Okla.; Clarke Garage; one-story garage, 100x140.

Cherokee, Okla.; Northwest Ford Co.; one-story garage, 75x140; $35,000.

Cherokee, Okla.; E. N. Blue; one-story garage, 75x140.

Enid, Okla.; J. M. Morris; one-story garage, 50x150.

Muskogee, Okla.; Graham-Sykes Co.; one-story garage; $40,000.

Tulsa, Okla.; E. A. Bradley; one-story garage and salesroom 100x125; $25,000.

Tecumseh, Okla.; H. L. Caldwell; one-story garage, 100x120; $13,000.

Canby, Ore.; Grant W. White; one-story garage, 50x66.

Portland, Ore.; S. P. Lockwood; one-story garage; $13,000.

Portland, Ore.; John Grieder; one-story garage, 46x136; $5000.

Portland, Ore.; Regner & Fields; one-story garage, 50x150.

Portland, Ore.; August Junge; one-story garage, 50x94.

Portland, Ore.; Gerber Garage; one-story garage; $12,000.

Portland, Ore.; Cook & Gill Co.; one-story garage and service station, 75x112; $60,000.

Portland, Ore.; J. Chikos; one-story garage, 100x100.

Portland, Ore.; S. D. Burnstein; one-story garage, 100x100.

Portland, Ore.; Braun Motor Car Co.; one-story garage and salesroom; $15,000.

Portland, Ore.; C. P. Barrette; one-story garage, 49x100; $3500.

Portland, Ore.; Auto Equipment Co.; one-story garage, 100x100; $18,000.

Tillamook, Ore.; Ackley & Miller; one-story garage; $20,000.

Aspinwall, Pa.; A. L. Miller, 24 Chislett street; two-story commercial garage, 20x24; $6000.

Dormant, Pa.; John O. Jones, care National Casket Co., Duquesne way, Pittsburgh; one-story private garage, 20x20; $3000.

Lancaster, Pa.; Wilmer Stewart; one-story garage, 40x250.

McKeesport, Pa.; Richard Beachdel; one-story garage; $3000.

McKees Rocks, Pa.; McClellan & Bradley Garage; one-story garage, 40x125; $6000.

Pittsburgh, Pa.; Seventeenth Street Garage Co.; one-story garage, 79x100.

Pittsburgh, Pa.; Western Avenue Garage Co.; 11 one-story private garages, 10x20 each; $6000 to $8000 each.

Philadelphia, Pa.; Clark & Dednick, 618 Drexel building; one-story garage, 54x140; $30,000.

Philadelphia, Pa.; Druckenmiller & Williams, 1537 Chestnut street; 1½-story public garage, 26x35.

Philadelphia, Pa.; H. H. Kline, 536 Nuffin street; two-story garage, 76x214.

Philadelphia, Pa.; Whittaker Brothers, 2035 Marshall street; one-story garage, 52x96.

Philadelphia, Pa.; Michael Rock, 832 E. Allegheny avenue; two-story garage, 28x230; $10,000.

Philadelphia, Pa.; Le Roy B. Rothschild; one-story garage, 50x213.

Philadelphia, Pa.; Harry J. Hogg; one-story garage, 75x76.

Philadelphia, Pa.; Lewis Friedman; one-story garage, 60x150.

Reading, Pa.; Humdue Cosiety, Berks county, 114 S. Sixth street; two-story garage, 45x110; $12,000.

Titusville, Pa.; Mrs. Bessie Emerson; one-story garage, 30x48; $8000.

Uniontown, Pa.; Adam Hoover; one-story garage, 50x166.

Columbia, S. C.; Dixie Auto Co., 1107 Taylor street; two-story garage, 57x127.

Florence, S. C.; D. R. Oglesby; one-story brick auto building, 42x125; metal roofing, concrete floor; $20,000.

Greenwood, S. C.; C. C. and Joseph P Wharton; one-story brick garage, 50x110 tin roof, concrete floor; $12,000.

Freeman, S. D.; Charles and Jacol Schrag; one-story garage, 32x70; $15,000

Fulton, S. D.; Floyd Strong; one-story garage and repair shop, 40x134.

Humboldt, S. D.; Iwerks & Wilsk; one story garage, 40x44.

Iroquois, S. D.; Guy Crawford; one-story garage, 50x100.

Mitchell, S. D.; W. H. King Auto Co. one-story salesroom and service station 50x142; $35,000.

Yankton, S. D.; George Braidwood; one story garage and repair shop, 70x80.

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Clarksville, Tenn.; Outlaw-Acree Motor Co.; two-story brick, stone and concrete garage, 76½x160.

Jackson, Tenn.; Cade Motor Car Co.; steel, brick, concrete and wood factory building, 104x160; $25,000.

Knoxville, Tenn.; Gulf Refining Co.; one-story filling station; $15,000.

Memphis, Tenn.; Gage Brothers; one-story battery station; $16,000.

Memphis, Tenn.; Herff Motor Corporation; two-story brick garage, 100x150; install equipment; $100,000.

Memphis, Tenn.; Union Motor Car Co.; three-story reinforced concrete garage, 120x225; $225,000.

Memphis, Tenn.; J. W. Williamson; one-story garage, 100x130; for Price Barwick Co., 29 S. Cleveland street; $25,000.

Memphis, Tenn.; Gulf Refining Co., Louisiana; one-story brick and concrete service station, 50x150.

Nashville, Tenn.; Chalmers Co.; two-story fireproof garage, 100x200; $60,000.

Paris, Tenn.; Jack Cole; one-story garage, 138x232; $42,000.

Dallas, Tex.; Jules E. Schneider; two-story brick garage and salesroom; $35,000.

Farmersville, Tex.; H. D. Honaker; one-story garage, 80x120.

Fort Worth, Tex.; Magnolia Petroleum Co., Main and 10th streets; one-story brick and reinforced concrete garage, 60x185; $50,000.

Hearne, Tex.; Wilkerson Brothers; one-story garage, 50x115.

Houston, Tex.; A. C. Burton; one-story brick garage, 100x220; $13,000.

Lubbock, Tex.; Samuel Dane; one-story garage, 75x120.

Paris, Tex.; Dr. J. L. Leverett; one-story brick garage, 50x200; $15,000.

San Antonio, Tex.; C. E. Barnett; one-story garage; $50,000.

San Antonio, Tex.; Albert Kronkosky, 284 W. Commerce street; one-story garage; $10,000.

San Marcos, Tex.; I. H. Harrison; two-story brick and concrete garage; $9000.

Wichita Falls, Tex.; Franklin Sales Co.; one-story salesroom, 50x150.

Wichita Falls, Tex.; R. Bean; one-story garage; $20,000.

Salt Lake City, Utah; Morris Johnson; one-story garage; $15,000.

Bristol, Va.; Hamilton-Bacon-Hamilton Co.; two-story garage and service station, 79x90.

Fredericksburg, Va.; A. T. Embray; one-story garage, 23x26; $2500.

Front Royal, Va.; H. Y. Updyke; one-story garage, 80x100; $30,000.

Lynchburg, Va.; Standard Oil Co.; one-story steel and concrete garage; $5000.

Newport News, Va.; Texas Co.; one-story garage, 38x122.

Norfolk, Va.; Old Dominion Paper Co., 75 Commercial place; three-story public garage, 100x133.

Norfolk, Va.; Campostella Machine Works Co.; one-story auto machine shop, 57x100.

Norfolk, Va.; H. Garrett Smith; one-story garage, 40x160; $40,000.

Norfolk, Va.; Barton Myers; one-story garage, 52x100; $14,000.

Norfolk, Va.; Page Battery Co.; Colonial avenue and 22nd street; one-story fireproof garage, 30x100; $15,000.

Norfolk, Va.; Travelers' Garage; two or three-story public garage, 86x117 and 115x220; $200,000.

Norfolk, Va.; Beazley & Blauford; one-story garage and auto salesroom; $22,000.

Painter, Va.; C. C. Perdue; one-story garage and salesroom, 44x70.

Richmond, Va.; E. L. Foist and S. T. Beveredge; one-story garage, 40x115.

South Boston, Va.; Crowell Auto Co.; one-story brick, steel and concrete garage; $50,000.

Elkins, W. Va.; Howard Day; one-story garage, 30x40.

Fairmont, W. Va.; Engineering and Equipment Co.; one-story garage, 44x63.

Huntington, W. Va.; Summers-Buick Co.; three-story brick garage, 45x160; $40,000.

Mt. Hope, W. Va.; Overland Fayette Garage Co.; one and two-story garage, 30x150; $12,000.

Manning, W. Va.; T. W. Bell; one-story concrete garage, 40x60.

Bellingham, Wash.; F. Thurston; one-story garage, 82x125; $16,000.

Bellingham, Wash.; W. S. Dulmage Car Co.; one-story garage, 96x120.

Bremerton, Wash.; Stebick Motor Co.; one-story garage, 104x110.

Buckley, Wash.; Orton Brothers; one-story garage, 40x70.

Centralia, Wash.; C. M. Carter; one-story garage; $10,000.

Custer, Wash.; Thompson & Flint; one-story garage, 50x100.

Elma, Wash.; Wakefield Brothers; one-story garage, 85x125.

Kirkland, Wash.; Blau Brothers; one-story garage, 60x108.

Seattle, Wash.; E. Rich; one-story garage; $30,000.

Seattle, Wash.; W. E. Grinshaw; one-story garage, 108x120; $16,000.

Seattle, Wash.; W. L. Eaton Motor Car Co.; one-story salesroom, 58x121; $35,000.

Washougal, Wash.; Otto Stelter; one-story garage, 75x80.

Yakima, Wash.; Elgin Motor Car Co.; one-story garage; $10,000.

Ashland, Wis.; R. E. Kamm; one-story salesroom, 40x100.

Janesville, Wis.; A. A. Russell; one-story garage, 40x55.

Milwaukee, Wis.; Joseph Klaister, 2441 Lisbon avenue; one-story garage, 30x75; $10,000..

Milwaukee, Wis.; Otto Trueman, 40th and Galena street; one-story garage, 20x35; $6000.

Sheboygan, Wis.; H. R. Prange Co., Wisconsin and Eighth streets; two-story garage, 60x85; $15,000.

Rawlins, Wyo.; Rawlins Motor Co.; one-story garage, 64x132.

CONTRACTS AWARDED.

Little Rock, Ark.; W. F. Ault; two-story reinforced concrete and brick automobile building, 40x50; for E. M. Rowe Auto Co.

Hartford, Conn.; William M. Sexton, 43 Lilly road; seven-story public garage 48x120; for A. B. Stone, 327 Trumbull street; $90,000.

Waterbury, Conn.; Tracy Brothers Co., 53 Benedict street; two-story garage and salesroom, 100x130; for M. A. Doolittle; $100,000.

Waterbury, Conn.; E. McGrath, 115 Willow street; one and two-story garage, 34x100; $30,000.

Washington, D. C.; Weller Construction Co., 816 14th street, N. W.; three-story garage, 45x100; for Donohue Motor Co.

Washington, D. C.; A. C. Moses Co., 916 York avenue; one-story garage, 54x400; for United States government; M. C. Koons, first assistant postmaster, 12th street and Pennsylvania avenue.

Washington, D. C.; S. K. Harris, 710 14th street; two-story garage and salesroom, 70x200; $75,000.

St. Petersburg, Fla.; H. A. Farmer; one-story concrete block garage, 95x135; concrete floor; for R. H. McBroom, Northeast, Pa.; $10,000.

Chicago, Ill.; S. Swartz, 139 N. Clark street; one-story private garage, 19.6x78; $3000.

Chicago, Ill.; Pl. Chultz, 6817 East End avenue; one-story garage, 22x53; $2000.

Chicago, Ill.; R. C. Wieboldt, 1534 W. Van Buren street; two-story garage and machine shop, 75x125; $40,000.

Chicago, Ill.; Collins & Wall, 52 W. Jackson boulevard; one-story garage and service station, 100x140; for John Collins, 53 W. Jackson boulevard; $60,000.

Indianapolis, Ind.; M. Couder & Culbertson; one-story garage, 65x145; for Eastman & Summerville; $22,000.

Council Bluffs, Ia.; Hughes Construction Co., 1515 W. Broadway; two-story garage, 55x160; for Hughes Iron Co.; $18,000.

Des Moines, Ia.; J. E. Love Joy Construction Co., 1006 Mulberry street; one-story garage for Sidney Mandelbaum, 507 Walnut street; $82,000.

Lebanon, Ky.; J. C. Miller; two-story reinforced concrete and steel trussed roof garage, 135x150; concrete floor; for T. M. Estes; $60,000.

Louisville, Ky.; National Concrete Construction Co.; one-story brick, steel and reinforced concrete garage, 56x200; for Muldoon Brothers, 406 E. Main street.

Tallapoosa, La.; J. W. Jenkins, 404 Silver building, Atlanta, Ga.; two-story brick garage for R. P. Thornton; $15,000.

Hagerstown, Md.; John B. Wolfkill; one and two-story public garage, 30x100; for Hagerstown Auto and Welding Co., care P. F. McCormick, R. F. D. No. 3, Hagerstown; $9000.

Hagerstown, Md.; M. A. Kenner, 48 Fairground avenue; one-story public garage, 76x200; for Lewis Meyers, 331 W. Washington street; $40,000.

Fall River, Mass.; James A. Donnelly, 32 Wrightington place; one-story public garage, 81x113; for Daniel J. Dennis, 362 Fifth street; $25,000.

New Bedford, Mass.; Napoleon Lapointe, 99 Allen street; one-story public garage, 50x100; for Eugene H. View, 65 Larkin Hill road; $12,000.

Springfield, Mass.; Paul T. Curtis, 117 Jefferson avenue; one-story public garage, 106x143; for Joseph Weisenberg, 112 Everett street; $34,000.

St. Paul, Minn.; F. J. Romer Construction Co., 190 Roamsey street; one-story garage, 150x200; for "The Golden Rule," Seventh and Robert streets; $15,000.

St. Paul, Minn.; Paul Steenburg Construction Co., 2123 Selby avenue; one-story garage, 71x116; for the Landran; $18,000.

Orange, N. J.; Domenick Anginoli & Co., 153 Lincoln avenue; one-story garage; for W. Winter, Esq., 460 Centre street; $20,000.

Elmhurst, L. I., N. Y.; Jacob Gescheidt, 142 E. 42nd street, New York; one-story garage, 100x100; for Kuergeral & Scheer; $20,000.

Cleveland, O.; Joseph H. Ruby, 3459 E. 147th street; one-story public garage, 36x50; for M. Matejka, 5428 Broadway; $4000.

Columbus, O.; John Nibling, 531 E. Fulton street; one-story public garage, 32x194; for Ben Kutz, 478 E. Main street; $8000.

Dayton, O.; Mary L. Beck; two-story public garage, 40x132; $56,000.

Dayton, O.; Industrial Building Co., 757 Reibold building; two-story garage and salesroom, 50x130; for Stamps Realty Co., 330 S. Jefferson street; $40,000.

Elyria, O.; Buygett & Co., Lorain, O.; one-story public garage, 40x100; for Samuel Rose; $135,000.

Ponca City, Okla.; Campbell Price, 611 Southwest Reserve Bank building, Oklahoma City, Okla.; one-story garage, 75x225; for E. W. Marland Refining Co.; $25,000.

Pulaska, Okla.; Reinhart & Donovan Co., 721 Insurance building; two-story garage, 55x140; for Ferguson Hurley Motor Co.

Tulsa, Okla.; M. J. Frederick, 1725 S. Baltimore street; one-story garage, 50x140; for J. H. McIlvain; $18,000.

Harrisburg, Pa.; Harold Nipple, 14 S. Second street; three-story garage and public service station, 52x105; for Sheldon Truck Distributors, care E. L. Craft, 1021 Market street; $65,000.

Homestead, Pa.; O. P. Lawson, 320 Ninth street; one-story private garage, 27x47; $4000.

Pittsburgh, Pa.; Nicola Building Co., Penn avenue and Dennison street; two-story garage, 60x95; for George Seeman; $25,000.

Philadelphia, Pa.; James H. Davis; one-story corrugated iron garage, 18x54; east side James street, north Bridge; for Charles Hiller, Jr.; $1400.

Philadelphia, Pa.; John Tingley; one-story stone garage, 22x30; at 6446 N. 13th street; for Frank L. Temme; $15,000.

Philadelphia, Pa.; A. Rubin; one-story brick garage, 16x17; at 522 S. 11th street; for Max Silberstein; $800.

Philadelphia, Pa.; Alfred Steinhauser; one-story brick garage, 19x20; northwest corner Fairhill street and Tabor road; $1500.

Philadelphia, Pa.; E. E. Hollenbach, Inc.; one-story brick garage, 74x72.6; north side Huntington Park avenue, west Broad street; $28,000.

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Philadelphia, Pa.; C. E. Lloyd, Jr.; one-story stone garage, 17x18; northeast corner Eighth street and 64th avenue; $900.

Philadelphia, Pa.; C. E. Lloyd, Jr.; one-story stone garage, 10x17; at 105 64th avenue; for C. E. Schobler; $750.

Philadelphia, Pa.; David Sterrett; one-story brick garage, 46x88; north side Windrim avenue, east 11th street; $9000.

Philadelphia, Pa.; A. A. Pastore; one-story brick garage, 12x16; at 5903 Woodland avenue; for Louis E. Pastore; $600.

Philadelphia, Pa.; M. Suava; one-story brick garage, 18x49.4; northwest corner Roxborough and Freeland avenues; for Carl Stephany; $800.

Philadelphia, Pa.; Tony Coal; one-story brick garage, 20.6x56, at 732 Kater street; for M. Green; $1500.

Philadelphia, Pa.; W. F. Koelle & Co.; one-story brick garage, 54x60, at 2805-9 E. Cambria street; $5000.

Philadelphia, Pa.; Richard Wildey; one-story brick garage, 20x90, at 6314 Rising Sun avenue; $1500.

Philadelphia, Pa.; M. Myerson; one-story brick garage, 16.6x35; at 1408 Wyoming avenue; for J. Granich; $600.

Philadelphia, Pa.; C. West & Co.; one-story brick garage, 17.1x19; at 1229 Allegheny avenue; for C. Herbert Aspen; $1100.

Philadelphia, Pa.; Walter Jordan; one-story brick garage, 18x36, at 4818 Rising Sun avenue; for George Chism; $1000.

Philadelphia, Pa.; Herman Bamford; one-story brick garage, 24x31.2; west side Vandyke street, north Longshore; $1200.

Philadelphia, Pa.; Joseph Brothers; one-story brick garage, 16x18; at 576 N. Sixth street; for H. Edelman; $1300.

Philadelphia, Pa.; John E. Kearney; two-story stone garage, 21x22; northwest corner 52nd street and Overbrook avenue, for Frank D. Heybrun; $2200.

Philadelphia, Pa.; John Tingley; one-story brick garage, 16x20; west side Fairhill street, south 67th avenue; for William F. Lotz; $700.

Philadelphia, Pa.; Essick Construction Co.; one-story stone garage, 23x24; at 5327 Garnor road; for Julius Keller, Jr.; $2000.

Philadelphia, Pa.; R. J. Lechner; one-story brick garage, 17x18; northwest corner Duncannon avenue and Hutchinson street; for F. G. Spaner; $765.

Philadelphia, Pa.; Holmesburg Concrete Co.; one-story garage, 12x16; west side Craig street, south Raawn; for Mrs. C. M. Tiernan; $700.

Philadelphia, Pa.; J. L. Tomlinson; one-story brick garage, 17x22; at 1615 Tioga street; for C. Pemm; $1000.

Philadelphia, Pa.; John A. Kilpatrick; one-story stone garage, 17.6x30.6; at 6509-15 N. Seventh street; $800.

Philadelphia, Pa.; W. S. Gore; one-story brick garage, 9x15.8; at 1663 N. Ridgewood street; $500.

Philadelphia, Pa.; William H. Balle; one-story brick garage, 11x17; at 4505 Kingsessing avenue; $500.

Philadelphia, Pa.; A. Hartman; two-story brick garage, 48x64; with rear wing 33x61; northeast corner Cambridge and Watts streets; for W. R. Parker; $26,000.

Philadelphia, Pa.; George H. Evans; one-story brick garage, 16.9x22; at 5421 Wynnefield avenue; for Capt. H. Doxrud; $1600.

Philadelphia, Pa.; S. Halpern; three-story brick garage, 22x47, at 463-65 North Second street; $4000.

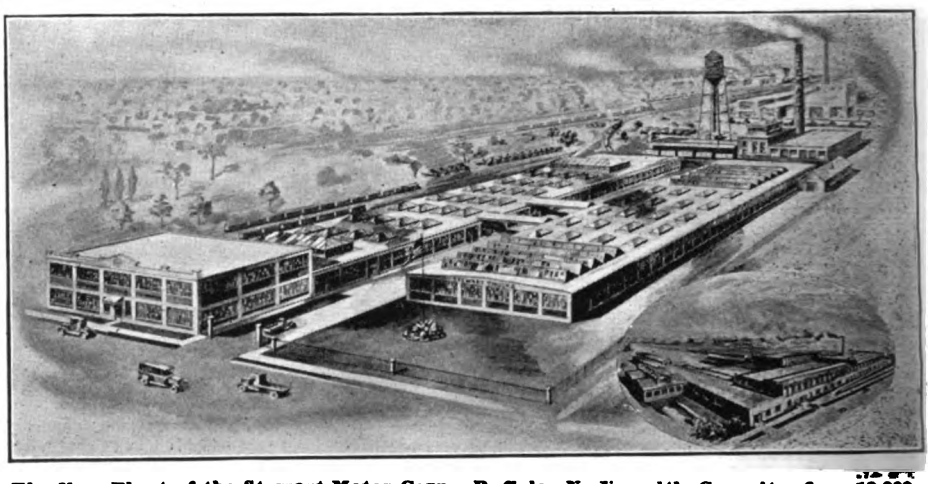
Philadelphia, Pa.; Potts Brothers & Cooperson; one-story and two-story brick show room and garage, 40x160; at 917 North Broad street; for Louis J. Kalb; $20,000.

Philadelphia, Pa.; Charles I. Spayd; two one-story brick garages, 16x18 each, at 49 and 51 No. 61st street; for Edward Hasskin; $1200.

Philadelphia, Pa; P. A. Walz; one-story stone garage, 13x18, at 611 65th avenue; for Mrs. Alice J. Valle; $800.

Philadelphia, Pa.; P. A. Walz; one-story brick garage, 72x88; south side Oak Lane avenue, east 13th street; for Thomas Bernard; $10,000.

Philadelphia, Pa.; Louis Mohr; one-story brick garage, 20x70, east side Lambert street, north Somerset; $1500.



The New Plant of the Stewart Motor Corp., Buffalo, N. Y., with Capacity for 10,000 Trucks a Year, to Be Occupied About Sept. 1.

Philadelphia, Pa.; Conneen Construction Co.; one-story garage, 50x214, at 49th and Market streets; for Carl Wolf Miller.

Philadelphia, Pa.; J. Howard Roberts; one-story hollow tile garage, 16x18, at 3011 Decatur street; for A. B. Cartedge; $750.

Philadelphia, Pa.; A. B. Gesner; one-story brick garage, 18x48, at 7131 Upland street; $800.

Philadelphia, Pa.; Marcus B. Loyer; one-story brick garage, 9x18; southeast corner 20th street and Snyder avenue; $825.

Philadelphia, Pa.; Charles Johnson; one-story brick garage, 12x20; south side Westview avenue, west Wissahickon avenue; for H. P. Erdman; $500.

Philadelphia, Pa.; William D. Wilson; one-story brick garage, 55x207; east side 63rd street, south Vine; $15,000.

Philadelphia, Pa.; J. D. Fotheringham; one-story brick garage, 12x18, at 951 Herbert street; $700.

Philadelphia, Pa.; C. Johnson; one-story brick garage, 11.6x20; east side Lambert street, south Chelten avenue; $1500.

Philadelphia, Pa.; George J. Bauerle; one-story brick garage, 14.6x28.6; at 4341 N. Darien street; $700.

Philadelphia, Pa.; George J. Bauerle; one-story brick garage, 14x21, at 4343 N. Darien street; $600.

Philadelphia, Pa.; M. H. Gordon; one-story brick garage, 18x18; at 2517 East Thompson street; for J. Golden; $720.

Philadelphia, Pa.; A. Earl Barnes & Co., 20th and Pacific streets; one-story private garage, 80x238; for Elmer Miller, 2737 N. Front street; $25,000.

Philadelphia, Pa.; Joseph McNutt, 1929 Allegheny avenue; one-story garage and repair shop, 100x134; for David McKibben, 2900 Allegheny avenue; $20,000.

Columbia, S. C.; W. B. Summerset; two-story garage, 80x100; elevator; for Mrs. T. B. Stackhouse; $25,000.

Knoxville, Tenn.; Worsham Brothers; two-story brick and concrete garage, 50x75; for Arthur Groves, State street and Church avenue.

Memphis, Tenn.; Ozanne & McKnight; one-story garage for Motor Transportation Co.; $55,000.

Fort Worth, Tex.; Christy & Dolph Construction Co.; three-story brick and stone auto building, 80x100; for Cooke-Boyd Motor Co.; $85,000.

San Antonio, Tex.; Stearns Motor Co.; one-story brick, tile and concrete garage, 52x198.

Sherman, Tex.; Allmon & Dilden; one-story brick garage, 50x150; for Roman Mills; $12,000.

Norfolk, Va.; W. H. Saunders, 344 Monticello Arcade building; two two-story brick garages, 27x100; for Charles W. Priddy, 219 Colonial avenue.

Richmond, Va.; E. L. Bass & Co., 708 Bainbridge street; two-story brick and reinforced concrete garage, 60x100; for William M. Reynolds, 2034 W. Broad street; $13,000.

Richmond, Va.; J. T. Nuckols, 1102 E. Main street; one-story garage, 28x110; for Imperial Tobacco Co.; $10,000.

Bluefield, W. Va.; J. T. Huldreth; two-story public garage for H. C. Morton, L. & C. building; $15,000.

Milwaukee, Wis.; R. L. Reisinger, First National Bank building; one-story garage, 50x80; $15,000.

Sheboygan, Wis.; C. Zelle & Sons; two-story public garage, 40x96; for North Side Garage; $15,000.

Stratford, Wis.; P. Laderm & Co.; one-story garage, 36x104; for Carl Fleix; $4000.

ADMITTED TO DEALINGS ON NEW YORK STOCK EXCHANGE.

The New York Stock Exchange has admitted to dealings the Kelly-Springfield Tire Co. common and preferred rights and the Keystone Tire and Rubber Co. rights.

STUDEBAKER.

Studebaker Corporation earned over $4,200,000 net before taxes in the six months ended June 30. Production for the six months was approximately 17,000 cars. The production schedule calls for 40,000 cars in the current year. The company has earned $400,000 more in the first half of this year than for the full year 1918.

KEYSTONE TIRE.

In the six months ended June 30 the Keystone Tire and Rubber Co. reported gross sales of $5,570,120, against $3,000,672 in the same period in 1918. Profits for the period before taxes were $725,935, against $442,404 in 1918.

GLOBE TIRE.

Stockholders of the Globe Rubber Tire Manufacturing Co. have over-subscribed a new issue of $250,000 of common stock, which was offered to the junior stockholders on the basis of one-third of their present holdings. The proceeds of the financing will be used to expand the company's facilities to keep pace with increased sales.

DIVIDENDS.

Company	Rate	Payable	Record
Fisher Body	*$1.75	Aug. 1	July 21
General Motors, pfd	*$1.50	Aug. 1	July 7
do com	*$3.00	Aug. 1	July 7
do deb	*$1.50	Aug. 1	July 7
Goodrich, B. F., com	*$1.00	Aug. 15	Aug. 5
Kelly-Springfield, com	*$1.00	Aug. 1	July 17
do stock	*3%	Aug. 1	July 17
Keystone Tire	x15%	Sept. 15	Sept. 2
Willys-Overland, com	*25c	Aug. 1	July 21

*Quarterly.

xStockholders of record July 21 may subscribe for one share new stock for every three held, at $40 per share. Warrants expire Aug. 7.

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These photographs show the great change in freight traffic on Brooklyn Bridge during the past fifteen years—a change that is coincident with the great developments in automobile tire manufacture, and the better service delivered by the dependable tires of today.

THE fact that Fisk Over-Size Cord Truck Tires are going onto more business trucks every day is a significant commentary on their durability, their long mileage and low upkeep cost.

Tires to Re-tire? Buy Fisk!

Tires on trucks are subject to accurate cost accounting—and business men buy those tires which serve them best.

Fisk Over-Size Truck Cords are massive with remarkable wear resistance and long life built into them by the maker.

Everywhere Fisk sales are growing.

FISK TRUCK TIRES

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MOTOR AND ACCESSORY MAKERS TO HOLD MEETING.

An important meeting of the Motor and Accessory Manufacturers' Association will be held at Buffalo Sept. 11 and 12, at the Hotel Lafayette. The meeting will be primarily a Credit Managers' Convention, but general executives of the various companies of the association are expected to attend, as subjects of direct and vital importance to business in general and the automotive industry in particular will be discussed.

In announcing the convention, M. L. Heminway, general manager of the association, said:

"In addition to strictly credit matters, business conditions in the automotive industry in general will be discussed by representative speakers who hold commanding positions in their particular branches of the industry. The names of the speakers and other details will be announced shortly. The paramount problems now facing the American business as a whole, and especially the automotive industry, will be discussed, and for this reason we urge that the chief executives of member companies make special effort to attend the convention.

"This is not to be regarded as a perfunctory or routine meeting. It will be a thought stimulating get-together convention. In view of the acute and pressing problems brought about by the readjustment to peace conditions, a large and representative attendance is desirable."

VULCANIZERS ARE TRAINED AT SCHOOL IN AKRON.

One of the natural results of the tremendous increase in the number of motor cars is the insistent demand for expert vulcanizers to carry on the tire repair business which has followed in the automobile's wake. Among the tire repair schools that have set about to relieve this condition by training men in the craft of repairing tires, with a big degree of success, is the one which is being operated by the Goodyear Rubber Co., Akron, O. Individual instruction is given to each man. The course covers two weeks' work.

ELLIS-SMITH TOWING TRUCK LIST IS $40.

In the July number of this publication the list price of the Towing Truck of the Ellis-Smith Manufacturing Co., Inc., was incorrectly stated as $32.50, whereby the price really is $40. The company has moved its plant from Buffalo, N. Y., to Elmira, N. Y., where it has its own foundry and is building its jack complete from the raw iron and steel product to the completed jack.

THE LEADER.

The Leader, the official organ of the Automotive Equipment Association, is always an interesting publication, and there is no doubt that the members of the association derive much benefit from its timely articles.

Service Station Men Are Organized In New York City

As a result of several meetings which have been held recently by the heads of many large automobile service stations in New York City, the Automotive Service Association has been formed, and will hold its first regular meeting on Sept. 3 at the National Automobile Chamber of Commerce, 7 East Forty-second street. The association had its inception in the desire of many of the managers and technical directors of the large service and repair shops to provide some method to improve the status of automobile mechanics. In this direction the service managers and department heads will endeavor to work out a plan whereby motor mechanics may be classified according to their several abilities by a process of examination.

The temporary officers recently elected, who will hold office until the annual meeting in January, are R. C. Rognan, president; J. W. Watt, vice president; J. Howard Pile, secretary, and E. V. Dirks, treasurer. The directors include E. Hunn, Jr., J. H. Lange, J. M. Grant, F. W. Lowe, H. M. Holt and Al Rawson.

The chief objects of the association are to promote the education of automotive mechanics and service station employees and to discuss the problems pertaining to more efficient automobile repair work in the service stations and shops. The offices of the organization, for the present, will be at the National Automobile Chamber of Commerce.

"There are many serious problems," explained Mr. Rognan, who is manager of a large truck service station, "relative to the efficient rendering of service to the public throughout the United States which, we believe, can be solved to good advantage by the association of those directly connected with this branch of the industry."

ILLINOIS MANUFACTURERS.

The Illinois Manufacturers' Association will hold an "Our Country First" conference in Chicago, Sept. 8 and 9.

Advance Dealer Help.

PANOL MAKES FINE POLISH CLEANER FOR AUTOMOBILES.

Car owners and garagemen who have not tried Panol, the polish cleaner, are invited to write to the maker, the Panvar Co., Inc., Bulletin building, Philadelphia, for a sample, which will be furnished for 25 cents. The company is so confident regarding the merit of its product that it has adopted the slogan, "A Try Means a Buy." The sample is liberal enough to permit a thorough test and a comparison with other polish cleaners on the market.

Panol, when used on automobiles, is a splendid dry wash, leaving a rich gloss free from dust-catching grease or oil. It makes scratches disappear and keeps the windshield clear. It is, as the maker states, "the soapless, greaseless way to keep your car everlastingly new."

Panol removes all grease and grime down to the original finish, and restores the original factory luster. The producer promises that Panol will leave "a clear surface; smooth as glass and dry as bone; no greasy surface; no milky smear." It is also claimed that Panol lengthens the life of woodwork.

Panol is also intended for use in households, offices, hotels and restaurants. The retail price is $1 per quart, $3 per gallon. It is applied with a soft cloth. On large surfaces a sprayer may be used. Panol contains no wax, no acids or alkali. It is known as "the oil with a thousand uses."

OVERLAND FOUR $845.

It is rumored that the price of the new Overland Four, which it is understood will be announced in the near future, will be $845.

ADVANCE ANNOUNCES NEW DEALER HELPS.

The Advance Automobile Accessories Corporation, Chicago, maker of White Stripe and Advance Cork Insert Linings, has just brought out three new and attractive "dealer helps."

The card shown in illustration is for Advance Cork Insert. It is 9x13 in size effectively lithographed in red and black. The hand holds an actual piece of Advance Cork Insert Lining. This display is unusually effective, for it not only attracts the eye, but also gives the prospective purchaser an accurate idea of what this famous lining looks like. The card is made so as to hang from a nail or to be stood on counters.

An equally effective card is out for White Stripe Lining. The carton and lining are well displayed. The White Stripe card is printed in three colors, and is immensely popular with dealers.

A new window display is the third item. It is a gigantic carton of Advance Cork Insert Lining—four feet high and three feet wide, lithographed in three colors—showing the lining and corks in natural colors.

This large display is mounted on very heavy stock and has substantial easels. Any of these cards are supplied to dealers free of charge.

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National Distribution

An Advertisement *by* Barney Oldfield

When we made our first plans for the Oldfield Tire Company, we set aside a full year for the securing of national distribution.

No other tire manufacturer had ever done it in less than five years, but no other tire manufacturer had ever had Oldfield Tires to sell.

We believed in the Tire Merchants of America—that they knew a good proposition when they saw it, and that they would meet us half-way.

Now Read Carefully

We have used up five of our allotted twelve months. We have signed contracts with distributors in nearly all the big trading centers of the country. Through them we also supply today nearly 4,700 Tire Merchants in the smaller cities and towns.

And how those Merchants are whizzing the Oldfield Tire across the counters!

Their original stocks melted away in the first few days. Their re-orders have kept us so busy that we have found difficulty in accumulating reserve stocks for our warehouses in New York, Chicago, Kansas City, Los Angeles, San Francisco, Atlanta and Dallas.

Record-Breaking!

Our production is right up to schedule. It's a big one, too—a record-breaker for a first year, and getting bigger every month.

We are closing new contracts every day.

In the next seven months we expect to close the territory that still remains open, complete our reserve stocks, and be set for 1920 when, to Oldfield quality, we'll add a big quantity production that will put Oldfield Tires in every town, village and cross-roads in America, to say nothing of our fast-growing export trade.

A Winner For You

These are facts, Mr. Merchant. I am giving them to you for you to use in your business.

The Merchant with Oldfield Tires in his racks today has the first call on business in his territory. And he's lined up with a manufacturer who has broken record after record in the tire business—a winner.

Make the Oldfield Tire a winner for you!

Profits, Permanence

Stock tires you can get behind and really sell—tires that have a sales story and that make that sales story good by the way they stand up in actual service.

Don't let a competitor beat you to this opportunity to increase the profits and establish the permanence of your business.

Apply for that Oldfield franchise and send your application straight to me, at The Oldfield Tire Company, Cleveland, Ohio. I will see that it is promptly taken care of.

You know me,

Barney Oldfield

OLDFIELD TIRES

"The Most Trustworthy Tires Built"

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FORD GETS SMALL DAMAGES IN LIBEL SUIT

THE automobile industry and trade followed with interest the suit for $1,000,000 brought by Henry Ford against the Chicago Tribune, which ended in a verdict of six cents and costs for Ford. Under the Michigan law, costs of not more than $50 can be assessed when the jury awards nominal damages. It is believed that the total expenses connected with the great legal battle will cost Ford $250,000 and the Tribune close to $400,000.

The suit was based on an editorial which appeared in the Tribune June 23, 1916, under the heading, "Ford Is an Anarchist." On the Sunday previous President Wilson issued an order for the mobilization of the National Guard on the Mexican border for duty in case the situation raised by Pancho Villa's raids and President Carranza's attitude toward the American punitive expedition required its service.

The Tribune, which favored intervention in Mexico, sought to encourage enlistments in the National Guard by obtaining assurances from employers that they would hold jobs open for men in the service while away or care for their dependents.

The paper wired its Detroit correspondent, P. W. Williams, to obtain a statement from officials of the Ford Motor Co. as to what the company would do in this regard. According to his testimony he obtained his information from Frank L. Klingensmith, vice president and secretary, to the effect that the company would do nothing either for its enlisted employees or their dependents, and that on their return the men would be considered as new applicants for employment. The dispatch was printed under the head, "Flivver Patriotism."

Henry Ford.

The possibility that the attitude of one of the country's greatest employers might have a deterrent effect on the movement espoused by the Tribune, led to a scatching editorial declaring Mr. Ford an enemy of the government. The editorial was written by Clifford Raymond, approved by Tiffany Blake, chief editorial writer, and by Major McCormick.

While Mr. Ford's views had brought him into much criticism from newspapers and public speakers advocating a more vigorous military policy for the United States, this was the editorial which roused him to action.

Probably the most interesting witness called was Mr. Ford himself. He was subjected to a severe cross-examination, which brought out his lack of familiarity with important historical facts and also with the use of simple words. Even his ability to read was questioned. Ford testified that he hired a newspaperman to write the newspaper and magazine articles that had appeared as having been written by Ford himself.

COLLINS MOTORS FORMED TO BUILD CUSTOM CARS.

"Hand tailored" automobiles will be made by the Collins Motors, Inc., recently incorporated at Albany, N. Y. The general offices and factory will be at Huntington, L. I., with metropolitan sales and export offices in New York.

"It has been my ambition," said Mr. Collins, "to demonstrate to the wealthy purchasers of foreign-made cars that it is not necessary to go abroad to secure a motor car with all the refinements and distinctive features that are supposed to be found only in foreign-made cars. All bodies on our cars will be hand-made and built to the measure of the individual purchaser, and his own ideas of upholstery, paint and trimmings are furnished to his order. It is our aim to give each buyer the unusual satisfaction of owning a motor car that combines all the special features in which he is particularly interested.

"A '120' chassis, built only as our 'Country Club' roadster, merges characteristically both speed and smart design. This car is built especially for the club man or amateur sportsman who expects the most from his car in speed, quality and appearance and for which the cost is his least consideration. This model is the outgrowth of an idea developed through years of experience in the manufacture and sale of high grade motor cars.

"Every chassis is tested for speed and ability on the famous Vanderbilt Cup Speedway and a certificate guaranteeing its performance is furnished with every individual car.

"Another longer chassis is designed to support the touring, town and other special hand-made bodies built to satisfy milady's most fastidious notions, bodies whose finish introduce luxurious upholstery and appointments in keeping with these times when traditional charm is the supreme evidence of luxury and perfect taste."

A four-acre factory site located on the Long Island railroad has been purchased and a modern plant of steel and glass will be erected at once. The capitalization of the company is $400,000, with the following officers and directors: President, Albert H. Collins, formerly vice president of the New R. C. H. Corporation, Detroit; vice president, William B. Brewster, New York; treasurer, Spencer C. Smith, East Orange, N. J.; secretary and general counsel, Charles H. Stoll, New York; Henry S. Brush, Huntington, L. I.

DAILY CAR PRODUCTION RECORDS.

Daily car production records for July follow: Buick, 500; Briscoe, 75; Barley, 10; Cadillac, 70; Chalmers, 65; Chandler, 90; Chevrolet, 730; Columbia, 30; Dodge, 375; Dort, 100; Ford, 3000; Hudson, 110; Hupp, 75; King, 15; Liberty, 40; Maxwell, 200; Oakland, 250; Olympian, 15; Oldsmobile, 140; Overland, 200; Packard, 25; Paige, 75; Paterson, 15; Jordan, 15; Maibohm, 15; Reo, 125; Saxon, 30; Scripps-Booth, 55; Studebaker, 165; Peerless, 12; Winton, 12; Essex, 110; Grant, 40.

NEW PLAN TO CUT CAR THEFT INSURANCE RATES.

A real solution of the motor car theft problem and a reduction on theft insurance rates of at least 50 per cent. is the promise of the Automobile Abstract and Title Co., a million dollar Detroit and Chicago corporation, which proposes to issue abstracts of title for automobiles.

The company believes that no more feasible plan has been advanced for the complete and absolute elimination of the automobile thief and that it will be quite as impossible to steal and sell a motor car so protected as it would be in the case of real estate. In fact, the automobile abstract finds an exact parallel in the abstract issued for real estate—to prove ownership and guarantee title.

From the motorist's point of view the immediate and most important results will be a material reduction in theft rates, which, in many parts of the country are now prohibitive. In addition, the abstract will serve a number of other worthy purposes such as providing information of mortgages, liens and similar legal claims which may exist against a car.

The automobile abstract is the best thought in motor car protection and the company considers it the only logical business like manner in which $5,550,000,000 of motor car wealth can be adequately protected.

New prices for the Franklin follow: Touring, $2750; brougham, $3700; sedan, $3750; four-passenger roadster, $2750; two-passenger roadster, $2700.

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What is Spring Service *for* A Nation?

ALL SPRINGS
for ALL Popular Cars
Always in ALL Stocks

Allen Apperson
Briscoe Buick Cadillac
Chandler Chalmers
Chevrolet Crow-
Elkhart Detroiter
Dodge Dort Elgin
E. M. F. Empire
Federal Flanders
Ford Grant Haynes
Hudson Hupmobile
Interstate Krit
Mitchell Maxwell
Monroe Oakland
Oldsmobile Over-
land Page
Pullman R. C. H.
Regal Reo
Republic Saxon
Scripps-Booth
Smith Form-
A-Truck
Studebaker
Vim

Our Own Branches with Complete Stocks

QUALITY **VULCAN**
The Replacement Spring

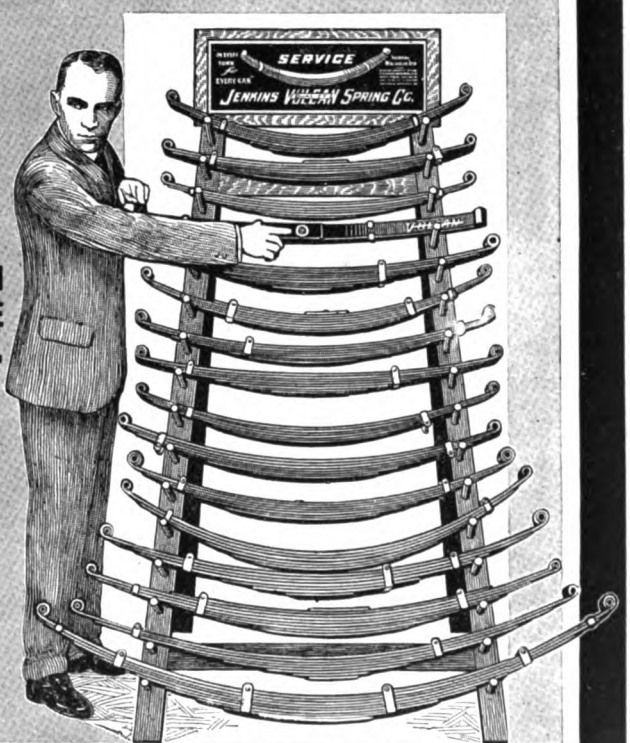
VULCAN "Spring Service for a Nation" enables Dealers everywhere to supply a spring for any car without delay.

It means:

¶ 100,000 Springs constantly in stock.
¶ Seven Distributing Branches.
¶ Over 7,000 Dealers now selling VULCANS.
¶ Demand—Sales and Profits.

Write for Dealers Proposition.

FREE
This splendid stand given FREE with first order.



Direct Factory Branches
Atlanta, Ga.
Boston, Mass.
Dallas, Tex.
Minneapolis, Minn.
Reading, Pa.
Kansas City, Mo.
Sumter, S. C.
Factory RICHMOND, IND.

Jenkins VULCAN Spring Co.
RICHMOND IND.

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SPECIAL SALE—AUTO TIRES

GUARANTEED 4000 MILES

If a tire fails to give service of 4000 miles we will replace it with another tire for ½ price marked below:

Size	Plain	Non-Skid	Tube
28x3	$6.45	$7.45	$2.30
30x3	7.45	8.35	2.15
30x3½	8.95	9.95	2.40
31x3½	9.45	10.45	2.45
32x3½	9.95	10.90	2.50
34x3½	10.45	11.30	2.80
31x4	13.45	14.60	3.20
32x4	13.95	14.95	3.30
33x4	14.45	15.45	3.35

Size	Plain	Non-Skid	Tub
34x4	$14.95	$15.95	$3.4
35x4	15.45	16.95	3.5
36x4	15.95	17.50	3.6
34x4½	18.45	20.45	4.3
35x4½	18.95	20.95	4.4
36x4½	19.45	21.45	4.4
37x4½	19.95	21.95	4.5
35x5	20.95	23.45	5.1
37x5	21.95	24.75	5.3

Deduct 2 Per Cent. When Check or Cash Accompanies Order.
10% Deposit Required on All C. O. D. Orders.
We Carry a Full Line of New and Reconstructed Tires.

ATLAS TIRE COMPANY,

Tires and Tubes Shipped Express Prepaid

Telephone Poplar 2970

822 BROAD STREET, PHILADELPHIA, P

TRACTOR WORLD

Monthly | 20c the Copy | $2 the Year

A Tractor Journal
devoted to the
tractor industry and trade

Published by
The Automobile Journal Publishing Company
PAWTUCKET, RHODE ISLAND

The Automobile Journal

Is the oldest Automobile magazin published in America devoted wholl to owners of passenger cars.

A quality magazine, with prestige and circulation that brings results to advertisers.

TIMES BUILDING
PAWTUCKET, R. I.

METZ Master Six

The car of the Year **A New England Pro**

Honest through and through

$1695 F. O. B. factory FULLY EQUIP

We are now extending our agency list
Information at request

METZ SALES CORPORATIO
BOSTON, MASS.

(When Writing to Advertisers, Please Mention the Accessory and Garage Journal.)

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GOGGLES FOR WELDERS.

Fitted with "Essentialite" Lenses.

THE FIBRE WELD.

Frame: Vulcanized fibre, non-conductor of heat and electricity, non-inflammable and infusible not affected by moisture, leather center, ventilated side pieces, adjustable elastic head band. We have demonstrated conclusively that with these lenses we vanquish the so-called "fatigue-weariness" and headaches caused by Ultra Violet and Infra Red rays. Circulars and prices at request. Price each, prepaid, $3 pr.

Manufactured by

CHICAGO EYE-SHIELD COMPANY

2300 Warren Ave., Chicago, Ill.

SCAIFE COPPER-BRAZED AIR TANKS

are positively guaranteed to hold air indefinitely without loss of pressure.

(117 years old. Founded 1802)

WM. B. SCAIFE & SONS CO.

First Nat. Bank Bldg., Pittsburgh, Pa.
26 Cortlandt St., New York, N. Y.
38 So. Dearborn St., Chicago, Ill.

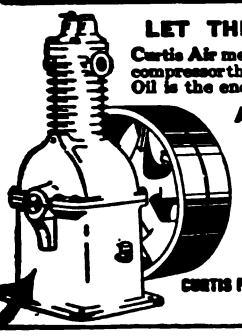
SCAIFE GASOLINE STORAGE OUTFITS

ARE IDEAL FOR PRIVATE GARAGES.

Send for catalogue.

CURTIS AIR FREE FROM OIL — MOTORISTS Have CONFIDENCE IN THIS SIGN

LET THEM FIND IT AT *YOUR* DOOR.



Curtis Air means more mileage, because Curtis is the only air compressor that can't flood cylinder with more oil than it can use. Oil is the enemy of rubber. It rots tires, causing blow-outs.

A Curtis Compressor is Dependable

requires practically no attention, costs very little, quickly pays for itself, always delivers the kind of cool, clean air that makes tires last longer.

5 sizes and 125 combinations. Write for full particulars and let us tell you why the Curtis will prove to be your best investment. Ask your jobber for prices—but be sure and mention Curtis—the name is your protection against substitution

CURTIS PNEUMATIC MACH. CO. 1821A Kienlen Ave. St. Louis, Mo.
Branch Office: 531A Hudson Terminal, New York

Shackle Bolts — **Steering Knuckle Bolts**
Tie Rod Bolts — **Piston Pins**
and Bushings — **Axles and Cones**

THE ORRELL MFG. CO.

67 Hampden Street — Boston, Mass.

Screw machine products for Dodge, Overland and Hudson cars. We are very pleased to take excellent care of the smaller dealer and repair man to whom we allow very generous discounts.

SPECIAL FOR THIS MONTH

Highest grade fibre pinions, No. 1, No. 2, No. 3—5 cents each, any quantity.

Stewart type speedometer shafts, complete—$1.25 each, any quantity.

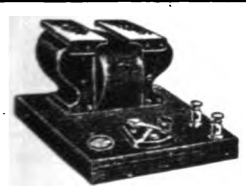
GENEROMETER

The new and practical generator testing instrument. It will locate shorts and grounds in generator armatures where most of the trouble is of a Lighting System. You will need this instrument if you want to be 100% efficient in your electrical repair work. Further particulars upon request.

PAUL G. NIEHOFF & CO., INC.

232 E. Ohio Street, Chicago, Ill.

Niehoff Laminated Magnetizer



This is the most scientific and practical Magnetizer ever constructed. It will magnetize any size magnet from a Ford to all the various other magnets used on the different cars today. Due to the fact that it generates an enormous amount of magnetism, with a pulling power of about 75 pounds, you can more quickly remagnetize a magnet, and, therefore save much current. All magnetizers are subject to considerable wear. The faces will wear down according to their use. The top pieces of our Magnetizer are especially hardened and also detachable so that when worn down they may be replaced at a very small expense. We have two types: one for 6 volt storage battery and another for 110 volt D. C. current. Write for further information.

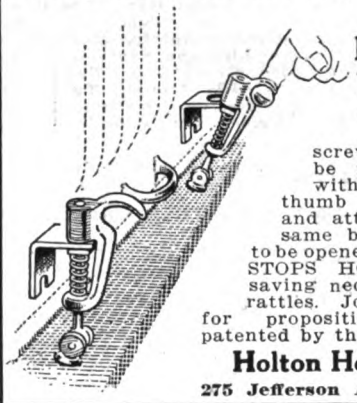
PAUL G. NIEHOFF & CO., INC.

232 E. Ohio Street, Chicago, Ill.

ALL CHEVROLET AND BRISCOE CARS

NEED A SET OF

Holton Hood Clips



This is a spring clip that takes the place of those slow, troublesome thumb screws on engine hood. Can be installed in one minute without tools by removing thumb screw from swing bolt and attaching HOLTON clips to same bolts. Enabling the hood to be opened and closed in one second. STOPS HOOD RATTLES, a time saving necessity, never slips, never rattles. Jobbers and dealers write for proposition. Manufactured and patented by the

Holton Hood Clip Company

275 Jefferson Ave., East, Detroit, Mich.

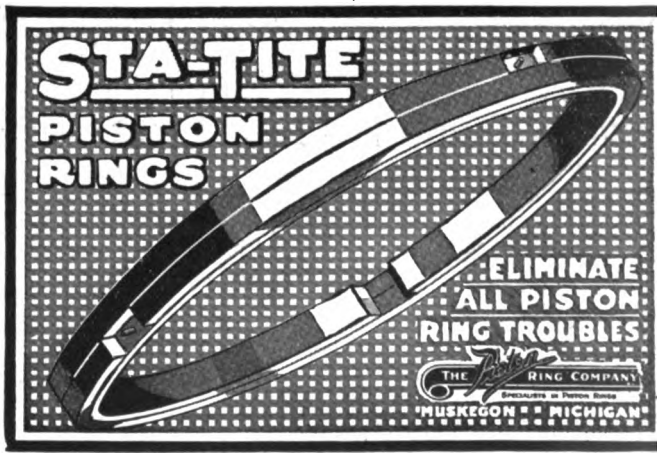
NEW DEPARTURE BALL BEARINGS

Strength
Stamina
Service

The New Departure Manufacturing Co., Bristol, Conn.

Conrad Patent Licensee

STA-TITE PISTON RINGS



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TRADE OUTLET

New Parts for All Cars

DO YOU GET FULL VALUE FOR YOUR DOLLAR?

IF NOT—WHY NOT

We Do Not Wreck Cars

TRY PURITAN WAY—IT PAYS

SEND FOR MONTHLY BARGAIN BULLETIN

FOR MAXWELLS.

One Man Khaki Tops—complete with curtains and dust boot. Can fit many Maxwell models, either Road or Touring. Price each while they last, $20.

6-volt Atwater Kent Coils $4.50
Wiring Harness..... .25
Steering Knuckles—left or right..... 2.50
Kelsey or Stanweld Rims 3.00
Kelsey Rim Lugs.... .20
Honeycomb Radiators—1914 to 18 models 41.50
Ventilating Windshields 17.00
Front Springs—1914-15-18 models..... 3.95
Lower Rear Springs, 1914-15-16 models.. 4 70
Lower Rear Springs, 1917 models..... 5.60
Lower Rear Springs, 1918-19 models..... 7.50

NEED ONE OF THESE?

Rear Gasoline Tanks, 28" long, 12" wide, with Gauge — for vacuum feed..... $8.00
Timken front axle left hand, complete with hubs and bearings 30.00
Timken Worm Drive Truck Axles with Hub and Drums....$85.00
Front Bumpers for Chevrolet 490 channel type..... 5.00
Kingston Carburetor, 1" top intake..... 5.00
Schebler Model R, 1" top intake..... 12.50
Brown Spotlights.... 3.75
Steering Gears—left or right hand..... 15.00
18" Steering Wheels, with corrugated rim 2.75
Hartford Shock Absorbers for many cars—set of four... 30.00

FOR FORDS.

Speedster Bodies — beautiful racy lines $60.00
Sporty Racing Type Bodies with top and shield 120.00
Honeycomb Radiators, 1910 to 16 models. 20.00
Honeycomb Radiators, 1917 to 19 models. 20.50
Crown Fender—good heavy type—set.... 14.50
Speedster Fenders—set of four..... 10.00
One-man Mohair Tops—touring complete 35.00
One-man Mohair Tops roadster complete. 25.00
Electric Lighting System—includes Generators, Battery, 2 Side Lamps, Tail Lamp, Wiring, Switches etc. Price for complete system $17.50
30x3½ Reliners..... 2.10
30x3 Reliners..... 1.95
Front Wheels, 30x3.. 1.50
Roller Bearings for front wheels—set.. 7.50
Tool Boxes..... 1.35
6-volt Menominee Generators, with attachments 23.50

RIMS AND WHEELS.

We have an enormous stock of all makes and sizes of demountable rims and wheels; have them right in stock and can make immediate shipment. Write for prices.

RADIATORS.

Brand new Honeycomb Radiators for all makes of cars. Guaranteed to be right. No matter what car you may need a Radiator for, write us for prices.

ELECTRICAL EQUIPMENT.

6-volt Autolite Generators $15.00
6-volt Menominee Generators 15.00
6-volt K-2 Atwater Kent Box Coils... 5.00
6-volt CC Atwater Kent Coils..... 4.50
6-volt Ward-Leonard Starting Motors.... 15.00

PURITAN MACHINE CO., 608 PURITAN BLDG. **Detroit, Mich.**

EASTERN BRANCH, 245 WEST 55TH STREET, NEW YORK, N. Y.

Send it to Detroit

MAGNETOS.

Bosch DU4 Variable spark.....$30.00
Bosch DU-4 set spark..... 25.00
Bosch D4 and Dr4..... 25.00
Bosch D6 and Dr6..... 30.00
Splitdorf 4 cyl. Dixie, high tension 25.00
Splitdorf 4 cyl. Models A, T, X and D..... 10.00
National 4 cyl. low tension..... 8.00
Briggs 4 cyl. low tension..... 8.00
Remy 4 cyl., type R L..... 15.00
Simms SU4 high tension..... 22.00

GENERATORS.

Deaco 6 volt.....$12.00
Auto Lite 6 volt..... 15.00

COILS.

Splitdorf T S type.....$10.00
Splitdorf box type..... 6.00
Bosch type A..... 10.00
Remy box coils..... 6.00
Remy type LC and LE..... 8.00
Briggs box coils..... 6.00

DETROIT MAGNETO REPAIRS ARE BETTER.

WE REPAIR any make magneto, coil, lighting generator or starter and give 24 hours service. Member Detroit Automobile Trade Association.

Detroit Magneto Exchange

192 Grand River Ave. Detroit, Mich.

GARDNER thermostat CARBURETOR

SIMPLICITY, DURABILITY, EFFICIENCY, ECONOMY

WHY?

THE THERMOSTAT TELLS

Highest Mileage, Easiest Starting, Most Power, Smoothest Running, Quickest Get Away, Simplest Construction

FORD MODEL $10.00 RETAIL

Gardner Carburetor & Brass Works, Detroit, Mich.

AUTO PARTS SAVE 50-90% FOR 400 CARS

POPE, PACKARDS, PIERCE, BUICK, STEVENS-DURYEA, KNOX, OVERLAND, ETC.

Motors.....	$25.00 up	Presto Tanks .	$ 4.50 up
Magnetos ...	4.00 "	New Spotlights	2.00 "
Carburetors ..	3.00 "	Generators...	10.00 "
Rear Axles ..	15.00 "	Gears.....	1.00 "
Front Axles ..	5.00 "	Bearings....	1.00 "
Cylinders ...	5.00 "	Radiators ...	10.00 "

$12 Diamond Bumpers.....$5.50

Jobbers in Bankrupt Auto Supplies.

BRIGHTMAN AUTO EXCHANGE

84 Wooster St., Hartford, Conn.

AUTO PARTS.

50% to 90% Off List.

24 Hour Service. Unlimited Stock. Pope-Hartford, Columbia, Reo, Overland and 200 other makes.

Motors,	$20.00 up	E. Presto Tanks,	$4.00
Magnetos,	$3.50 up	B. Presto Tanks,	$4.75
Cylinders,	$3.00 up	Bearings,	50c up
Springs,	$1.00 up	Rims,	$1.00 up

1000 Other PARTS Bargains.

If you want any part not listed here, Write Us—We Have It.

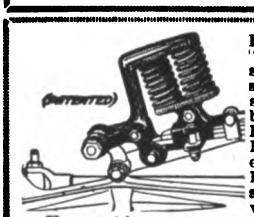
Conn. Auto Parts Co., Inc.

1070 Main St., Hartford, Conn.

MOTOR BARGAINS.

Continental Motors, Model 9-N. New—In Original Crates. Specially priced at $300 each for quick sale. Write

C. C. NEWBURN,
621 Superior St., Milwaukee, Wis.



Front Absorber

FOR FORD CARS. "Champion" Shock Absorbers. The perfect spring suspension. Absorbs all jar and rebound. Easy to attach. Fully guaranteed. Makes Fords ride as easy as any $5000 car. Ford dealers, agents and owners, this ad is worth $10 to you. Ask why. Write today.

Champion Shock Absorber Sales Co., Inc., Indianapolis, Ind., Mfs.

EXPERT REPAIRING; every known Magneto and Ignition System, Starters, Motors, Generators. **Magneto Exchange and Repair Shop, 269 Halsey Street, Newark, N. J.**

LOZIER OWNERS—Why buy counterfit repair parts. We have all **Original Parts.** Made from original Patterns. Order from headquarters.

LOZIER MOTOR CO.
Fort and 6th Sts., Detroit, Mich.
Service Stations—E. A. Cornely, Inc., 1445 Bush St., San Francisco, Cal. Lozier Motor Co. of New York, Inc., 47th St. and 11th Ave., New York City.

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BRINGS BIG RETURNS

20 Cents a Line, Seven Words to Line.

Auto Mailing Lists

Send for our free complete Price List covering Auto Dealers, Owners, Ford Dealers, Truck Dealers and Owners, Garages, Auto Mfrs. and etc., any state.

A. F. WILLIAMS, Mgr. of List Dept.
168 W. Adams St., Chicago. Franklin 1183.

(When Writing to Advertisers, Please Mention the Accessory and Garage Journal.)

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TRADE OUTLET

Accessories Salesman Wanted

to carry a complete line of Ignition repair parts, Platinum, Tungsten Contacts, Motor and Generator Brushes, Coils, Condensers, etc., by reliable concern guaranteeing all products; every garage, magneto shop, accessory dealer a good prospect; our prices and high discounts beat competition everywhere. Sold from catalog with small sample case. Good side line or main line. Previous experience preferred, but not essential as our first letter suffices to enable you to talk intelligently. Liberal commission, exclusive territory to real hustlers. State experience, territory wanted, etc., in first letter, addressing Box XX, Accessory and Garage Journal.

Every Ford Owner Should Read "TRANSFORMING THE FORD." Tells how to secure smooth, positive brake action that no car can excel. A little "transforming" and your car will glide to a quiet, quick stop without the annoying, irritating clatter that you now experience. It will go into low or reverse without jumping or jerking and you can pick up speed with all the smoothness and ease of a high-priced car. All accomplished without additional expense and the result is a clear saving of 75 per cent. in one direction alone. "TRANSFORMING THE FORD" tells how it's done. Send for your copy this very minute. IT IS FREE. **Cormack & Co., 500 Fifth Ave., New York City.**

AGENT WANTED

to handle our 5,000-mile guaranteed tire.

CHICAGO NEEDHAM TIRE CO.,
726-728 W. Jackson Blvd., Chicago.

GARDNER CARBURETORS
FOR FORD CARS

Dealers write us for special price.
Salesmen with Ford Cars Wanted.

FACTORY SALES COMPANY
Sun Building, Detroit, Mich.

AGENTS, all territories, we have a fast selling carburetor for Ford and other makes of cars. $7.50. Write for proposition. Sample, $5.00.

AUTOMOTIVE EQUIPMENT CO.,
1777 Broadway, New York City.

WANTED: OLD MAGNETO ARMATURE CORES

We pay cash for armatures you have no use for.

PAUL G. NIEHOFF & CO., INC.
Electrical Laboratories,
232-242 East Ohio St., Chicago, Illinois.

"MOTOROL"
Trade Mark

Saves 25% Gasoline. Eliminates Carbon. Promotes perfect combustion. Reduces operating cost. Absolutely non-corrosive. Dealers and agents wanted.

AUTO PRODUCTS CO.
226 W. 138th Street, New York.

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JOB LOTS

Obsolete, Surplus Stocks and Factory Seconds

WRITE—CALL

BROADWAY TIRE JOBBERS
250 West 54th Street **New York**

EXCLUSIVE IGNITION SUPPLIES

The Place To Get What You Want When You Want It
At Prices That Compel You To Buy

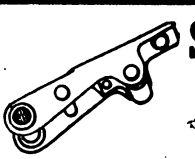
WE HAVE ANYTHING IN THE IGNITION LINE—Magnetos, Coils, Generators, Starters, Distributor systems and cutout relays, for every make of car.

STARTER AND GENERATOR CHAINS AND ARMATURES. You have undoubtedly had great difficulty in securing these items. We have a very complete stock on hand and are sure we can supply your wants.

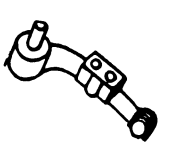
OBSOLETE PARTS. If you have an old Magneto or Generator for which you cannot get parts, write us. We have the part you want.

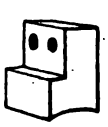
Write today for our catalog.
Special Discount to Dealers.

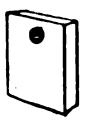
MEINERT MAGNETO SPECIALTY CO.
1216 Prospect Ave., **Cleveland, Ohio**



Superior Parts and Brushes
FOR ALL
Ignition and Starting Lighting Systems
Used for Years by the Best Repair Shops Everywhere
"They Last Longer but Cost Less"
Write for Catalogue







Specialty Manufacturing Co.
637 Massachusetts Ave., **Arlington, Mass.**

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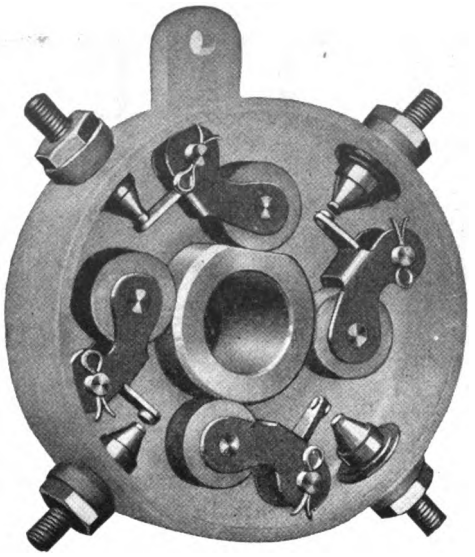

DUNTLEY
MAGNETO BREAK
TIMER

FOR ALL FORD CARS

Guaranteed to Deliver 50,000 Miles of Efficient Service

The Duntley Magneto Break Timer Eliminates Ignition Troubles and Insures Maximum Motor Efficiency and Economy.

Perfect ignition can be attained only through positive contact and a clean break. In the Duntley, the electrical current is closed by Tungsten points in positive contact, not through a greasy roller jumping and skipping across a metal segment.

The only parts in motion sufficient to cause wear are the rollers riding on the operating cam and they are made of a special fine grain, hard pressed fiber that is oil and water proof and practically everlasting.

FOR FORDSON TRACTORS

The following letter from a satisfied user shows how the Duntley delivers 100% on the Fordson.

"The timer you sent . . . . is all you claim for it. It certainly gives the tractor twice the power it had before and also is a saver of fuel." Name on request.

SOLD ON AN ABSOLUTE MONEY BACK GUARANTEE

DEALERS: To any reputable dealer who writes, mentioning the name of his jobber, we will send a Duntley for a 10 day trial.

J. W. DUNTLEY

1004-B Michigan Ave. **CHICAGO, U. S.**

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DEALERS
Write for a sample of DURACORD

A better, stronger extension lamp with a different kind of cord

USERS of portable hand lamps have suffered so long from the necessity of using poor lamp-cord that they have come to accept it as inevitable—like death and taxes.

Surely the cord is of the utmost importance when danger of fire from short circuit and of accident from electric shock is considered.

You can now get this complete Duracord Extension Lamp all wired up ready for use. Everything except the bulb.

Duracord has a heavy *woven* covering like a piece of fire hose that will outlast ordinary cords several times. It is gripped in the handle by a patented "holdfast" fitting—no strain on the wires or the terminals.

Each lamp in an individual box, complete. See them at your dealer's.

Prices

Light weight - - -	**$5.00**
Heavy duty (as illustrated)	**6.00**
Vapor proof - - -	**8.00**

TUBULAR WOVEN FABRIC CO., PAWTUCKET, R. I.

DURACORD EXTENSION LAMP

RADIATORS *for* FORDS

BRASS TANKS

SPECIAL BOTTOM TANK

Will fit any model

Write today

Bremer Manufacturing Company
Canal and Forquer Streets, Chicago

IF YOU ARE A DEALER SEND FOR

"The Little Salesman"

Our illustrated, confidential Net Price List of

AUTO SUPPLIES

It's Free!

Make Money on Old Fords by equipping them with Fidelity bodies, stylish and medium priced club roadsters, speedsters, etc., shown in "The Little Salesman."—WHOLESALE ONLY!

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TRACTOR WORLD

Monthly **20c the Copy** **$2 the Year**

A Tractor Journal devoted to the tractor industry and trade

Published by

The Automobile Journal Publishing Company

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ATTENTION!
Ford and Fordson Dealers

The FAIRBANKS Company O.K.

Automobile and Service Station Equipment sold under "The Fairbanks Company O. K."

Burning-in and Running-in Machines for the Ford Cars and Fordson Tractors, Motor Stands, Motor Clamps, Piston Clamps, Radiator Test Plugs, Tow Bars, Jacks, Reboring and Rebabbitting Jigs, etc. Our line is complete for all shops, large or small.
Write or telephone the nearest Fairbanks Branch House for complete information.

THE FAIRBANKS COMPANY
Administrative Offices—New York.

BRANCH HOUSES

Albany	Detroit	Pittsburgh
Baltimore	Hartford	Providence
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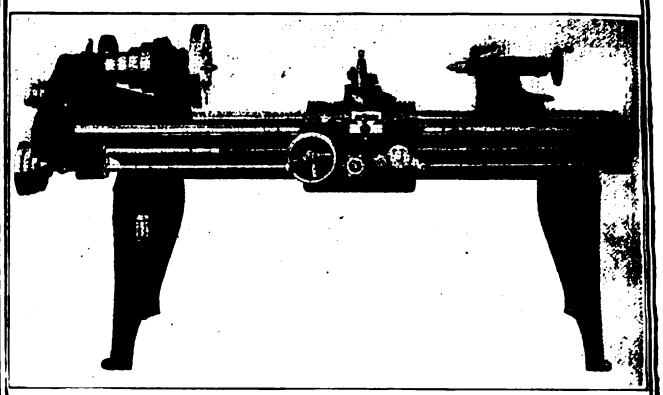

UNION LATHES
MANUFACTURED BY
UNION LATHE WORKS, York, Pa., U. S. A.

This lathe is especially designed for garage and machine shop work. It is well constructed and can be obtained at a moderate price.

Obtainable in various sizes with equipment of large and small face plate, follow rest, tool post, center, double friction counter shaft (see cut) rod and screw feed and all necessary change gears, wrenches, etc.

Write for complete descriptive literature and prices.

THE UNION LATHE WORKS
York, Pa., U. S. A.

BUNTING BEARING BRONZE — B.B.B. CO. No. 1

Same quality as our finished bronze bushings and bearings used by manufacturers the country over.
Your repair stock is not complete without it.

All leading jobbers
Ask for catalog N

The Bunting Brass & Bronze Co.
727 SPENCER STREET
TOLEDO, OHIO.

CORED BARS

PIECE NO.	STOCK SIZES Outside Diameter	Inside Diameter	Length	Approx. Weight
A	1	½	12	3
B	1¼	½	12	3¾
C	1½	¾	12	5
D	1¾	¾	12	7
E	2	1	12	8¾
F	2¼	1¼	12	10
G	2½	1½	12	11¾
H	2¾	1¾	12	13¾
I	3	2	12	18¾
J	3¼	2¼	12	15¾
K	3½	2½	12	17
L	4	3	12	21
M	4¼	3¼	12	25

BURKE AUTOMOBILE PRODUCTS

THE BURKE
Condenser

Replaces the radiator cap; prevents evaporation of water or anti-freeze mixture from cooling system. 1,000 miles on same water. Distills water continuously. Protects passages of cooling system from corrosion and scale. Makes use of alcohol as anti-freeze medium practicable and inexpensive.

Little Giant Model

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Burke Automobile Products.

Ford Model

AUTOMOBILE DEVICES COMPANY
PHILADELPHIA, U. S. A.

Wanted: Distributors

Manufacturer of well known and nationally advertised automobile shop equipment will consider applications from jobbers and distributing agencies for exclusive territorial rights. This is one of the easiest selling and most profitable selling lines open today, and the opportunity is offered only because of a change in selling policy. In answering please state lines you are now handling on a similar basis, number of salesmen and territory covered. None but high grade connections will be considered, and inquiries will be treated as confidential. Address

John H. Thomas, Sales Manager

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Victor Gaskets Set a Standard in Quality & Service that Counts

Dealers, Garage and Repair Men

For repair and replacement work, to be sure of a dependable, durable job that will save your customer money and annoyance, use Victor Gaskets. Made from pure Lake Superior Copper and highest quality asbestos. Absolute insurance against leaks and blowouts. Used in almost every make of automotive vehicle. We can ship gaskets for new and obsolete model engines at a moment's notice, because our big, modern plant carries complete stocks. Order Victor Gaskets through your jobber.

VICTOR MFG. AND GASKET COMPANY

World's Largest Gasket Manufacturers TROY AND TWENTY-FIRST STREETS, CHICAGO, ILL.

Allied Industries, Inc., 279 Minna Street, San Francisco, California, Coast Representative

GARDNER AIR PUMPS

Result of 50 years manufacturing experience.

An inefficient air pump makes your air service expensive. It hurts the quality of your service.

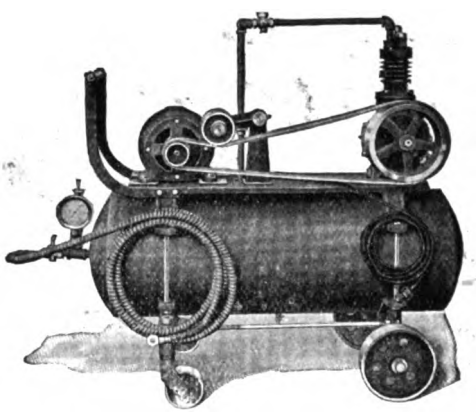
Makes a customer dissatisfied and hurts your business generally.

Install a GARDNER

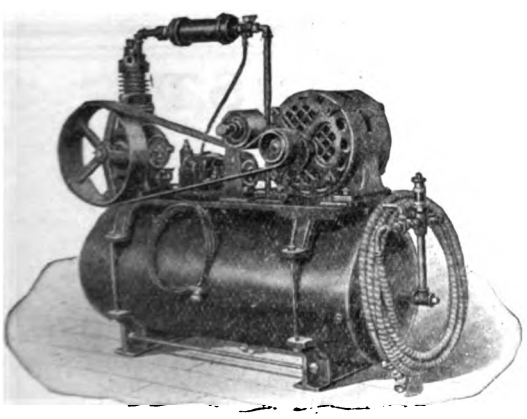
It will pay for itself in a short time.

It is simple, rugged and efficient.

The fact that many filler stations supplying hundreds of car owners daily use the Gardner air pump is proof that experience had demonstrated it is economical.



GARDNER AIR WAGON



GARDNER AUTOMATIC UNIT

Made in Single and Two Stage Types

Variety of sizes ***Prompt shipment***

There is a Gardner Air Pump to meet the demands of every garage no matter how large or small.

Ask your jobber for prices.

THE GARDNER GOVERNOR COMPANY

138 Williamson Street, Quincy, Ill.

Garage Department

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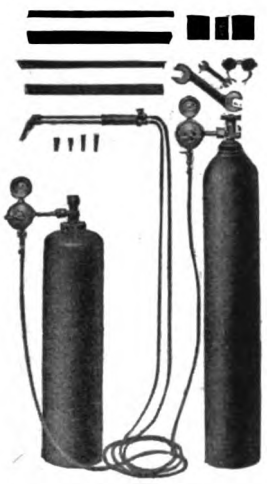
GET A WATERHOUSE WELDING OUTFIT AND WATCH YOUR BUSINESS GROW



Boost your profits—Swing the big profitable welding business to your shop. Thousands of repairers are doing it and most of them use a Waterhouse outfit.

Time is money and a Waterhouse Welding Outfit saves the time as well as labor. It affords utility great enough to meet any shop requirement, yet no shop is too small to own one.

The great difference in welding outfits is all in favor of the Waterhouse. That means quality, utility, long service life, simplicity, dependability, low first cost and the best and most complete welding apparatus ever offered to the trade.

Write for descriptive catalogue, or better still, tell us your requirements. Do it today. We can supply the exact outfit for your needs.

All Waterhouse outfits are guaranteed.

WATERHOUSE WELDING COMPANY, 3 PELHAM STREET, BOSTON, - MASS.

FREE AIR COSTS MONEY

when the customers for whose convenience you provide an air station forget to turn off the flow after they have filled their tires.

Guard against this waste by attaching a

Schrader Universal Inflating Valve

to your air hose.

Thanks to this appliance your bottled air locks itself into the tank the minute it is taken off the tire-valve. You turn on the air by pressing the nozzle of the inflating valve against the tire-valve and you turn it off by removing the device from the tire-valve.

Made to fit any diameter of hose from ¼ in. to ⅝ in.

PRICE $1.50 in U. S. A.

Manufactured by **A. SCHRADER'S SON, Inc.**
800 Atlantic Avenue, Brooklyn, N. Y.

Schrader products were awarded a Grand Prize and two Gold Medals at the Panama Pacific International Exposition. "There's a Reason."

THE PEERLESS HAND HOIST

Single Cable Quadruple Worm Gear Drive.

For Any Make or Type of Truck.

A wonder in efficiency and speed. It will fit any chassis and body. Weighs but 200 pounds. Simple, fool proof, wholly dependable and will last for years in the hardest service.

Any one that can drive a truck can hoist the heaviest load to 30 or 50 degrees in the longest body in less than two minutes. The smaller the body and load the quicker the action.

But two gears are used, quadruple worm and gear (both machine cut) and housed to protect from dirt and dust. The single cable makes an even pull. Compact and can be installed without drilling holes in chassis frame. The body hitch is also furnished.

We specialize in building all-steel bodies for any need.

Write for complete information.

THE AUGLAIZE MOTOR CAR CO.

NEW BREMEN OHIO

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Will Somebody Else Get Your Share?

If you can repair and adjust Electrical Equipment, you will get the cream of the garage business and make more money. With the increasing demand for service of this sort, you must equip to handle the business, or lose it to your more enterprising competitor.

Weston

Model 280

GARAGE TESTING INSTRUMENT

is your one great and urgent necessity to enable you to locate electrical troubles quickly and apply the proper treatment to remedy them. Its possession will place you a long way ahead of your competitor not so equipped.

This instrument is extremely accurate, durable and serviceable. It is the most practical electrical equipment you can install.

The Weston Company is pre-eminent throughout the world in the production of highest grade Electrical Precision Instruments.

Prompt Shipments from Stock—Order Now!

WESTON ELECTRICAL INSTRUMENT CO., 103 Weston Ave., Newark, N. J.

Branch Offices in the Larger Cities.

FAWSCO

Fawsco Steel Wrenches

The *"Fawsco"* brand on a Wrench stands for the most improved methods of manufacture and the most rigid inspection of workmanship and materials, to the end that the *"Fawsco"* Wrench shall stand without an equal for durability, economy and general satisfaction.

Ask for circular.

27 WARREN ST. **J. H. FAW, Inc.** **NEW YORK CITY**

AMBU

BATTERY SHOP CONVENIENCES

BATTERY TURN TABLES Makes work on heavy batteries easy and a pleasure. Saves time and energy—soon pays for the installation. Every shop should have four or five. Simple, sturdy, everlasting. Each $4.

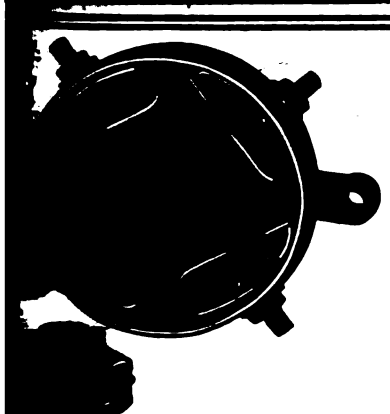
BATTERY CARRIERS Specially designed carrier handles—fit any battery instantly—makes it easy to remove battery from car. One man can carry two batteries — each $1.75. Pair $3.25.

LEAD MOLDS With material still high it pays to save scrap lead. These molds put it into convenient form for use—price each $1.75. Pair $3.25.

Get these from your Jobber—or direct if he cannot supply you.

AMERICAN BUREAU OF ENGINEERING
109 E. 16th St., Chicago

Makers of the Famous AMBU Electric Trouble Shooter.



BAY STATE TIMER for FORD CARS

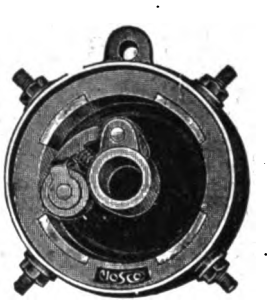
It adds to power, efficiency and economy.
Eliminates all Timer troubles.
Cuts gas and repair bills and guaranteed to give full satisfaction.
Used by Ford owners everywhere.
There is one best Timer for Ford cars—It is the Bay State.

List Price $2.50

All dealers or direct.

BAY STATE PUMP COMPANY
[illegible] Purchase St., Boston, Mass.

Mosco No. 200 Timer for Ford Car



Patented Oct. 31, 1916.

The case is made of extra heavy pressed steel, finished in aluminum. Gray bone fibre is used for raceway, with steel inserts dovetailed in and all lathe finished to a polished surface. The threaded terminals are insulated by fibre washers all the way through to contact points, thus removing cause of short circuiting common to this style of Timer.

PRICE, Complete with Brush, $1.50 EACH

Motor Specialties Co.

Manufacturers

WALTHAM **MASS.**

(When Writing to Advertisers, Please Mention the Accessory and Garage Journal.)

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"Send Us More New York Automobile Replacement Coils at Once"

is the request of every Jobber and Dealer who have ordered previously

TYPE D

Unless you are already handling our REPLACEMENT IGNITION COILS you cannot realize the tremendous existing demand—they are not in the class of ordinary accessories. They must be procured immediately when coil troubles occur.

Fifteen years' coil building experience enables us to produce a coil that gives a crashing big hot spark, even when battery is low, which insures easy starting, perfect running and full power from present day gas.

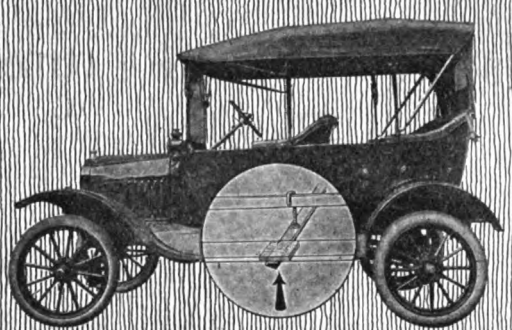
No article ever supplied the automobile industry has proven more beneficial alike to Dealer, Jobber and user. We make a coil for every car, that is guaranteed for all time.

Circular showing how to order for each model car with prices and other information upon request.

TYPE A

NEW YORK COIL COMPANY

338-340 PEARL STREET NEW YORK, N. Y.



Dow Auto Body Brace

For Ford Cars

A real seller with the jobber and dealer.
Worth its weight in gold to the Ford owner.
Quantity sales with large profits.
Write for quotations and our Agency.

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He has a Hastings Stabilizer on his Car

Ford owners will buy this Stabilizer because it takes up all the lost motion and looseness of the steering mechanism. Relieves driving fatigue and aching arms. Makes a Ford safer and easier to drive for wives and daughters. Makes the car more comfortable. It is an accessory no Ford owner can afford to be without. He will buy it if you show it to him. Retails for $5.00.

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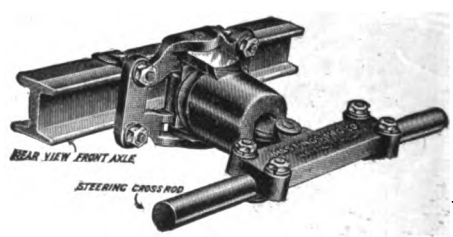

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MANUFACTURING CO.
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Model "P" Carburetors with Airplane Principle, for Dodge, $18.00. For Maxwell, $15.00 For Ford cars and trucks, $10.00

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Van Briggle Shock Absorbers for Fords
Easier to Install
Better Protection to the Car

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Small Stock For Fitting All Cars

Because of flexible caps, terminals and brackets these coils are adapted to all ignition systems. You are required to carry only a very small stock. Consequently, your investment is unusually small and at the same time you can fit all makes of cars.

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Coils are famous for their long life, dependability and uniformly high standard. Order your stock at once.

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Jefferson Electric Mfg. Co.
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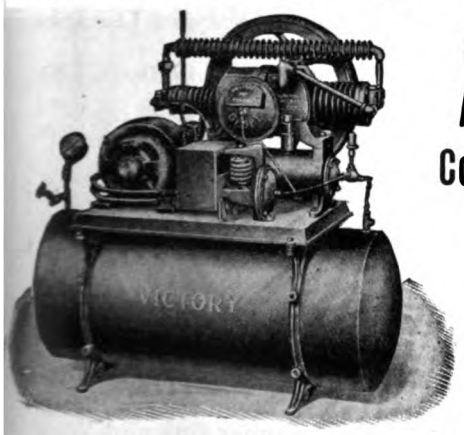

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A C E O F A C E S

GLOBE TYPE B—Original Two-Stage Garage Compressor. Saves power, time and money.

WONDERFUL new system of AUTOMATIC LUBRICATION insures Oil-Free Air, provides abundant and continuous lubrication and wastes NOT AN OUNCE of lubricant.

Automatic Pressure Unloader protects belts, fuses and motors.

15 Sizes and Styles of LAST WORD Equipments from which to select.

Desk C.

Globe Manufacturing Co., Battle Creek, Mich., U.S.A.

FINDS ALL IGNITION TROUBLES

Makes car owners and repairers expert trouble finders

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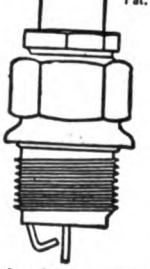
Pat. 3-19-'18.

Attached to Plug Stops all Spark Plug Troubles



The spark is always visible. It is a window in the cylinder.
It will make a plug fouled with grease or carbon or that has a broken porcelain, fire perfectly.
When the magneto is not working properly, a wire short circuited or broken, or the battery is out of order, the Intensifier will prove it at a glance and it can be adjusted to overcome almost any ignition weakness.
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IT ABSORBS THE REBOUND OR UPTHROW

By installing Beckman Springs the original spring on a Ford is lowered 2½ inches automatically. This action reduces the equivalent amount of spread on each side of the lower spring as well as the play in the steering. In other words, it improves the steering.

Completely absorbs all shocks. Controls the rebound, side sway and all chance of springs breaking.

It stops the squeaks and rattles. These springs cannot dent or bump the body. Easy to clean and will last longer than the car. Our trial offer money back iron clad guarantee goes with every sale.

Easy to apply as any shock absorber. Anyone can do the work. 100% protection for Ford pleasure cars or trucks.

The double action of springs is controlled by the opposite arch and suspension. Practical equipment that is guaranteed to afford full satisfaction in any service, not to break and made of the best alloy spring steel.

It greatly improves the appearance and makes the Ford look like a high priced car. For comfort, safety and efficiency it adds 100% to the service value and life of any passenger car or truck.

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This is car equipment of the highest quality, efficiency and service. Sells right and will prove to be a leader with you.

Write for details and trade discounts.

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BECKMAN BLDG
CLEVELAND, O

FORD OWNERS:

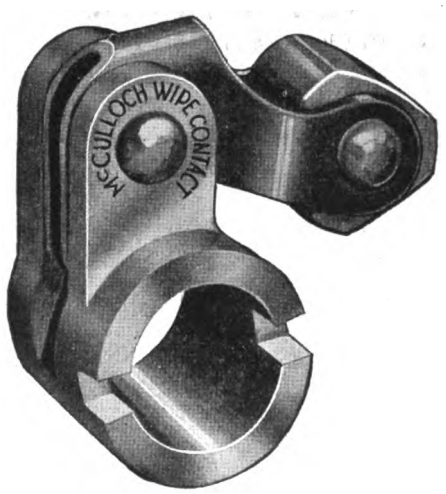
Save your springs and ride in comfort. Price $18.00 per set. Our guarantee protects you. Order from your dealer or direct.

Catalogue at request.

For Ford Cars

McCulloch Wipe Contact

For Fordson, and Ford Trucks



The McCulloch Wipe Contact will absolutely do away with the abnormal wear on the roller of a Ford car, Fordson or Ford truck timer, and is guaranteed for the severe life of any timer used on Ford products.

It operates similar to the old style roller, but instead of rolling around the timer ring in the timer case, it slides till an obstruction is reached, turning over to a new surface, on which the contact is continued. This action taking place as often as an obstruction is encountered.

The old style roller contact, attached to the camshaft, revolved at one-half the crankshaft speed, and this is approximately 625 R. P. M. The wipe contact, turning at a much slower rate of speed, due to its triangular shape, wears the timer ring and Wipe Contact equally and smoothly, but will also keep the points of contact clean, assuring long life, small amount of wear and perfect ignition.

The Wipe Contact is made of high carbon steel that is not affected by the sliding motion of contact with the distributor points or fiber. There is not a chance of a misfire.

List Price but $ .60. Sold by all dealers or direct.
Jobbers and dealers write for discounts

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DON'T send away a Ford or Fordson block when it comes in for main bearing replacements.

Have a Universal Main Bearing Replacement Equipment ready to do the job quickly and accurately in your own shop.

The job is easy to do—can be done quickly. The finished work is absolutely accurate and the profits are big, both in money to you and satisfaction to the customer.

See current issues of Auto Trade Directory and Chilton's Directory for list of jobbers carrying stock. Write for catalog.

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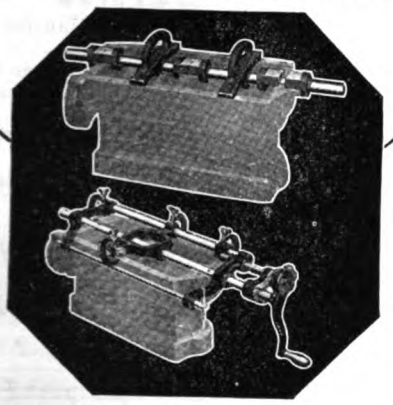
435 Woodward Ave, Detroit, U. S. A.

Manufacturers of Universal Cylinder Reboring Tools and Main Bearing Replacement Equipment for Fords and Fordsons



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No Grease to Catch Dust
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Use With Spray if Desired

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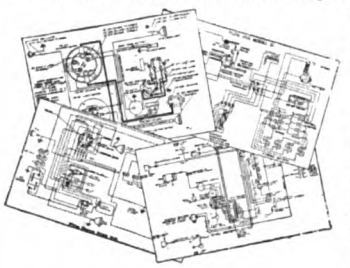
In New Edition of Auto Electrician's Guid

Contains wiring diagrams for every car on the market, includir the new 1919 Starting and Lighting Systems for Ford cars, also di grams for Baker R & L and Detroit Electric and pipe connections fc Stanley Steamers. Covers all kinds of systems from 1912 to 1919 an many as far back as 1906. Most complete diagram book on the marke



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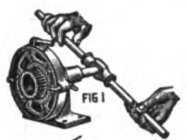

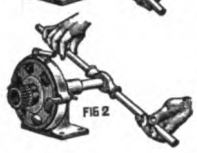

This great saving of time means a big additional profit, but is now a loss. There is BIG MONEY in Ford repairing if you have efficient tools that save time and eliminate guesswork and experts. The two outfits listed here will save their cost on a very few jobs and enable you to render the quickest possible service to your trade.

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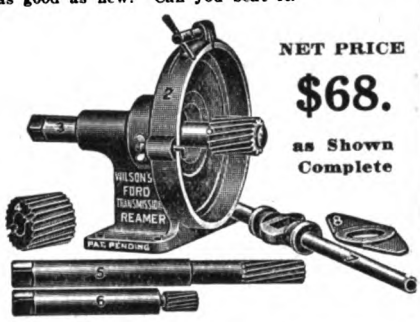

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30 Minutes to Fit Perfectly All Main Bearings and Connecting Rods.

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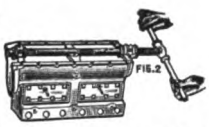

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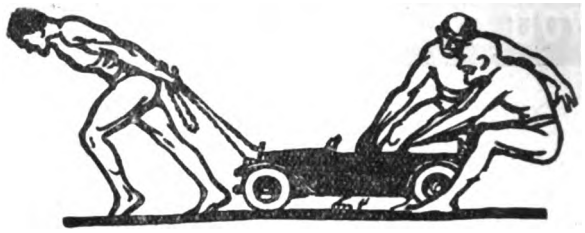

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Transmissions and differentials are the go-betweens in the constant fight of **Power** against **Resistance.** Here the battle takes place—where the two forces meet.

DIXON'S GRAPHITE Transmission and Differential LUBRICANT

is made specially to meet a difficult lubricating problem like that.

It stands to its post under the tremendous pressure that must be met and conquers in this grueling work.

It stays on the gears as faithfully when they are **not** moving as when they are in action.

They will build better lubricating business for you and satisfy your customers.

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BRUSHES

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FOR AUTOMOBILE STARTING MOTORS AND LIGHTING GENERATORS

THE OHIO CARBON COMPANY

1900 FULTON PLACE, CLEVELAND, O.

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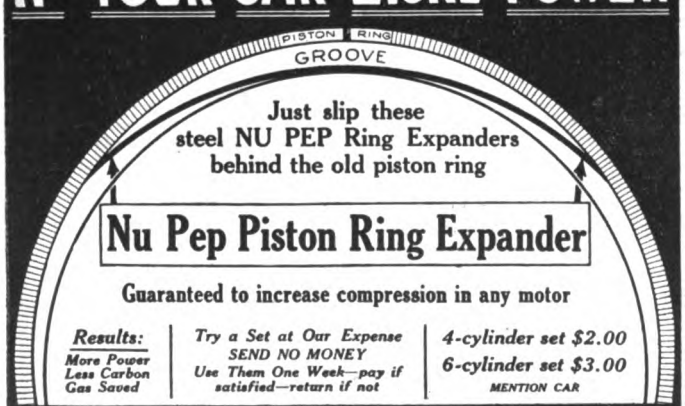

Just slip these steel NU PEP Ring Expanders behind the old piston ring

Nu Pep Piston Ring Expander

Guaranteed to increase compression in any motor

Results: More Power, Less Carbon, Gas Saved

Try a Set at Our Expense SEND NO MONEY *Use Them One Week—pay if satisfied—return if not*

4-cylinder set $2.00
6-cylinder set $3.00
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There's economy in using the best fluxes you can find for particular welding jobs. Insure better and stronger welds, more easily and more rapidly made, by using

ANTI-BORAX COMPOUNDS

For Acetylene, Gas and Electric Welding

Anti-Borax WELDING FLUX

Best on the market for all grades of iron and steel. Weld at lower heat. Leave no scale. They cleanse the molten metal, assist fusion and improve the quality and appearance of your work. Guaranteed to give perfect satisfaction or your money refunded.

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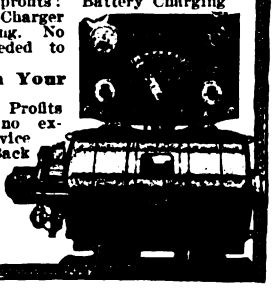

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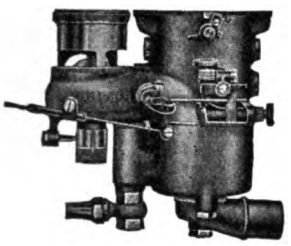
Successful Manufacturers Since 1893



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More Mileage—More Power—More Speed

Get him to try it for 15 days. Satisfaction guaranteed.

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PATENTED

THE dependability of the "M & E" Grease Cups is recognized by the leading makers of motor vehicles.

There is no possible way for the tops to rattle off from vibration or jars. This will keep the grease clean and free from dirt and grit that will cause wear even in thoroughly lubricated cars.

Secure safety, economy and efficient lubrication by selecting the "M & E" Grease Cups as your standard. They come in all sizes, made of Brass and Steel. A neater and more reliable cup cannot be obtained.

Write to Department 2 for Samples.

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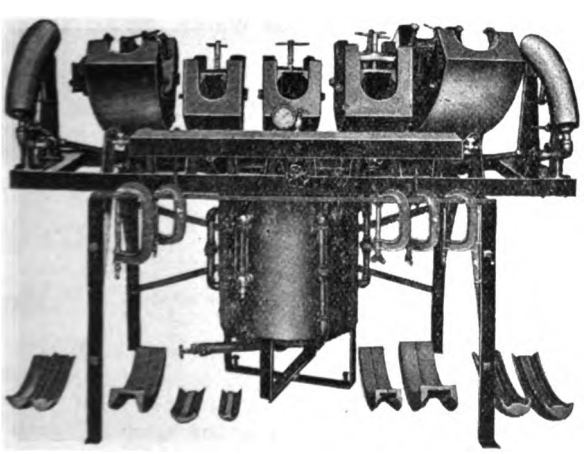
Here is the most profitable business on earth—TIRE REPAIRING. Open a Tire Repairing Shop—business pours in. Vanderpool Vulcanizer (5 Cavity) has capacity of $100 worth of work a day. We are the pioneers in the manufacture of the Dry Cure Vulcanizer—the only vulcanizer that guarantees absolutely PERFECT work. We send FREE TIRE REPAIRING MANUAL—tells you everything necessary to know. Write at once for full particulars.



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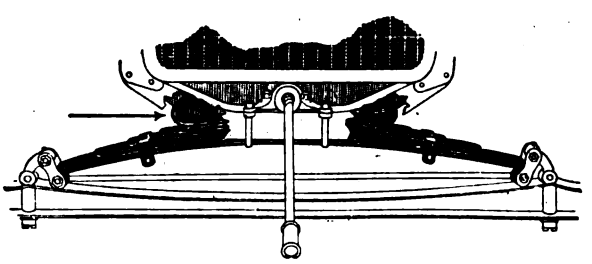

SAVEUR FORD FRONT SPRING

The Open Loop of the SAVEUR Ford Front Spring absorbs the extra heavy thrust of the Spring itself when deflected greatly by a severe jolt, and positively prevents Spring breakage. Even without this Open Loop Leaf, this Spring would be proof against breakage or sagging for the whole Spring is a genuine A 1 NEW ERA "Better" Spring—oil tempered—with a 5-hour reheat treatment, bushed, clipped, painted and graphited between leaves for a year's lubrication. The Open Loop provides surplus cushioning effect and modifies the severe bumps—saves the Spring—saves the radius rods, axle spindle—and possible severe accident.

PRICE OF SAVEUR SPRING, $6.50
Open Loop Leaf Only $2.50
DEMONSTRATE THIS SPRING. SELLS ON SIGHT.

Use New Era "Better" Springs for all Cars, and Stop the Breakage. 150 Best Jobbers List Them.

There is a NEW ERA "Better" Spring for every car, at MORE popular retail price than others. To stock the popular car Springs and show on car, attractive Spring Display Rack (furnished free with an order of twelve or more Springs) is to make many additional sales, at more REAL PROFIT than other accessories. No unpacking or packing costs, no freight on five or more Springs.

NEW ERA SPRING & SPECIALTY COMPANY
1177 Hamilton Ave., Grand Rapids, Michigan

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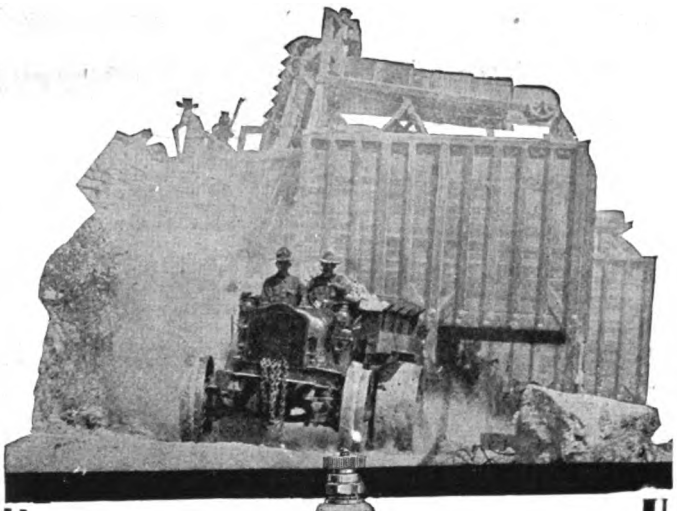

Reflex equipped White Truck speeding up building by bringing up material;—

—no delays due to ignition trouble mean continuous and fast work here

Reflex Spark Plugs NOW "Bring up Supplies" in Construction Work

—and with the same dependability as they held trucks to rigid schedules bringing up war supplies to the front line fighters.

For Reflex equipped White—and other—Trucks promote rapid construction by keeping the workers supplied with building materials. Downright trouble-proof ignition is assured by the sturdy Reflex regardless of how continuous the work—the same result your customers get when you sell them this plug for their car or truck.

It is the cromite war-service porcelain and non-pit electrode construction of Reflex Plugs which enables them to force these supply trucks through all kinds of roads. Every Reflex Spark Plug you sell gives your trade, too, unfailing ignition under even the most trying emergency conditions of excessive heat and lubrication.

Sell Reflex Plugs because of what they have done and are doing in cars and trucks—and what they have done for dealers everywhere. And you can sell a Reflex for any engine. Order from your jobber—or write us direct if he is not supplied.

The Reflex Ignition Co.

Dept. A3 Cleveland, U, S. A.

REFLEX SPARK PLUGS

KEEP THE CAR ON THE GO!

THE ACCESSORY AND GARAGE JOURNAL
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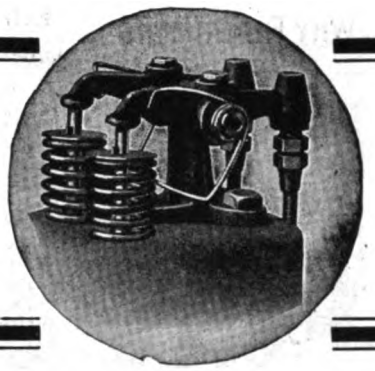

STOP THAT NOISE!

caused by loose action of push rods and rocker arms in

BUICK CHEVROLET

and other valve-in-head motors with

K H K Valve in Head MOTOR SILENCERS

This attachment is guaranteed to eliminate from 75% to 90% of the noise in the valve action of Buicks and Chevrolets; takes up the play in the push rods and rocker arms and holds the cam rollers snugly against the camshaft.

Nothing Else Like It

K H K Motor Silencers have successfully solved the problem of stopping that clicking noise in valve-in-head motors. There's no other attachment of this kind on the market. Every owner of a Buick or Chevrolet motor appreciates the value of this attachment the moment they see it.

Satisfaction of Money Back

A written guarantee that K H K Motor Silencers will eliminate from 75% to 90% of the noise caused by loose valve action in Buick or Chevrolet motors goes with each set. K H K Motor Silencers are further guaranteed against breakage for six months.

Notice to Dealers

The overwhelming demand for K H K Motor Silencers tells the true story of their success. They sell on sight. We've got a very attractive proposition for the right kind of dealers. List prices—for Buick 6, **$3.00**; Buick 4 and Chevrolet, **$2.25**. Liberal dealers' discount. Sample sent C. O. D. on request.

KAY H. KAY COMPANY

966 Woodward Avenue DETROIT

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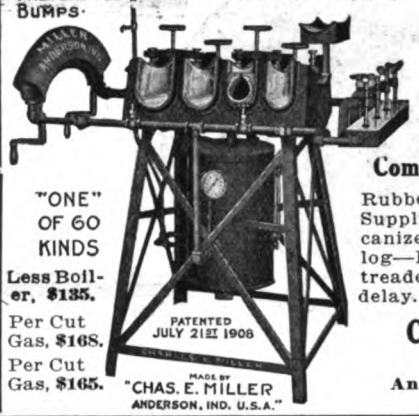
USE MILLER'S WHY EXPERIMENT



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Less Boiler, $135.

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Extra Ply Tires, Tubes, Vulcanizers

60 kinds.

6 kinds Wrapping Machines—Tire Building Stands—Air Pumps—Repair Stocks—Reliners—Steam Boilers.

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Rubber Workers Tools and all Supplies—Boot and Shoe Vulcanizer—FREE 84-page Catalog—Four Cavity Ribbed Retreader. Write today. Don't delay.

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The tightest, safest, strongest tank it is possible to construct by any known method. Process originated by us over twenty-five years ago.

We also make a special portable emergency tank for filling tires. Throw it in your emergency car and take it with you.

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AIR-TIGHT STEEL TANK CO.

Main Office and Works

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Guaranteed Bearings

We Exchange Rebuilt Bearings for old or worn ones

BILODEAU BALL BEARINGS WORKS

In Order to Obtain

EFFICIENCY and ECONOMY

in Bearings, send your worn bearings to us for repairs. We will rebuild them, make them as good and better than new at a fraction of the cost of new bearings.

SATISFACTION GUARANTEED.

Garage and Repair Men cannot afford to miss this splendid service. No delay. We carry a big stock of Rebuilt Bearings to exchange for worn ones. Catalog sent and discounts quoted on application.

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Both Guaranteed.
Either or Both Delivered.
Your Money Back if You Want It.

They Fit Any Spring. Easy to Operate. Both Drop Forged.

Nickel-plated and polished.

100% EASIER RIDING.

SQUEAKING STOPPED.

Spring Breakages Eliminated.

Use a Heavy Grease (not oil) for real results.

DON'T RUIN YOUR SPRINGS BY NEGLECTING THEM!

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Gun metal yoke, screw and handle nickel.

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Every garageman and repairman should get our catalog. You'll find in it just the time and labor savers you need, and their prices will astonish you by their moderateness.

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Just RUB IT OVER THE GLASS and RAIN or SNOW cannot collect to obstruct the vision.

INSIST UPON THE "RED CLOTH"

Which is guaranteed to give continuous use for one year or money refunded. Made only by

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Offer a quick and ready means of connecting storage batteries for charging. Simply fit your connecting cords with these clips and snap them over the battery terminals.

No. 21-A—lead plated—1½" spread of jaws.

Sample mailed postpaid for 15c in stamps.

Single Lots, Each 20c. Lots of 10, Each 15c.
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The Perfect One Piece Piston Ring

This is a picture of "Mac." He is a corking good mechanic and a great booster for the Gill Piston Ring. "Mac" says you only have to show a motorist a Gill Ring to sell it and thousands of dealers all over the country have found this true to the advantage of their business.

What is the reason for this "Gill Enthusiasm"?

Look at the double step, interlocking joint and you will see for yourself. It allows an expansion of from 1/8" to 3/16" before any loss of compression occurs. In addition Gill Rings are made from single piece castings of special fine gray iron and machined to absolute accuracy. The easiest ring on the market to install, the easiest ring on the market to sell.

Send for the new Gill Piston Ring Size Directory, complete, convenient and full of just the information you need. It is free to the trade.

Dealers—Ask your jobbers about them
Jobbers—Write to us for information

The Gill Manufacturing Company
351 West 59th Street, Chicago, Illinois

Sole Foreign Agents:
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Have You an Air Service Problem?

The Brunner Compressor either motor or belt driven --any one of the many sizes and combinations---together with a Brunner open hearth steel tank---Resistoil air hose and Brunner fittings is the answer to the air service problem---the last word.

Every piece or part entering into the Brunner product is made in the Brunner plant not just picked up here and there and assembled.

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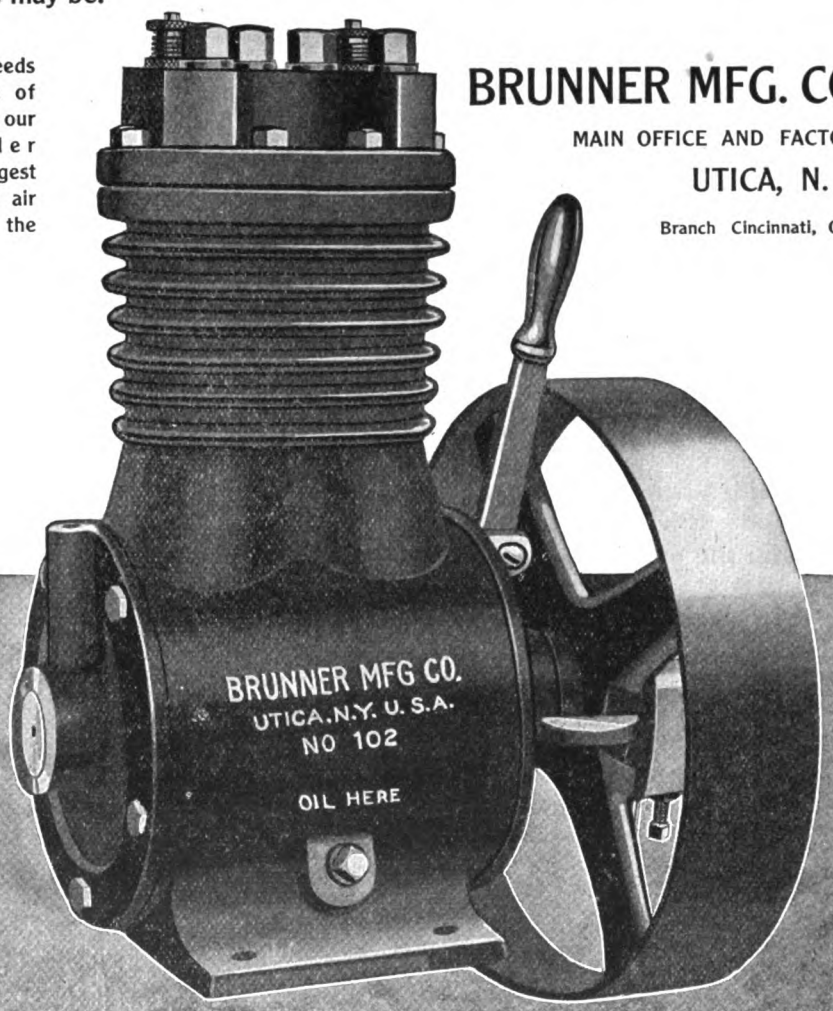
We will fit your needs with a well engineered product whatever your special requirements may be.

Tell us your needs and the name of your jobber. Get our illustrated folder showing the largest line of Garage air compressors on the market.



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MAIN OFFICE AND FACTORY

UTICA, N. Y.

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AUTOMOBILE SPECIALTIES
Make old cars look like new

Peerless Automobile Specialties produce durable and lasting results that please every owner for their quality, giving dealers repeat orders and good profit on each can sold.

Put up in attractive lithographed can with friction tops, that can be pried off and put back on when through using, preventing any possibility of deterioration.

PEERLESS MOHAIR TOP DRESSING—
A waterproof dressing which also dyes tops with one application.

PEERLESS LEATHER TOP DRESSING—
Renews and softens leather, rubber and pantasote tops—adds months to life of tops.

PEERLESS LINING DYE—
Dyes all dirty and spotted linings a black, uniform color, improving the entire appearance of the car.

PEERLESS CUSHION DRESSING—
Brightens and renews the finish of leather seats and cushions.

PEERLESS CYLINDER ENAMELS—
Heavy bodied enamels that will resist heat, grease and gasoline. Black and Gray.

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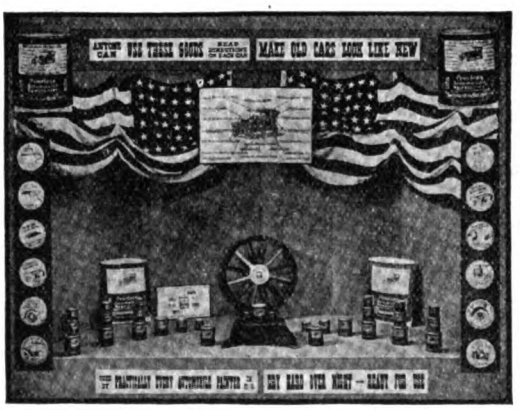
A rich enamel finish for lamps and kindred parts which will cover solid with one coat. Gloss and dull.

PEERLESS JET BLACK FENDER JAPAN—
An air drying enamel which gives a rich finish similar to a baked job.

PEERLESS BODY POLISH
A fine product for dull varnished surfaces. It brightens with a finish that is lasting.

PEERLESS GASKET SHELLAC—
A high grade alcohol product. Heavy bodied for gasket work and is not affected by gasoline.



PEERLESS TOUCH-UP BLACK—
A quick drying product for touching up various metal and wooden parts about a car.

PEERLESS TIRE PAINT—
A waterproof dressing, that protects and improves the appearance of your tires. Made in Black, Gray and White.

PEERLESS BATTERY BOX BLACK—
An acid resisting enamel for coating wood and metal that comes in contact with acid and fumes from battery boxes.

PEERLESS MIRROROID—
A clear varnish if applied before the paint and color have perished will make a finish like a new varnished job.

PEERLESS CARBON REMOVER—
A liquid preparation that will remove deposits of carbon from cylinders and keep your motor always active and full of life.

PEERLESS LIQUID WAX—
A wax polish in liquid form that is easy to apply with a light, even coat, that will stand many washings without dulling the finish.

PEERLESS RIM PAINT—
A coating that prevents the rusting of rims. It does not chip off and is absolutely waterproof.

PEERLESS EXTRA FINE BLACK JAPAN—
A fine black gloss product for touching up and all around use on wood, metal and old painted and enameled surfaces.

PEERLESS FORD TOP DRESSINGS—
Made especially for Ford cars and will protect the top from the ravages of inclement weather.

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Made so that you can paint the body chassis and wheels of your car your favorite color. Made with a finishing varnish to stand wear and may be used without an undercoat. Dries over night. Made in eight colors: Straw Color, Red, Yellow, Blue, Green, Gray, Black and White.

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DEALERS: Order these products from your jobber, who has stocks of Peerless Automobile Specialties. If you are already selling these items get catalogs, window display (see cut in center of page), inserts and other advertising matter. If he cannot supply you write to us direct.

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Columbus, Ohio, U. S. A.

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GASTINE

"GASTINE" is GUARANTEED to give you 30% more mileage, preventing formation of carbon and assuring easier hill climbing ability, faster ignition and greater power.

A Gas Saver—Carbon Destroyer—Power Producer

Keeps spark plugs clean. Absolutely harmless. Sold in concentrated form—easily dissolved in gasoline. 100 tablets in a box. Used successfully throughout the civilized world.

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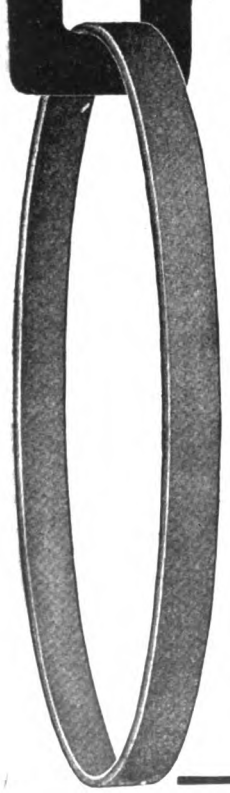
Dealers write for prices. Some territory still open. If consumers or dealers cannot be supplied from their jobber or dealer, they can order direct from this office. Always give name of their jobber or dealer.

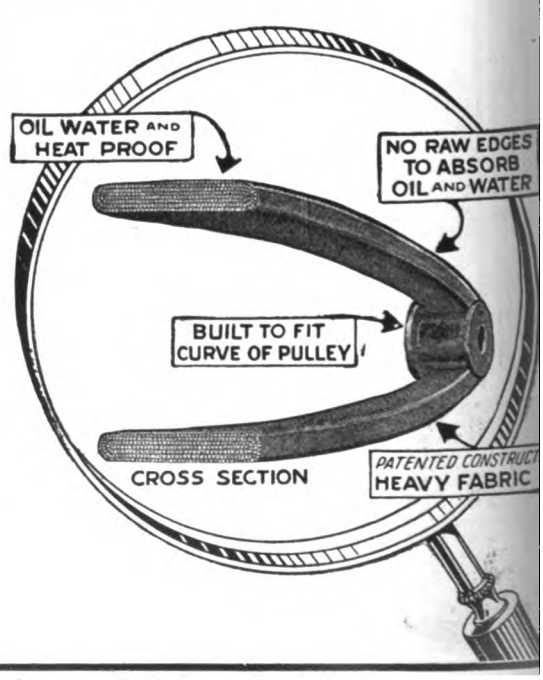
Guaranteed 10,000 Miles

At last—a fan belt of known and guaranteed performance. DEALERS—This is the safe belt to stock.



FLEX-O-TYTE FAN BELT

Combines Flexibility With Tightness.



Made for all cars. Built of special Rubber Coated Fabric, vulcanized into a one-piece belt—wrapped cure process.

Dealers—Order Sample

The name of your supply house and 10c to cover postage and packing brings sample belt promptly. Our 32 page catalog FREE on request.

A. J. STEPHENS RUBBER CO.
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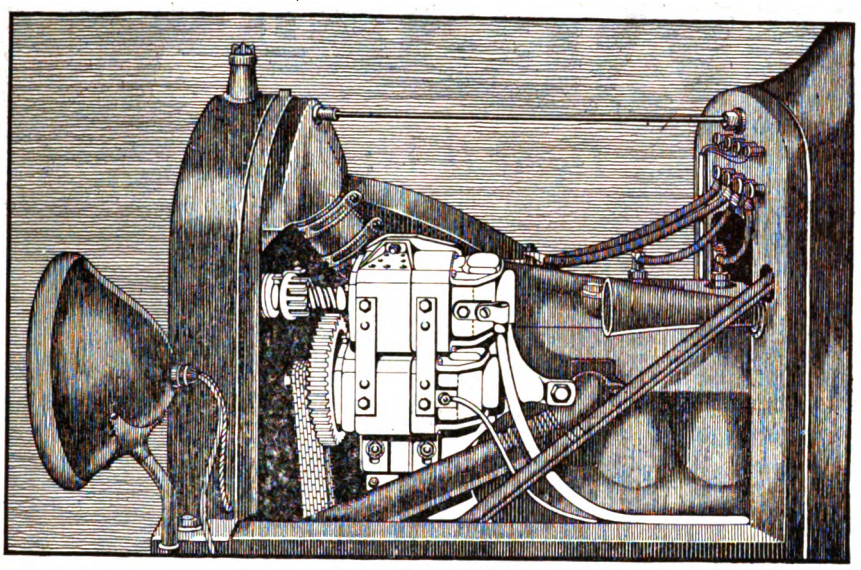

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STARTER
for Every FORD

Add convenience and safety. You and your Ford deserve it. Always a quick start in any weather. Bright steady light standing or running. Specially designed and built to add Gray & Davis reliability to Ford service.

Booklet A 62 tells the story.

GRAY & DAVIS, INC. Boston, Mass.

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HAYWOOD'S LATEST INVENTION

SILVUR LINED RE-TREAD MOLD

Here It Is:

A new machine that will earn from $100.00 to $150.00 per week in any well established tire repair shop. More than one year of constant experimenting and development work was required to complete it.

Statistics say there will be **One Billion Dollars** worth of tires worn out this year. The insistent demand for re-treaded tires that would add 3,000 to 4,000 more miles of wear is growing. A new and better machine than had so far been produced was needed.

Two actual photographs of One Tire

BEFORE and AFTER

being repaired and retreaded on a silvur-lined mold.

HAYWOOD'S Silvur Lined MOLD

meets the need Made of white metal—die cast—absolutely free from blemishes and smooth as glass. It is truly a wonderful machine.

Old tires retreaded on this machine closely imitate the runner, **cord type**, and are, smooth, classy, bright. All 4,000 owners of Haywood Tire Repair plants will **want** this new Haywood invention. Owners of other plants should have one.

Pays for Itself in a Week

Will earn from $100.00 to $150.00 weekly. Are you an auto tire repairman? If you are not, why not enter this profitable business? Tire Repairmen earn **$2,500 to $4,000 Per Year.** Many are doing better; some up to $6,000 and $7,000 per year. If you have a tire repair shop, you need this Haywood Silvur-Lined Retread Mold. You should write us at once and get the details. It will pay for itself in a week. Every week thereafter you should make $100.00 or more extra profit.

FREE BOOK I have an interesting book to send you that tells about tire repairmen and the Haywood method. It tells about automobile tires—it gives inside facts that you should know about profits. When you write tell me if you have a tire repair shop, or, if you want facts about the tire repair business. Address

M. HAYWOOD,
Haywood Tire & Equipment Co.
955 No. Capitol Ave., Indianapolis, Ind.

WRITE ME!

I will tell you how to start in business as an expert tire repairman and earn $2,500 to $4,000 per year. Sounds too good to be true. But it is true, every word of it.

M. HAYWOOD,
Haywood Tire and Equipment Co.
955 No. Capitol Ave., Indianapolis, Ind.

(Mark an X for interest in either or both subjects)

☐ Send facts about the Silvur-Lined Mold

☐ Send facts about the Tire Repair business.

Name.....

Address.....

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N. E. hard, C lotte, M owner o Haywo plant, last did a busine $15,000. Charlotte is a of 7500 popula

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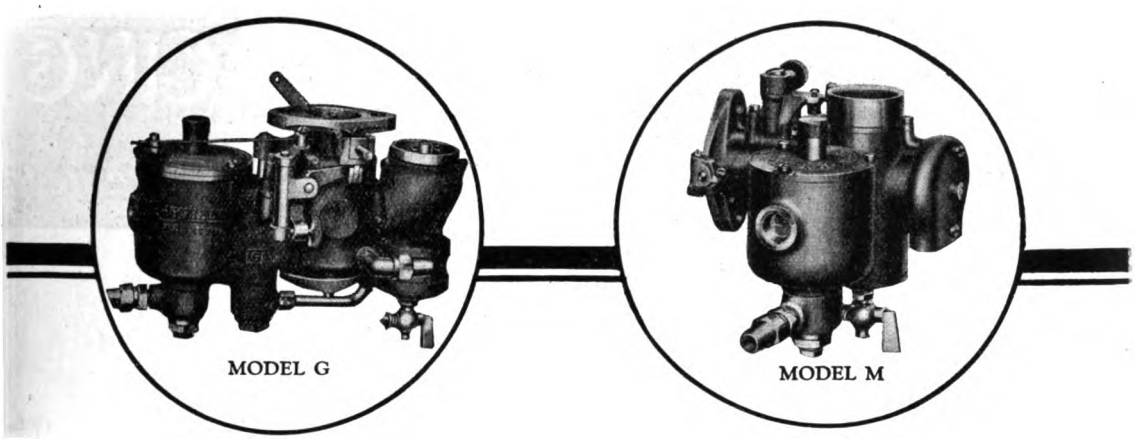
The Carburetor Makes the Motor Respond



When you step on the accelerator in an emergency and your car leaps ahead, it is the carburetor that makes the engine respond quickly.

The instant response of Rayfield carburetors can be depended upon at all times. There is no hesitating and no faltering.

This is a factor of safety just as important as the strength of the axle or the reliability of the transmission.

Rayfield response is due, first, to the superiority of its design. But the design would be of little use if it were not for the nicety of construction of each part, and the exactness with which they are assembled.

Naturally it costs more to build so good a carburetor. Motorists have found, however, that the greater cost is repaid many times by the absolute surety of their cars' performance.

BENEKE & KROPF MANUFACTURING CO.
Successors to Findeisen & Kropf Manufacturing Co.
21st and Rockwell Streets, Chicago, Illinois

7

RAYFIELD CARBURETORS

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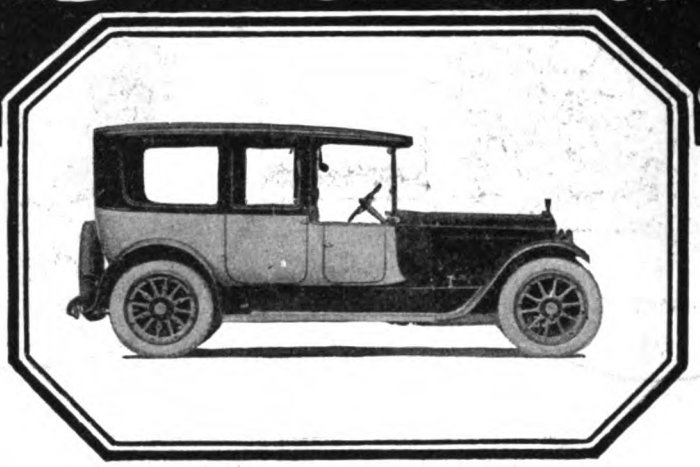
Raybestos

MOLDED CLUTCH FACING

Patented *Guaranteed*

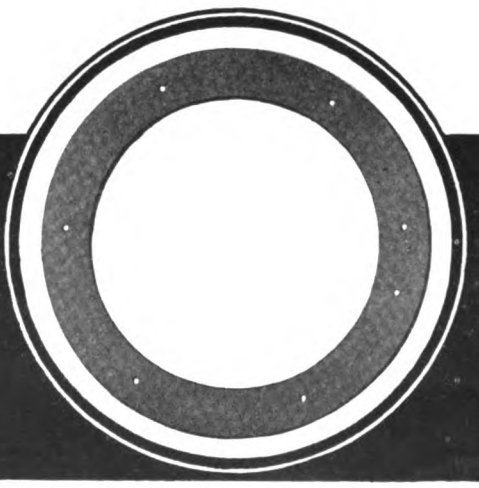


On America's Leading Automobiles

RAYBESTOS MOLDED CLUTCH FACING has received the highest possible commendation, for it is found in foremost cars for 1919. This is positive, undeniable evidence that this facing exceeds in performance any other device intended for the same purpose. It's not a question of "price," but of getting a product which brings a distinct improvement into motor car efficiency.

Cars of every class: trucks, tractors and tanks are equipped with Raybestos MOLDED Clutch Facing, because it has actually revolutionized the efficiency of the disc clutch and for no other reason.

THE RAYBESTOS COMPANY BRIDGEPORT, CONN.



Improves Any Disc Clutch

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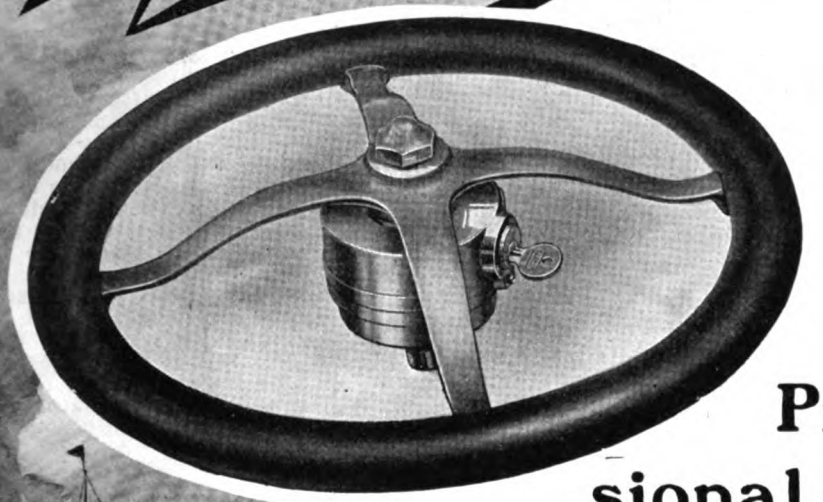
Masters

AUTOMOTIVE ACCESSORIES



It Foils the Profes=sional Thief

FORD owners don't need to be told that the Ford is the most easily stolen car in America. Every time it is left, even for a few minutes, it is at the mercy of joy riders and thieves. Insurance is good, but it won't bring back a stolen car.

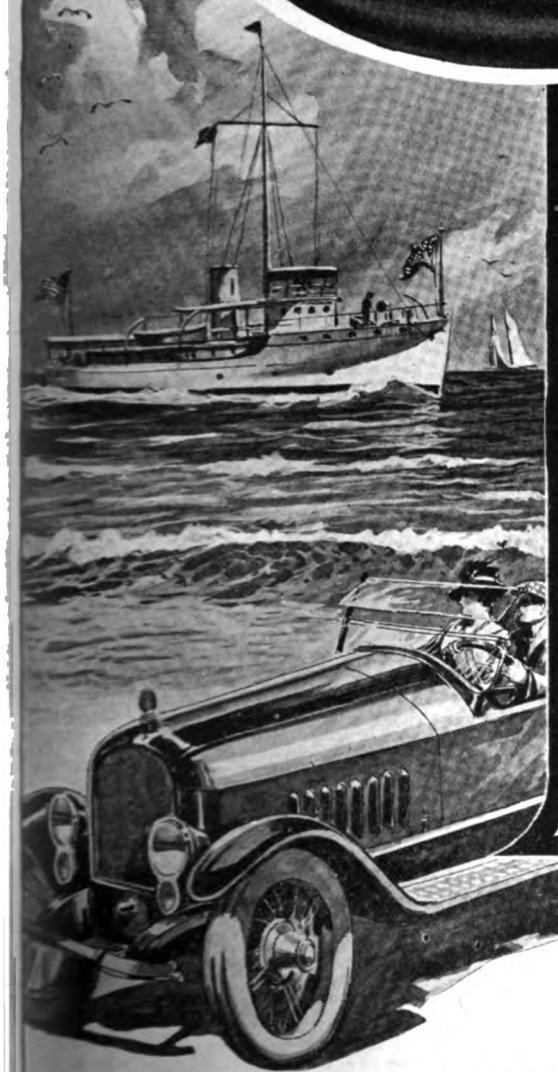
But the Ford can be locked. It's easy to safeguard it with a

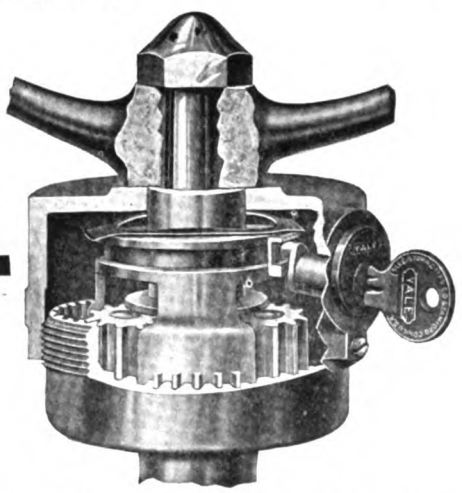
Masters
Steal-Proof Lock

This lock clamps the steering apparatus so that the front wheels cannot be used for steering. It's neat, convenient, cannot be picked, cannot be broken. You sell it over the counter. Easily installed by anyone. It can't lock accidentally for the locking bolt **rises** into mesh.

Sells for $6.50

Dealers write at once for terms, sample and literature. Thousands of Fords will be made safe for owners by this lock.





MASTERS MANUFACTURING COMPANY

68 Woolsey Square, Jamaica Plain, Boston, Mass.

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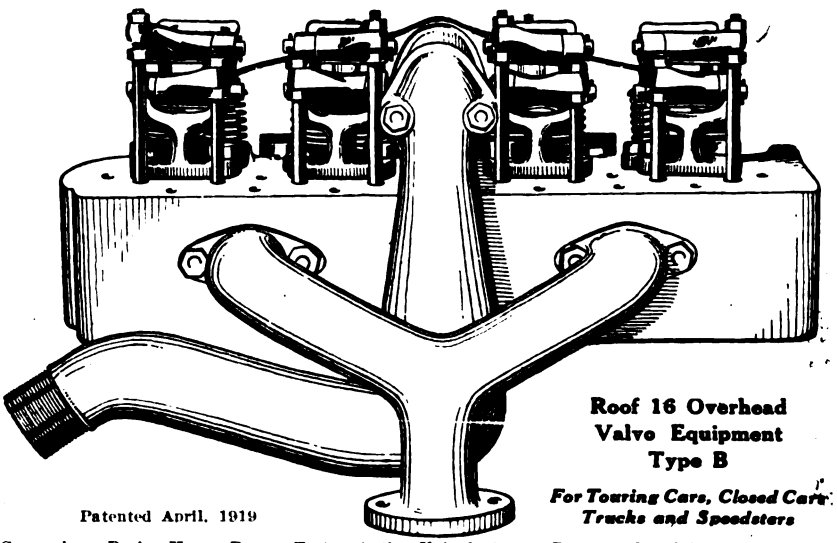
POWER and SPEED

Roof 16 Overhead Valve Equipment

FOR FORD MOTORS



Patented April, 1919

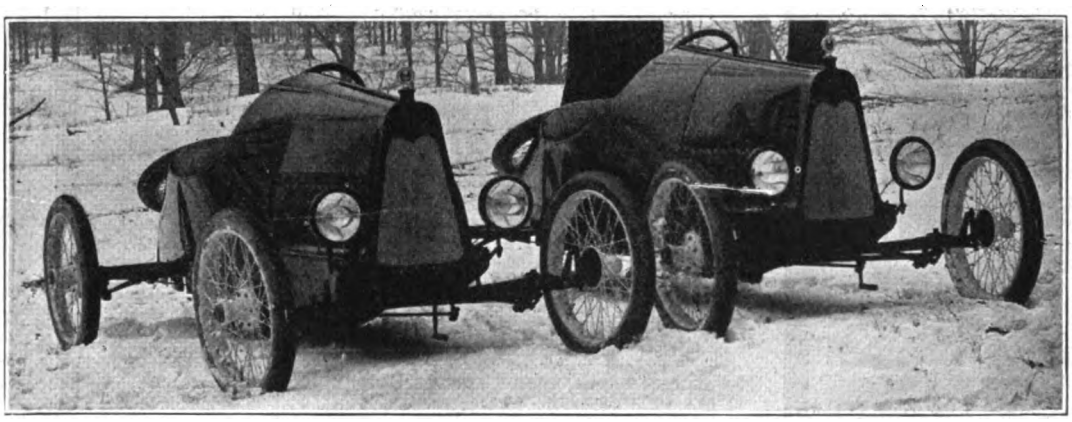
Roof 16 Overhead Valve Equipment Type B

For Touring Cars, Closed Cars, Trucks and Speedsters

The Most Remarkable Power Device, Even in This Inventive Age

Hill climbing for touring cars—pulling power through sand and mud—doubles the hauling capacity of converted Ford truck-speed for mile and half-mile tracks to rival the fastest cars built. Ford racing cars with our Cylinder Head Equipment and special racing parts have attained speeds from 80 to 100 miles per hour. Hill climbing and pulling power for touring cars, closed cars and trucks. Price, complete, $115.00 f. o. b. factory. Nothing extra to buy. Cylinder head equipment all ready for installation. It takes the place of the regular Ford Cylinder Head. Any mechanic can easily and quickly install it.

Comparison Brake Horse Power Tests at the United States Bureau of Standards gave Standard Ford motor with regulation carburetor 18.7 Horse Power. The same motor with 16 Valve Head and regulation carburetor 22.4 Horse Power. The same motor with 16 Valve Head and Special carburetor 29.7 Horse Power. Recent tests at Bureau of Standards with Type B gave 32 Horse Power. We are Manufacturers and Distributors of speed and other specialties for Ford cars; 3 to 1 gears, high speed camshafts, aluminite, light grey iron pistons, lynite pistons, aluminite connecting rods, racing spark plugs, racing carburetors, roller bearings, counterbalances, wire wheels, multiple speed transmission, high tension magnetos, special oiling system, special worm and gear, steering gear, racing tires, racing bodies, hood and radiator, parts for underslinging chassis. Tell us what you want. We can supply it. Racing quality. Lowest prices. Send for our Complete Literature on how to build fast cars and double the value of your converted Ford Truck and descriptive circular on Speed and other Specialties for Fords.



Our Famous De Luxe Racing Cars Price $1500

Ford Racing Car Speed Kings

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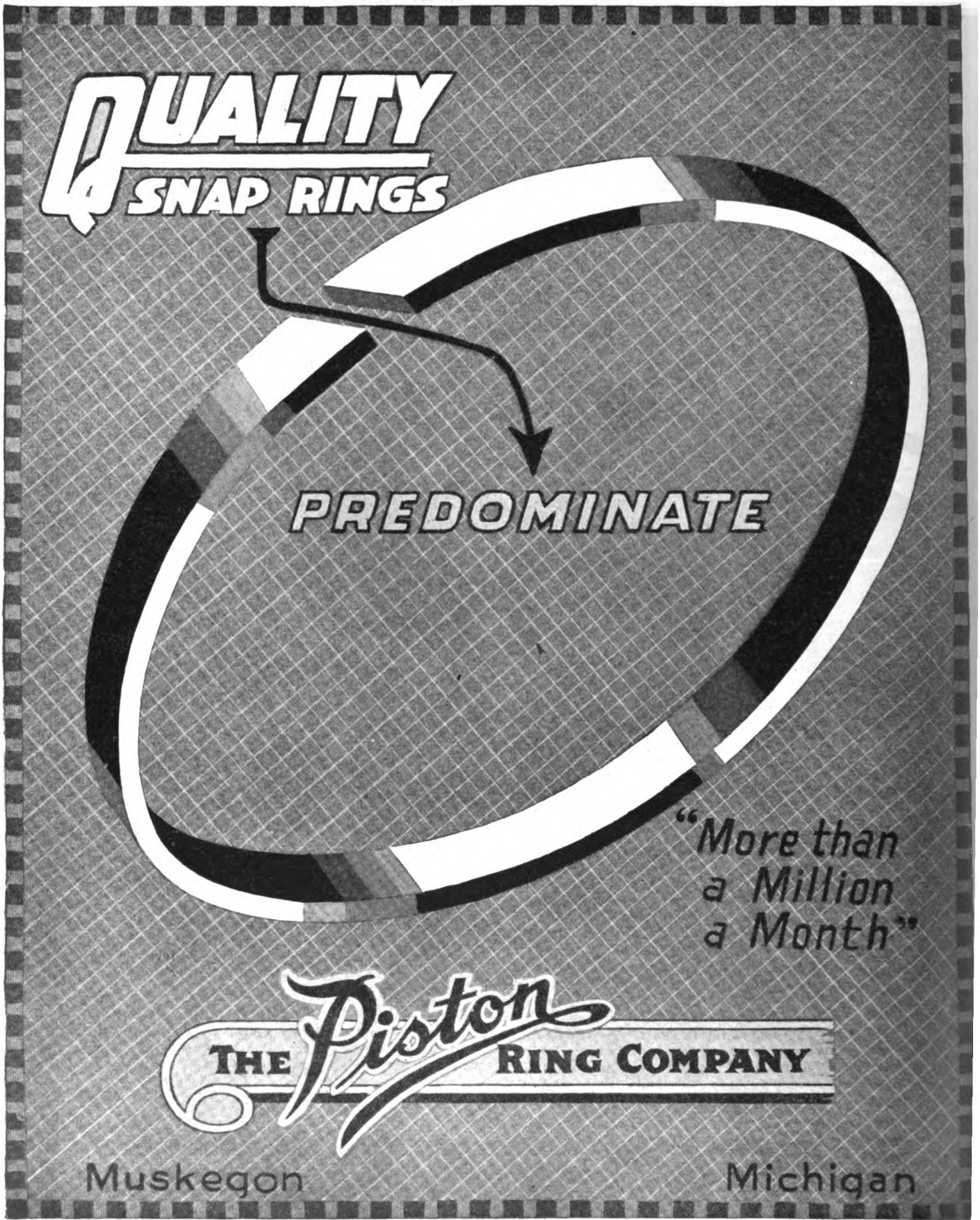

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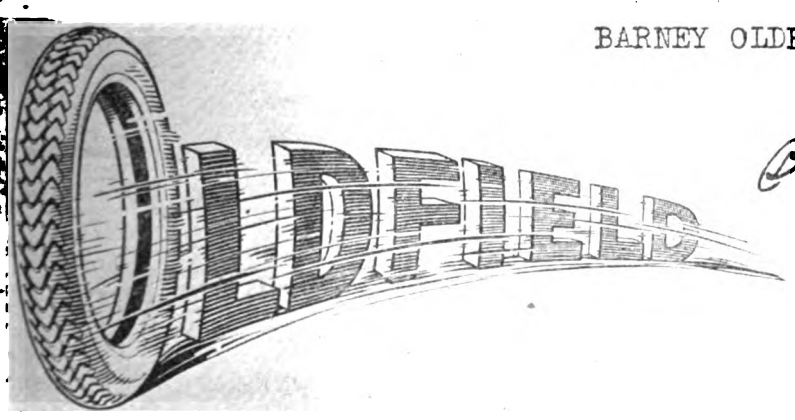
President.



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PATENTED JANUARY 14, 1913—PATENTED SEPTEMBER 8, 1914

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The Quickest and Strongest Garage Jack Made—as well as the Handiest

Main Jack lifts from 10½ inches to 24½ inches. Toe Extension lifts from 4½ inches to 15 inches. A Time-Saver and a Back-Saver in Garages, Service Stations, Paint Shops and wherever there is need for a Jack that will do heavy duty and stand up under it. Will lift under Springs, Axle or Hub. Will reach under Bumpers, Low Gasoline tanks, trunk racks and other hard-to-get-at places. One sweep of the 5-foot handle does the trick.

Excel Jacks, ready to ship, List Price $25.00

Liberal Discounts to the Trade.

Consumers will confer a favor by ordering through their Jobbers.

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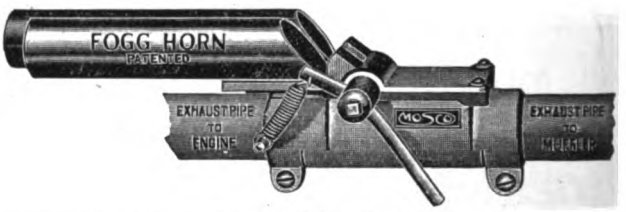
The BEST SIGNAL FOR FORD CARS



It does away with the Tail Pipe Problem because it is attached between the Engine and the Muffler. And so it makes no difference whether the FORD is of the Vintage of 1912 with **long tail pipe**—or a 1919 model with **no tail pipe.** The JERICHO-FOGG HORN blows loudly even when motor is running slowly. It throws the Sound **ahead of the car**—where its warning is most needed and where it can do the **most good.**

One size only—List Price $5.00—complete with all attaching accessories

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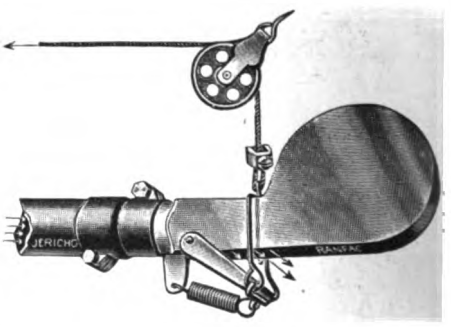

The Regulation JERICHO (Single Tone) and the JUBILEE Chime have the indorsement of careful drivers—because of dependability and performance.
Attached to Rear of Muffler. Operated by the Exhaust.

All sizes—List Price $5.00

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DO YOU get full measure of Gasoline Mr Ford Owner?

JOHN D. DEMANDS FULL MEASURE OF GASOLINE

Portsmouth, N. H., July 18.—[Special.]—John D. Rockefeller questioned the accuracy of a gasoline filling machine and the proprietor of a garage measured a sample gallon at his request, it became known here today, following the departure of Mr. Rockefeller and party for Tarrytown, N. Y.

When the four automobiles reached the motor mart last night Mr. Rockefeller ordered five gallons put into the tank of each. He watched the filling process, then summoned Mrs. R. C. Dickey, proprietress of the garage, and said:

"Madam, are you sure your pump delivers a full gallon to the stroke?"

"Absolutely," replied Mrs. Dickey.

"It does not look so to me," insisted Mr. Rockefeller. "Would you mind having it tested for me?"

"Not in the least," responded Mrs. Dickey, and, summoning a helper with a sealed measure, she directed him to measure the gallon delivered at each stroke of the pump. Mr. Rockefeller gave close attention, and noted that the pump delivered an exact gallon at each stroke. He smiled as he said:

"It's the first pump I've seen which is accurate for several days. Thank you."

WIFE CONFIRMS

The STANDEX Gasoline Gauge INSURES IT!

¶And this Infallible Gauge does more than check overcharge for gasoline;

—It checks your Gasoline-Mileage.

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—Tells you, instantly and always, how much "Gas" you have in your tank to run on to where you want to go. Only pay attention to the dial——in plain sight alongside filling-hole of your gasoline tank—and never again need you stall on the road with an empty tank, and then hike weary miles to get a quart or so.

¶This Sure and Certain Fuel-Meter is unique in its absolute accuracy.

—Unique in being graduated to contour of cylindrical tank (NOT merely to depth).

—Installed in a moment, good for years of service.

—Fits into filling-hole; never need be removed.

¶If your dealer is not a STANDEX DEALER, send us his name with your order, and Gauge will be shipped prepaid.

¶ Try it 30 days. If it is not absolutely satisfactory, return it. Money will be refunded.

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ENDS ALL GUESSWORK

Standex Automatic Lubricating System Solves Your Biggest Problem

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Prevents Carbonized Cylinders, Fouled Spark Plugs, Smoke, Overheating.

Gives a Traveling Range of 800 to 1000 miles, without a worry on Single Filling of Reservoir.

"Solve the problems of lubrication, and you have solved seventy-five per cent of the difficulties you may have with motor cars." "FORD TIMES." May, 1915.

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TRADE MARK

IN YOUR GASOLINE

AND GET

MORE POWER WITH LESS GAS
MORE MILES AT LESS COST

CARBON ELIMINATION AT NO COST

FOR

Automobiles—Trucks—Tractors or other Gas Engines.

GUARANTEED To Contain No Insoluable Matter or Clogging Sediment.

$2.50 FOR A QUART CAN

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Positive Saving Equal to 30 Gallons

SPECIAL ADVERTISING OFFER

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618 BULLETIN BUILDING, PHILADELPHIA, PA.

THE LASTING FINISH

Panvar

TRADE MARK

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A lustrous, lasting, transparent liquid to take the place of varnish, beats varnish in lustre, lasts quite as long, is self-leveling, not said to be, but actually is, for Panvar is as thin as water, so it can level itself and not show brush streaks, but when it dries it dries harder than varnish—free from stickiness, can be used on the metal, wood, seats, tops and plated parts—of itself Panvar can not turn white, creamy or craze—it's a lasting, livening up preparation that has varnish beaten in a hundred ways—ANY NOVICE FOLLOWING SIMPLE INSTRUCTIONS CAN APPLY WITH ASSURANCE OF SUCCESS.

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If there are bruised places in the ground coat of paint, buy a tube of our FIX-A-MAR color to touch up the marred parts. at $1.00 per tube delivered. SEND STAMP FOR COLOR CARD.

TWO QUARTS ENOUGH FOR LARGE CAR

If finish is much worn, two coats may be necessary. Easy proposition for anyone, so why neglect your car, or pay a big bill for an expensive repainting job.

SEND $1.50 for ONE, 3.00 " TWO, 5.50 " FOUR QUART

WE PAY PARCEL POST CHARGES

Add 25c per quart to points west of Rockies.

SMALL TEST SAMPLE 25 CENTS

THE PANVAR CO., 618 Bulletin Bldg., Philadelphia, Pa.

Send by express or parcel post paid.....quarts.

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Address.....

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THE ACCESSORY AND GARAGE JOURNAL
Index to Contents

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It means absolute satisfaction to users. OMAR and LIBERTY tire dealers will advise you that these tires will deliver full service mileage and the purchaser will receive full value.

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have proved that they are the very best that can be made. They stand the hardest service—never letting go. They are made from the best grade of steel—30 to 40 point carbon, drop forged. The babbitt is a scientific combination, requiring the least amount of lubrication and giving the maximum amount of wear. You'll make satisfied customers with these connecting rods. Others may cost slightly less, but the difference in quality is so apparent that business judgment dictates your using the Oro.

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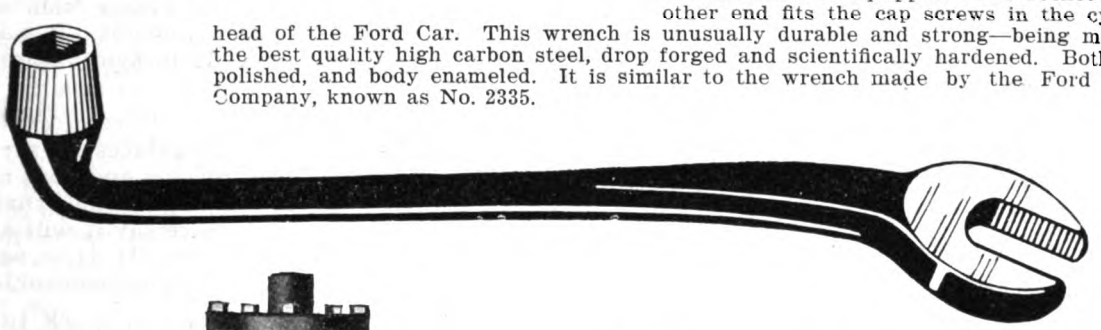
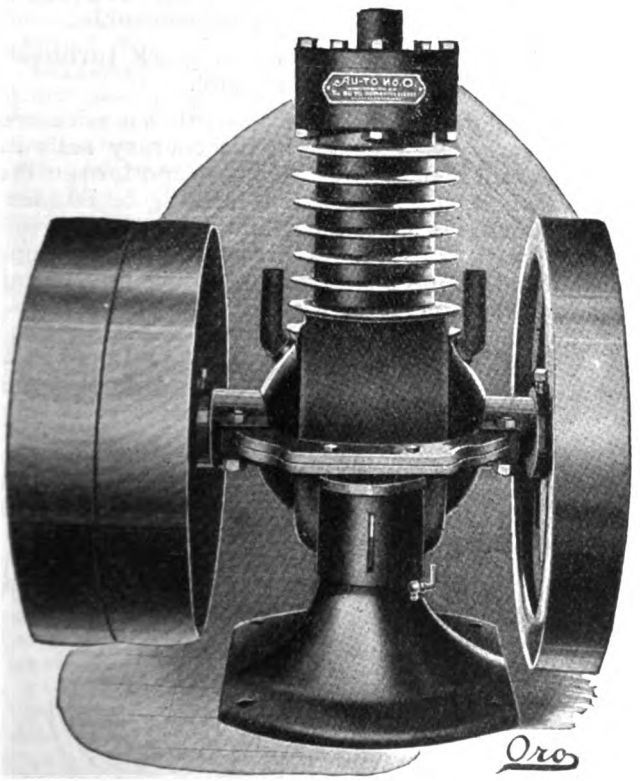
For Spark Plugs and Cylinder Head Bolts

Fits the Champion X Spark Plugs, with which the Ford Car is equipped. The socket at the other end fits the cap screws in the cylinder head of the Ford Car. This wrench is unusually durable and strong—being made of the best quality high carbon steel, drop forged and scientifically hardened. Both ends polished, and body enameled. It is similar to the wrench made by the Ford Motor Company, known as No. 2335.





10 Years of Success Back of this Sturdy, Reliable Compressor

This is No. 0 Au-to Compressor, one of the most popular of the world famous line of Au-to Compressors. No. 0 is designed especially for automobile garages, and will produce 6½ cubic feet of air a minute, at 300 pounds pressure. It is simplicity itself—requires practically no attention—and has nothing to get out of order. Ten years of satisfaction prove its high quality. Au-to Air Compressors are known everywhere as the best—and this is one of the most popular because of its suitability for use in the ordinary sized garage.

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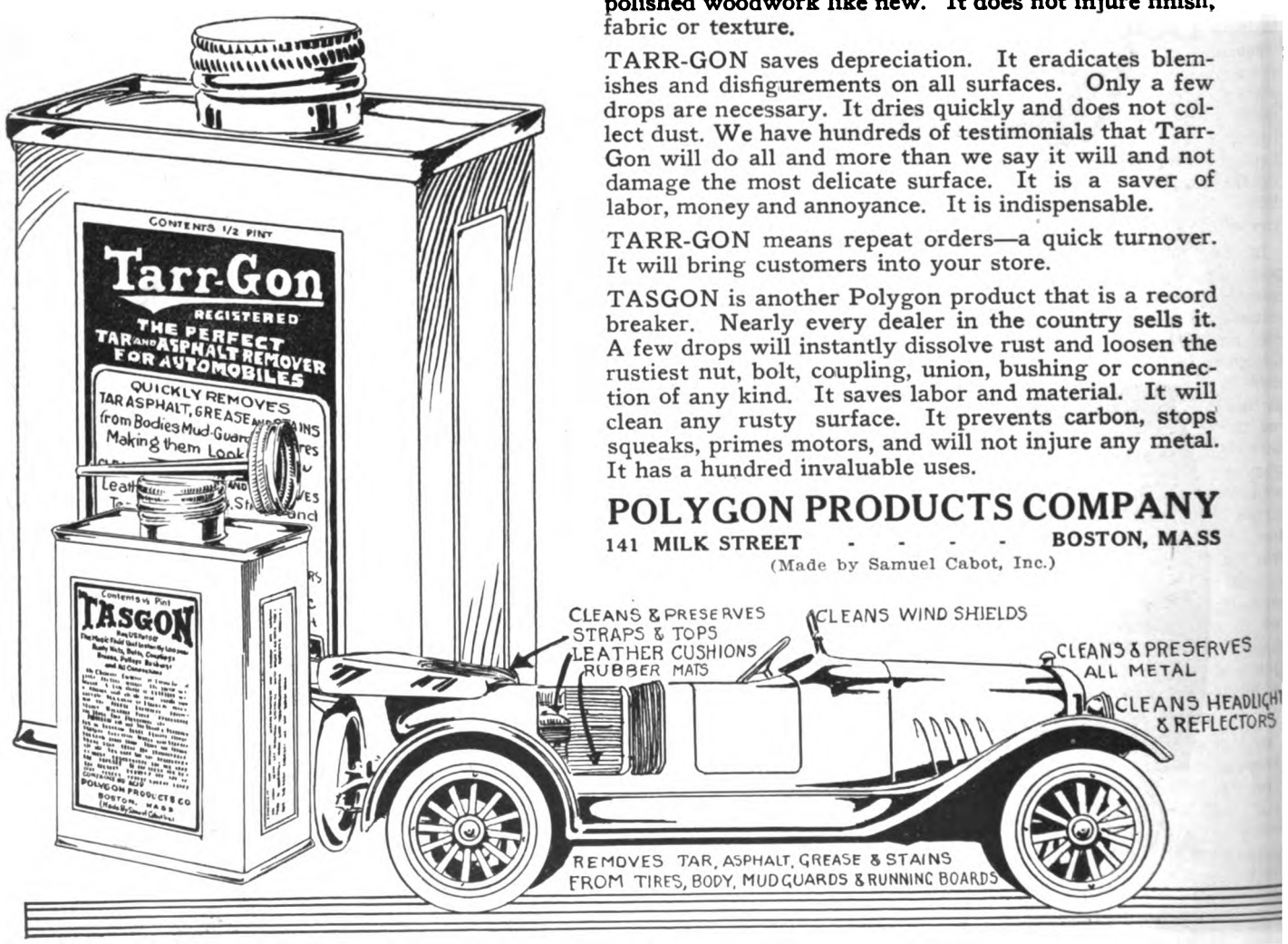
(Made by Samuel Cabot, Inc.)



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The ACCESSORY and GARAGE JOURNAL

VOL. IX. PAWTUCKET, R. I., SEPTEMBER, 1919 No. 5

Jewett Sees Fine Outlook For Industry

Believes Big Export Demand Will Keep Auto Plants Here Very Busy.

H. M. JEWETT, president of Paige-Detroit Motor Car Co., is a firm believer in the future prosperity of the automobile industry. He thinks that in addition to enormous domestic business which will keep the automobile manufacturers of this country busy for at least a year, large export demand will develop which they cannot attempt to handle. In line with his beliefs, Paige-Detroit is building an additional plant at Detroit, which, it is estimated, will permit the doubling of this year's output in 1920. The company also plans to increase its output of trucks.

In an interview, President Jewett points out that demand for cars in many instances was five times the ability of the manufacturers to make deliveries. This does not take into account demand from foreign countries. "While I concede that there is today a marked discrimination, particularly in France, England, Belgium and Italy, against American cars, I believe that it is only a question of time when the pressure of the demand for automobiles which foreign manufacturers cannot supply will overcome this prejudice, and our product will be admitted into Europe on more favorable terms," he said. "The war has demonstrated the necessity of the automobile to Europe and it wants thousands of cars. Machinery purchased by Europe for making sheets is in most cases not practical for production of cars."

Can't Handle Exports.

Mr. Jewett emphasized that as yet American manufacturers are not in a position to take advantage of foreign business, but are simply shipping a small amount of cars abroad to maintain their agencies and for advertising purposes. "Only last week," he said, "we received from England a single order which exceeds our estimate of what our English

(Continued on Page 22.)

Motorists Are Robbed At Many "Gas" Pumps In New York State

Survey Shows Nearly Half of Measuring Devicec for Gasoline to Be Inaccurate.

SHORT MEASURE delivered by gasoline measuring pumps causes a considerable loss daily to thousands of automobilists in New York State, according to a report made public by Commissioner Eugene H. Porter, of the Division of Foods and Markets, at Albany, following a Statewide survey carried on by the Bureau of Weights and Measures in conjunction with city and county sealers. Out of 1,100 gasoline measuring devices tested, 535 indicated shortages ranging from one-half pint to one quart on a five gallon delivery, and in a few instances sealers found shortages running from two quarts to as high as two gallons.

Machinery Unreliable.

In a large majority of short deliveries there was no apparent intent on the part of pump owners to defraud, the report says. Rather the shortage is ascribed to carelessness or unreliable machinery. Carelessness may be evidenced in various ways, but interest in the transaction on the part of the motorist will do much to establish better and more uniform service. To insure himself against shortage, the motorist should watch the operator to see that he makes a full stroke when operating the pump. If the machine bears an indicator showing the quantity as delivered, this also should be closely observed. The delivery hose should in all cases be drained since it is likely to contain from one to two quarts of gas.

Responsibility rests with the pump owner for maintaining his machine in a state of accuracy. In many cases a pump may be inspected by a weights and measures official and found to be operating correctly, but upon his return within a month it may show a shortage and prove to be wholly undependable. In one instance investigation was made on complaint of a tourist, who asserted he had received four gallons of gasoline instead of five. When the facts of the

(Continued on Page 22.)

Steel Strike May Close Auto Plants

Manufacturers Have Limited Reserves—Equipment Shops Hard Hit.

JUST what effect the steel strike will have on the automobile industry and trade is not yet known, but fear is expressed that it will only tend to add to the present shortage of cars. One close observer predicts that for every week the strike lasts there will be two and perhaps three weeks delay in the output of the motor car factories when, the coming winter, they should be at the peak of their production.

The motor vehicle industry is most intimately associated with the steel industry and is wholly dependent upon it, because no car or truck can be manufactured without steel, and modern methods of production cannot be carried on for any length of time without a most abundant supply of the finest grades of steel.

Even though an automobile factory may have a fair supply of steel on hand, it cannot continue very long without encountering trouble because of the shortage of supply of some accessory or equipment manufacturer. This fact was clearly demonstrated some months ago during strikes in equipment and accessory factories.

Pessimistic Reports.

Reports coming from automobile centers indicate that some automobile manufacturers face the steel strike with a totally inadequate supply of steel on hand. Reserves are said to be so low in many factories that if the strike of the steel workers continues for many weeks these factories will have to shut down altogether. A few plants have enough material to last them 60 days, but most of them are not provided with over a month's supply.

At the time of the armistice in November passenger car manufacturers had practically discontinued their normal work and were prepared to enter exclusively upon the production of war supplies. The truck factories were produc-

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ing very few vehicles except for the government. Peace came at just about the time that the automobile industry usually places its orders for steel for the next season's production.

Steel would, under ordinary conditions, have been bought last January for the cars and trucks to be built this fall and winter. But prices were very high then and there was a prospect that the government would fix a lower scale, so purchases were not made.

Unable to Get Surplus.

The automobile industry waited until May and June for the reduced prices of steel. Then contracts were made, but the demand for motor vehicles has been so large and supply of steel so restricted that the automobile industry has been able for the last two months or so to obtain only enough material to keep the factories going and has been unable to accumulate a surplus.

The precipitation of the steel strike, therefore, found the automobile and the parts and accessory makers wholly unprepared and when the present supply they have in the warehouses is exhausted there cannot be any further production of passenger cars and trucks. Even if the steel strike does not last very long or does not assume sufficient proportions to prevent making of some steel, the automobile industry will feel the effects in curtailed construction of vehicles during the winter months, when a supply should be accumulating to take care of the spring demand.

It is the consensus of opinion that the steel strike has put off for another season the anticipated catching up of the automobile industry with the demand. The circumstances will make for further advances in the prices, it is believed, and many are looking forward to higher lists on the models that will be offered for the spring trade than the existing lists, most of which have been boosted since last winter.

APPEAL FOR FREIGHT CARS.

The National Automobile Dealers' Association has appealed to Walter D. Hines, director general of railroads, to aid car manufacturers in getting freight cars. "Reports indicate serious loss to automobile dealers because manufacturers are unable to get freight cars," states a telegram sent to him. "Great hardship is being occasioned to thousands of dealers whose expenses can only be met by delivering automobiles."

WINTER BODIES SCARCE.

Winter bodies for automobiles are mighty hard to get. Through strikes and high wages the bodies will cost a great deal more than formerly. Everything that goes into the manufacture of closed bodies is said to be months behind.

SPARE PARTS WARNING.

Because of the steel strike, service and garage men are cautioned to get in whatever supplies of spare parts they may need for the next few months.

Jewett Sees Splendid Future For Industry

(Continued from Page 21.)

business would amount to for a full year."

The new plant now in course of construction at Detroit will be ready for operation about Jan. 1, and covers 47 acres of ground. With this plant in operation, Mr. Jewett estimates the company in 1920 will turn out from 33,000 to 35,000 cars, exclusive of trucks, or double the output of this year. In an earlier estimate of 1919 output, officials of the company placed the production at about 17,000 cars, but Mr. Jewett now figures that, barring any tying up of the industry due to the steel strike or other causes, this estimate can be bettered by from 1500 to 2000 cars. This would bring 1919 production close to 19,000 cars, compared with 15,000 in its banner year 1915.

Effect of Steel Strike.

Mr. Jewett does not expect the steel strike will affect the automobile industry to any extent unless it is prolonged and shut down of the mills for two months or more develops. He pointed out that automobile companies on an average carry three months' supplies of raw materials on hand. Paige-Detroit is stocked with raw materials sufficient to carry it for 90 days.

Paige-Detroit is planning to turn out trucks on a large scale. Preparations made under government supervision to manufacture trucks for the army just before the ending of the war place the company in good position to extend this profitable end of the business. Last October the company had an order for 20,000 trucks from the government on its books, but this was cancelled on the signing of the armistice. Mr. Jewett believes motor trucks will eventually carry a good part of the short haul freight, being in a position to carry it cheaper than the railroads can.

Pumps Inaccurate

(Continued from Page 21.)

case were brought out it was found that the pump had been previously run into by a truck, yet the owner had continued its use without testing or readjustment. Other cases of neglect, the statement says, often result in an equally unfair deal for the motorist.

It has been found, for example, that if the gas pump stands idle for any length of time, its first delivery is invariably short, due to the gasoline's leaking back through the check valve into the supply tank. This condition can be noticed by one not familiar with the operation of the pump by watching the operator. If a nearly complete stroke is made before gas begins to flow into the auto tank, it is evident that short measure is being delivered. Again, short delivery of gasoline is likely to occur if operators continue to operate the pump when gas is low in the supply tank. In this case the pump delivers air instead of gas, and the practise is easily noted by the sound.

It is altogether possible that the operator is frequently unaware of the vagaries of his apparatus, and it is certainly true that he pays too little attention to its accuracy. It is the purpose of the Bureau of Weights and Measures, however, Commissioner Porter says, to undertake a vigorous campaign for impressing pump owners throughout the state with their responsibility, and to insist that they shall test their dispensers at least once every day. To do this, owners must supply themselves with a standard five gallon measure—a smaller measure is impracticable since differences are minimized on a lesser quantity. The operator who tests each day is living up to his responsibility, and motorists patronizing him can therefore place some confidence in his measurements.

It is estimated that there are approximately 3,500 gasoline measuring devices in the State of New York, excluding New York City. It is a physical impossibility for the local sealers of weights and measures to watch every transaction that takes place. Automobile owners must therefore assist in watching the gasoline pump operator if the general standards of gas measuring practice are to be raised and the motorists' rights upheld. Incidentally this will mean protection to the scrupulous pump operator in his competition with those who have fallen into careless methods.

All complaints registered either with local sealers or with Dr. Eugene H. Porter, State Division of Foods and Markets, Albany, will be duly investigated.

RAISE PRICES OF FORDS WITH EXTRA EQUIPMENT.

The Ford Motor Co. has raised the prices for the sedan and coupe $100 each to cover the self-starters and demountable rims as standard equipment, making the sedan price $875 and the coupe $750. On the touring car and roadster the starter and demountable rims are optional and without them the prices remain the same—$525 for the touring and $500 for the roadster. For the starter $75 extra is charged and for the rims $25.

RAILROAD CAR SHORTAGE BOOSTS SALES OF TRUCKS.

Railroad car shortage has had a favorable effect on motor truck sales. In August the sales of Mack trucks increased 64 per cent. over those for July and big gains were also made for September. Other truck makers also reported increased sales.

RECORD FOR CHANDLER.

Chandler Motor in the third week of this month made its record shipment of 701 cars. This is at the annual rate of nearly 36,500 cars.

BOOM FOR USED CARS.

The steel strike is expected to prove a big boom for the used car, because of the probability that there will be a greater shortage of new cars than ever.

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THIS DEALER LOOKS UPON BUYERS OF AUTOMOBILES AS "CLIENTS" AND NOT AS "CUSTOMERS."

A Massachusetts dealer who has been in business several years says:

"We regard those who buy cars from our company as 'clients'—not as mere 'customers.' Our interest in them is not only when they are buying, but throughout the entire year. We want to keep in close touch with them so that when they are ready to buy a new model they will not think of going anywhere else to place the order.

"When we sell a car we make certain that the buyer gets all the information possible about the operation and upkeep of the vehicle. We impress upon him that if anything goes wrong he should notify us immediately. If we do not hear from him we send him quarterly circulars politely inquiring how the car is running.

"If we can do him any little favor we are only too glad to do so. We give him the maximum of service to which he is entitled. Our experience has been that they do not impose upon us. If the car breaks down due to their own fault they never complain at paying a reasonable bill for the repairs in our service station.

"Give the car owner a square deal and he will reciprocate. It pays mighty well to deserve confidence."

ALLEN MOTOR CO. PUTS PEP INTO NEW CATALOGUE.

The Allen Motor Co. is very progressive in its advertising policy. It has issued a new advertising catalogue that is a through and through offset job in five colors—quite a departure from the regular method of printing automobile catalogues by the letter-press process. By employing the offset process of printing the company is able to use a very durable stock. This catalogue will wear for months and months without any breaking of the paper, as is the case of enameled stock, where unsightly white seams show in the color work at the folds. The envelope in which the catalogue comes carries a new kink in the window in back. The opening permits the dealer to stamp his name and address on the catalogue without having to remove it from the envelope. Dealers the country over are complimenting the completeness of this catalogue.

Dealers Should Use Advertising Helps

Many small accessory dealers put a few articles into the window and let them stay there for an indefinite time. They never bother to change the display. The handsome "Dealer Helps" that come from the manufacturers and jobbers are tossed into the back room.

These dealers make a big mistake. The manufacturers spend great sums in having these "Dealers Helps" made, and they would not go to this expense if they were not satisfied that the helps would prove of real value to the dealer.

The helps, both for window and counter displays, should be utilized, as they will bring in much business, besides adding to the general attractiveness of the store.

PROGRESSIVE DEALERS KNOW THE VALUE OF TRADE ADVERTISING.

The live wire dealer or garage man reads all of the advertisements in the automobile trade journals.

When he sees something advertised that he believes he can handle at a good profit he writes to the advertiser for his proposition.

In this way he keeps fully informed of all the new offerings of the manufacturers and jobbers and manages to get in the new goods before his competitor wakes up.

If you see something advertised that appeals to you, sit down and write for further details. Don't wait for your competitor to get it ahead of you.

PLENTY OF BUSINESS.

If business isn't good with you, find out why. Motorists are spending vast sums of money for accessories these days, and you ought to get your share of this business. See what the other accessory dealers in your town are doing. Never mind worrying about high prices, for people have plenty of money and are spending it liberally. Car owners never spent more than they are now putting out for accessories and equipment.

COLUMBUS VARNISH CO. PROVIDES DEALERS WITH SALES HELPS THAT MOVE GOODS.

The Columbus Varnish Co., Columbus, O., goes the limit in extending cooperation to the dealer. The company, besides being a progressive advertiser, provides many decidedly attractive "Dealers' Helps." One of its latest offerings is a very neat window sign in seven colors, 16½ by 25, showing half of a wheel with the spokes colored to show the different colors of varnish. Other helps include two cut-out reproductions of the lithographed can, 14 by 21; four reader streamers, 6 by 42; two side streamers showing use of goods, size 10 by 10, and a center design, 26 by 40 inches. These helps will fit into any window display and will command attention. Any dealer handling the Peerless Automobile Specialties should take advantage of the company's offer to send these. The company impresses upon the dealer these selling points: "Highest quality possible to make," "Sold in attractive lithographed cans," "Each can has friction top," "Convenient," "Sold by garages, dealers, jobbers throughout the world."

"LOTAPEP" IS GOOD PROPOSITION FOR JOBBERS AND DEALERS.

"LotApep" is the name of a powerful gas energizer produced by the Panvar Co., Bulletin building, Philadelphia, and dealers and jobbers who have taken it on report that it is producing splendid returns. "LotApep" is for automobiles, trucks, tractors, motorcycles, motor boats, aeroplanes or engines, and the maker claims that it "puts back into the gas pep the refinery took out." The product is guaranteed to contain no insoluble matter or clogging sediment. It sells for $2.50 a quart. Jobbers and dealers who are interested should write to the Panvar company for its attractive proposition.

"THE LITTLE SALESMAN."

"The Little Salesman," a dealer's confidential illustrated net price list for automobile and truck supplies, is issued by the New England Mills Co., 1219-1221 Michigan Boulevard, Chicago. This is a publication that is crowded with pep and dealers who receive it appreciate its worth. Write for a copy.

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Space For Jobbers' Exhibition Is Over-Subscribed

Commissioner Webster Announces That Every Indication Points to Show Being Most Successful and Interesting Ever Held

INTEREST in the exhibit to be held under the auspices of the Automotive Equipment Association in the Temple in Chicago, Nov. 3 to 8, has already passed the most sanguine expectations of the committee in charge of arrangements, and there is every indication that the affair will be the most interesting one of its kind ever held.

The space in the Temple has been largely over-subscribed, and it is a matter of regret that the Temple has not a greater capacity in order that applications for space still coming in might be taken care of. The committee has been forced to open up the space on the stage to care for the earlier of the late applicants, although this space was not to be utilized under the original plan.

"This exhibit seems to have struck a popular chord and to have met a long felt want," announces Commissioner William M. Webster in behalf of the committee. "The financial success of the enterpraise has long since been assured beyond any doubt; in fact, that phase was never in doubt for a moment. But the pluck, spirit and enterprise which the manufacturers have entered in this matter and in taking hold of the project reflects great credit on them and is one typical of the wide-awake and progressive industry that they are engaged in.

"All that now remains is the staging of the exhibit by the Atlantic Decorating Co., whose reputation for unique accomplishment in this matter is too well known to need comment, so that when the great doors of the Temple swing open on Nov. 3 all that will be left to crown this initial movement and exhibit with the wonderful success it so largely deserves is to have the jobbers come forward and lend it their support and encouragement.

"Present advice and indications are that they will not be wanting, and when the curtain rings down on this magnificent setting on the day of the final adjournment, in the spirit of good fellowship and on the throne of success, the manufacturer and the jobber each may say to the other, 'Well done, thou good and faithful friend, and as we have met with such great success and in the midst of plenty, may we hope for greater success in 1920.'"

The Congress Hotel has been selected as headquarters for the delegates attending the convention. The hotel management has promised to take care of the entire delegation, providing reservations are made with as little delay as possible with John Burke, manager.

The following will have exhibits in the Temple:

Victor Manufacturing and Gasket Co., Chicago; Auto Metal Parts, Co., Des Moines, Ia.; Edison Lamp Works of General Electric Co., Harrison, N. J.; Higgins Spring and Axle Co., Racine, Wis.; Advance Automobile Accessories Corporation, Chicago; Marvel Accessories Manufacturing Co., Cleveland, O.; Hall-Thompson Co., Hartford, Conn.; Shurnuff Manufacturing Co., St. Louis, Mo.; Perkins-Campbell Co., Cincinnati, O.; Columbus Varnish Co., Columbus, O.; Albertson & Co., Sioux City, Ia.; B. & W. Manufacturing Co., Chicago; Hawthorne Co., Bridgeport, Conn.; Black & Decker Manufacturing Co., Baltimore,

WILLIAM M. WEBSTER.
Commissioner of the Automotive Equipment Association.

Md.; Packard Electric Co., Warren, O.; E. V. Hartford, Inc., Jersey City, N. J.; Sinclair Refining Co., Chicago; General Asbestos and Rubber Co., Charleston, S. C.; Nu Back Manufacturing Co., St. Louis, Mo.; Double Fabric Tire Co., Auburn, Ind.; Jefferson Electric Manufacturing Co., Chicago; Goodrich-Lenhart Manufacturing Co., Philadelphia; Rowe Calk and Chain Co., Hartford, Conn.; Gray & Davis, Inc., Boston, Mass.; Motor Parts Co., Philadelphia; Indiana Lamp Co., Connersville, Ind.; A. R. Mosler & Co., Mt. Vernon, N. Y.; McQuay-Norris Manufacturing Co., St. Louis, Mo.; Champion Spark Plug Co., Toledo, O.; A. Nelson Manufacturing Co., Chicago; Gates Rubber Co., Denver, Col.; H. & D. Co., Inc., Goodland, Ind.; Thermoid Rubber Co., Trenton, N. J.; L. H. Gilmer Co., Philadelphia; Standard Woven Fabric Co., Walpole, Mass.; Allen Auto Specialty Co., New York; Peters & Herron Co., Columbus, O.; E. Edelmann & Co., Chicago; Corcoran Manufacturing Co., Cincinnati, O.; Van Cleef Bros., Chicago; Weaver Manufacturing Co., Springfield, K-D Lamp Co., Cincinnati, O.; Walden-Worcester, Inc., Worcester, Mass.; Sharp Spark Plug Co., Cleveland, O.; Hill Pump Valve Co., Chicago; Judd & Leland Manufacturing Co., Clifton Springs, N. Y.; Apco Manufacturing Co., Providence, R. I.; Coe-Stapley Manufacturing Corporation, Bridgeport, Conn.; Sunderland Manufacturing Co., Chicago; Van Briggle Motor Device Co., Indianapolis, Ind.; Sterling Manufacturing Co., Cleveland, O.; E. A. Cassidy Co., New York; Arrow Grip Manufacturing Co., Glens Falls, N. Y.; Davies-Young Soap Co., Dayton, O.; Metal Specialties Manufacturing Co., Chicago; Northwestern Chemical Co., Marietta, O.; Fulton Co., Milwaukee; Atwater Kent Manufacturing Works, Philadelphia; K-W Ignition Co., Cleveland, O.; C. A. Shaler Co., Waupun, Wis.; H. W. Johns-Manville Co., New York; Macbeth-Evans Glass Co., Pittsburgh; Kellogg Manufacturing Co., Rochester, N. Y.; X Laboratories, New York; Challoner Co., Oshkosh, Wis.; Imperial Brass Manufacturing Co., Chicago; J. & B. Manufacturing Co., Pittsfield, Mass.; Champion Ignition Co., Flint, Mich.; American Chain Co., Bridgeport, Conn.; Splitdorf Electrical Co., Newark, N. J.; Anderson Electric Specialty Co., Chicago; Metal Stamping Co., Long Island City, N. Y.; Western Manufacturing Co., Oskaloosa, Ia.; Gemco Manufacturing Co., Milwaukee, Wis.; Mayo-Skinner Manufacturing Co., Chicago; Heiser Special Tool Co., Kingston, Mo.; Dayton Wire Wheel Co., Dayton, O.; Motor World, New York; Dole Valve Co., Chicago; Beneke & Kropf Manufacturing Co., Chicago; Federal Rubber Co., Cudahy, Wis.; New Era Spring and Specialty Co., Grand Rapids, Mich.; Pyrene Manufacturing Co., New York; Klaxon Co., Newark, N. J.; Copeman Laboratories, Inc., Flint, Mich.; Clover Manufacturing Co., Norwalk, Conn.; Interstate Electric Co., New Orleans, La.; Durkee-Atwood Co., Minneapolis; Van Sicklen Speedometer Co., Elgin, Ill.; Badger Manufacturing Corporation, Milwaukee; Milwaukee Auto Engine and S. Co., Milwaukee; Tuthill Spring Co., Chicago; J. H. Haney Co., Hastings, Neb.; Bonney Vise and Tool Works, Allentown, Pa.; Frank Mossberg Co., Attleboro, Mass.; Spencer Metal Products Co., Spencer, O.; Pennsylvania Piston Ring Co., Cleveland, O.; Romort Manufacturing Co., Chicago; Wire Wheel Corporation of America, Buffalo, N. Y.; Stiles-Gilliland Manufacturing Co., St. Louis, Mo.; Russell Manufacturing Co., Middletown, Conn.; Motor Specialties Co., Waltham, Mass.; Moto Meter Co., Boston; Central Brass and Fixture Co., Springfield, O.; E. A. Laboratories, Inc., Brooklyn, N. Y.; Stevens & Co., New York; Burd High Compression Ring Co., Rockford, Ill.; National Standard Co., Niles, Mich.; Paul G. Niehoff Co., Chicago; Chas. O. Tingley Co., Rahway, N. J.; Brunner Manufacturing Co., Utica, N. Y.; Gardner Governor Co., Quincy, Ill.; Atlas Specialty Manufacturing Co., Chicago; Silvex Co., South Bethlehem, Pa.; Edgar C. Guthard Co., Chicago; Au-To Compressor Co., Wilmington, O.; Inland Machine Works, St. Louis, Mo.; Continental Piston Ring Co., Memphis, Tenn.; L. P. Halladay Co., Streator, Ill.; Walker Manufacturing Co., Racine, Wis.; Curtis Pneumatic Machine Co., St. Louis, Mo.; Howe Lamp and Manufacturing Co., Chicago.

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How The Accessory Dealer May Win Trade

Effective Ways of Overcoming Competition from the Department Stores and Mail Order Houses—Importance of Window Display in Success of Business

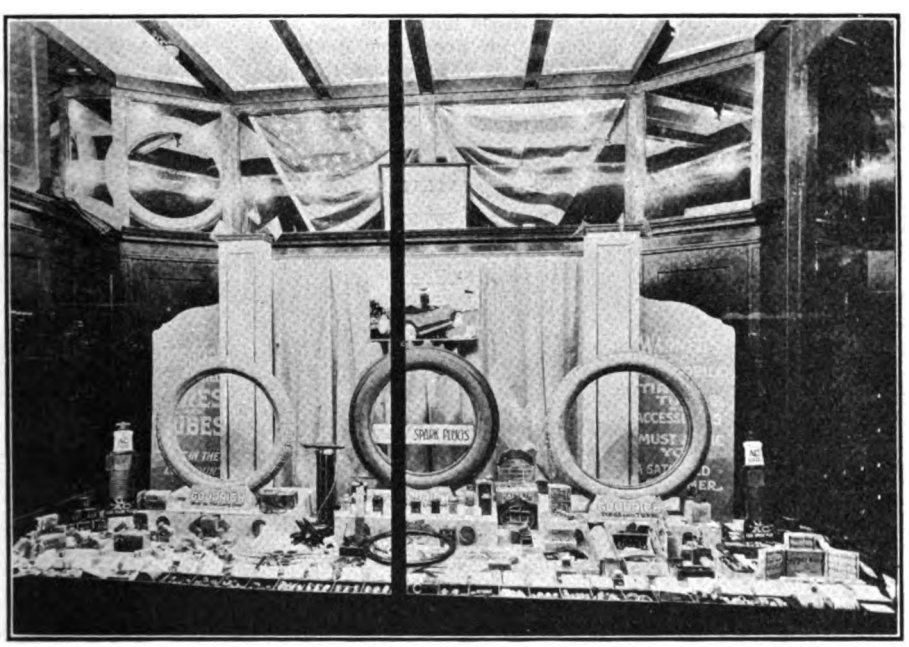
By WALTER ENGARD.

THERE are only two really important problems which confront the retail merchant and these are buying and selling. The success of any business depends very largely upon these two phases and each is of great importance. It is a question just which is of the more importance at the present time.

Some view buying as the most important factor in successful merchandising, arguing that the stock that goes into the store is the food upon which the business strength is built, and that the methods of selling, important as they are, only go to dispose of that which is purchased. This is true. Buying is the very first requisite of a successful business and no merchant can hope to overcome the handicap of poor buying sufficiently to operate his business under the present conditions with even moderate success.

It is, therefore, important that the merchant be a good buyer. Without belittling the importance of good buying, I sometimes think that buying is usually overstressed under the delusion created by that old adage that "goods well bought are half sold." But what of the other half of the sales operation that remains? Goods half sold are no better than goods unsold if sale is not completed.

The buying of the goods is merely the first half of the transaction, and, important as it is, it does not complete the transaction. The half that remains, that of actually selling the goods, is by far the more important part of the transaction. And while there is much truth in that old maxim that "goods well bought are half sold," it should go without saying that "goods all sold were well bought." The mere fact that the goods were well bought does not sell them, although goods well bought are much easier sold.



This Window Display Resulted in Many Sales Being Made.

Almost any merchant who has provided his business with a proper system of buying records can buy goods if he has the market or outlet for them, but not so with the selling end of the business. Selling covers a multitude of activities and many a good buyer has gone down to ruin because he could not cover the selling end of the game.

The main problem before the accessory dealer during these days of keen competition is to sell, not merely to have on hand those articles for which his customers may call, but he must put up a strenuous fight for business, not because business does not exist, but in order that he may get his full share of the business.

There never was a field which offered such opportunities for building up a large and successful business as does the accessory trade. The automobile is just coming into its own. Every year will see a big increase in the use of the automobile and motor truck. The demand for automobiles is larger than the supply.

It is not that business does not exist that the accessory dealer must make a strenuous fight for business, but because of the increasing competition that is making it so imperative for him to put up a vigorous fight for trade. Almost every hardware store in the land is installing an accessory department, and in some of these stores this department is becoming the leading department of the business.

Mail order houses are going after this accessory business with a vim and energy that should make the accessory dealer sit up and take notice. Only recently two of the largest mail order houses located in Chicago mailed out several million copies of catalogues listing some 50 pages of accessories.

One New York mail order house mailed out a catalogue with more than 60 pages of accessories. The large city department stores are opening an accessory department and they are making great headway into the sales of accessories. Only the wideawake accessory dealer is going to be able to meet this competition.

The local accessory dealer has many advantages over the mail order house. He is in close touch with his prospective customers all the time. By watching his operating expense he should keep his cost of doing business down to such a point where he can successfully meet the mail order house prices. It is not necessary for the local dealer to set his prices on an equality with the mail order house, as he should take into consideration the transportation charges and interest that is lost on money paid in advance.

If the dealer will install a proper system of handling charge accounts and extending credit he may well encourage charge accounts. This may be a bold statement, yet it is true. Another advantage the local dealer has over the mail order house, and one that the dealer may use to his benefit, is the delay the

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customer experiences very often in receiving goods from mail order houses. The dealer who finds that a great deal of the accessory business of his community is going to the mail order house cannot do better than emphasize this point strongly in his advertising.

Another point the local dealer should emphasize is the advantage of examining merchandise previous to purchasing, something which is impossible in the mail order business. There are plenty of other arguments that the local dealer might use, but, unless the mail order houses are making great inroads in the community, it is best to ignore them altogether, especially in general advertising.

How to Proceed.

The best plan is to try to line up the names and addresses of the car owners in the community who are patronizing the mail order house and send them a personal letter touching upon the various advantages of buying at home and asking them for the opportunity of figuring on their next orders for accessories. Never "knock" the mail order house in your advertising or in your sales talk. When you "knock" you get people thinking that there may be something in buying from the mail order house after all, or you would not be squealing. It is enough to realize that the mail order house is coming into your territory, that it is one of your real competitors and that you must go after the business with renewed energy.

If you are located in a small town you will probably find that the mail order house is your stiffest competitor, but if you are in one of the larger centers you will find the hardware store and the department stores are even more antagonistic. The energy of every store is being turned toward the selling end of the business and you must not be outdone in this respect.

Winning trade is, in other words, "getting people into your store." This is a big job. You should consider every possible means of attracting the attention of the public and arousing their interest in the particular store exploited. The very first thing that should receive your consideration is the stock of merchandise. If you are to meet competition successfully you must have in stock every item of merchandise for which there is a demand.

What to Have in Stock.

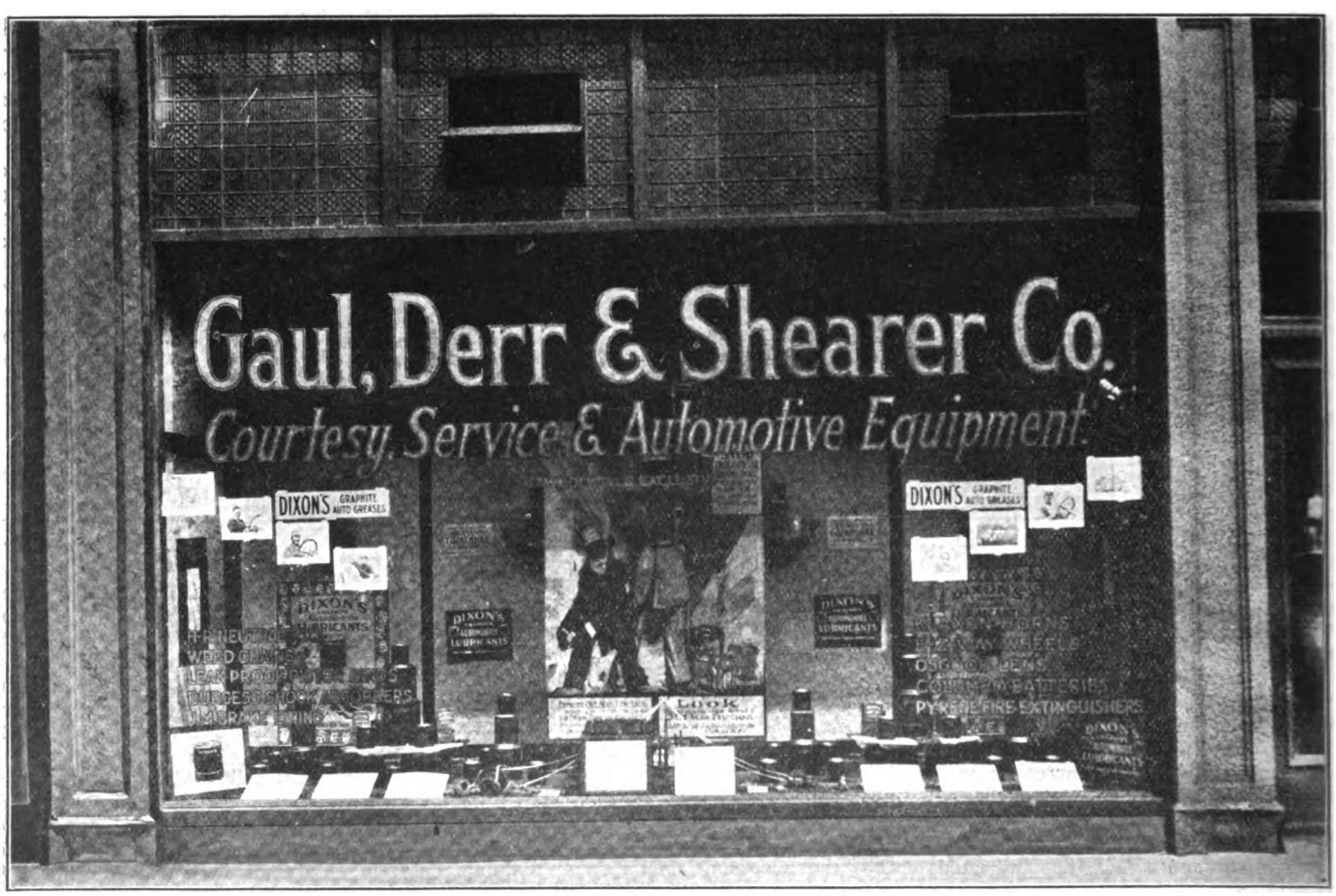
Such items as tires, tubes, spark plugs, jacks, tire tools, patches, tape, lace-on boots, etc., are standard articles of stock and will be found in any accessory store or any store catering to the auto trade. But in every locality there is demand for certain articles peculiar to that particular locality and it is up to the individual dealer to carry these in stock. The best way to determine what line of accessories is the most likely to be in demand is to know the makes of automobiles that are the most popular in your locality and then stock a line of accessories especially adapted for those machines.

For instance, an accessory dealer located in a town of 4500 where the most popular machines sold are the Buick, Dodge, Overland, Ford and Essex, and possibly an occasional Hudson, Packard and Cadillac, would want a stock of accessories for these lines of cars, holding the lines especially adapted to the three last named down to a limited supply. He would not want to stock an extensive line of accessories for Stutz, Premiers, Elcars, Empires, Bush and other cars which had a very limited distribution in his community. The city dealer may handle a much greater variety of accessories because of the larger number of various makes of autos sold in his community.

A successful accessory dealer has adopted a plan whereby he can determine what line of accessories he should stock. He has a printed "Lost Sale" slip and whenever he has a call for any article he does not carry in stock he requires that the salesmen fill out one of these slips, entering the name of the article, the possible amount of the sale, the reason the sale was lost, name and address of party calling for the article and also whether the party wishes to be notified when the store has that particular item in stock.

Check on "Lost Sales."

These slips furnish him with a complete history of lost sales and through them he is able to know the number of sales lost on any one item. They not only post him upon articles for which there is a demand that he does not carry in stock, but they also show him the



The Manufacturers Are Always Ready to Aid the Dealers in Their Window Displays. The Above Shows How Dixon's Products Were Blended in an Enticing Window Attraction.

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number of sales he loses because of insufficient stock.

For instance, he had never carried a stock of wheel lugs. He merely had a sample of the various designs and when a customer called for wheel lugs he would show him the samples and order them for the customer. This caused several days delay, often for weeks. After installing this "Lost Sale" slip he found that he was losing a large number of sales on these articles simply because he did not carry them in stock. During one week he lost sales amounting to more than $14 on this one item. It did not take him long to place an order for wheel lugs and thereafter he had them in stock.

Trouble lamps proved another item upon which he found he was losing a large number of sales because he did not have these in stock. With this slip he now knows whether there is sufficient demand for an accessory to justify his stocking it and he has, thereby, almost entirely eliminated "Lost Sales."

There is nothing that will ruin the prestige of an accessory store so quickly as that of being out of the very thing the customer wants, or not having on hand the items which a customer desires. If you want to successfully meet competition, make sure your stock is complete and up to date.

The next thing which should receive the consideration of the progressive accessory dealer is the window display. Hardware stores and the department store are keeping their stocks of accessories before the public all the time through the medium of the show window and the accessory dealer will find the window display a great aid in his fight for more business.

Importance of Window Display.

Whether you are retailing in a small country community or in a large city, your display window possesses real dollar compelling power. The show window is a form of salesmanship which you can keep within arm's reach of every person who passes your store every hour of the day. The real value of the window display rests in the fact that it offers a remedy the minute it suggests a want. When a passerby's attention is called to your window display and he sees some article which he desires, whether the display creates the desire or merely reminds him of it, he is right on the spot and can step in and make the purchase.

Not only does the good window display attract attention to itself and create a desire for some article displayed, but it draws attention to the store itself. The dealer should bear in mind that the show window is in reality the "Mirror of the Store." It usually reflects the kind of a store the passerby will find on the inside when he has crossed the threshold.

The new customers, the ones every accessory dealer is constantly trying to win, are usually influenced by the character of the window display. Not being familiar with the interior of the store, they always gain their first impressions of the store from the exterior, and the window display will have a lot to do with these.

The Above Is Part of a Newspaper Advertisement of a Boston Department Store That Has Installed an Automobile Accessories Department. This Advertisement Mentioned Dozens of Accessories Offered Supposedly at Bargain Prices.

First impressions are always the most lasting and it is up to the dealer to see to it that his displays make the right kind of an impression. The window display will either make a favorable or an unfavorable impression. It is the outward appearance that counts most with the prospective customer.

Purpose of Display.

The aim of the commercial window is to sell goods. In order to do this it must perform certain functions necessary in the process of making a sale. The rules for successful window trimming are almost identical with those for successful personal salesmanship. Window selling is salesmanship and, like personal salesmanship, it requires organized action if it is to be successful.

It must involve the human equation. It must follow largely the same line of action as employed in personal salesmanship. It must first attract attention, arouse an interest, create a desire and, finally, produce action. Thus you will see the successful display has four functions to perform, and each function is of vital importance to the success of the display. No display can hope to sell goods unless it first attracts attention. It must also arouse an interest in the goods displayed before there can be a desire created.

There can be no hard and fast rules for window trimming. The main thing is for the man who has charge of the window trimming to be surcharged with enthusiasm and individuality. The man who keeps his brain busy will find that new ideas for window displays will germinate faster than he can take care of them.

The very first requisite of a good window is the attention getting power. The display must attract attention if it is to sell goods. There are various methods for attracting attention. Motion, demonstrations, attractive designs, color, etc., all have this power. Above all the display should possess individuality and originality. If you trim a window in the same manner as your competitor your window will lack individuality.

You should endeavor to put forth your goods in some manner unfamiliar to the public. A well trimmed window will always attract attention, although there is nothing particularly out of the ordinary in it. A moving object in your display will always create interest and is one of the best means of attracting attention. Color is another way and when you cannot get motion in the display you can almost always count on color getting the attention.

Arousing Interest.

The second function of the display is to arouse an interest in the goods displayed. This function, as well as the remaining functions, those creating a desire and producing action, can best be performed through the use of show cards.

Of all the mistakes made in window dressing none equals the inexcusable mistake of leaving the show card out of

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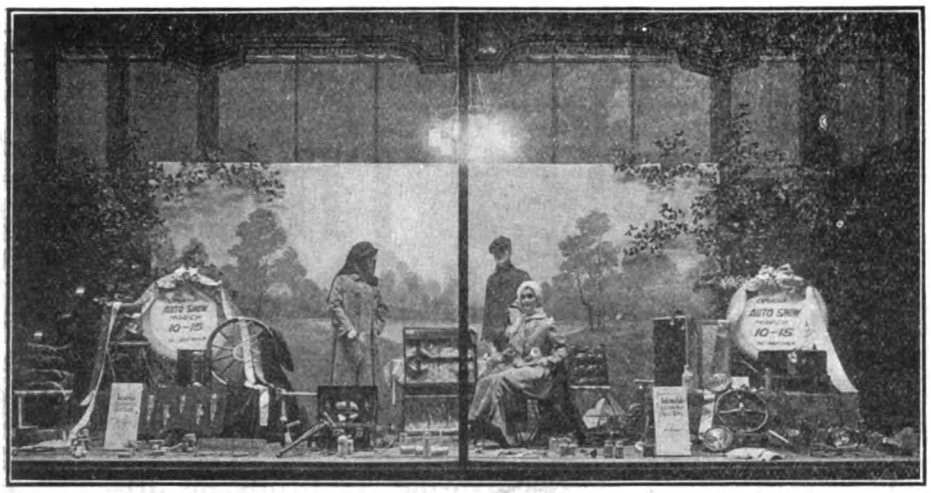

This Display Proved a Magnet for Attracting Unusual Interest.

the calculations. Good show cards are the making of many a window. They put pep, snap and ginger into the display. Often common articles in stock are so unattractive to the display man that it is thought they have no display value, and if displayed by themselves they would not make a single sale. But if the trimmer will dig and keep his thoughts busy and show along with the display suitable show cards, many sales will result.

For illustration, an accessory dealer put in a display of grease in his windows and for three days it was left in the window without a single sale. At the suggestion of one of his employees he took out the window display and built another, again using grease. In the background the dealer placed a barrel full of old auto parts, with a few extra parts on the floor of the window. At both ends of the window he arranged a neat display of lubricants and in the center of the display he placed a show card reading:

> POOR LUBRICANTS
> Filled
> This Barrel.
> Every Bearing Placed Under a
> Microscope Shows the Tiny
> Teeth of Friction.
> Insist That
> You Get BLANK'S—Blank's
> Lubricants Prevent Friction.

He used two smaller cards reading:

> There's No "In Between."
> Specify BLANK'S.

> May We Help You
> Dixonize Your Car?

This display was in a week and it sold the goods.

The display would not have aroused any interest without the show cards. It would probably have attracted much attention because of the oddity of the display, but the show cards supplied the pep and snap and created the interest.

Another dealer made a window display of the "Warner Lenz." The display of itself was attractive, but the display of "Warner Lenz" was not enough to arouse an interest, so in the center of the display he placed a large show card reading:

> John Doe Was Fined $50.00.
> The New State Law in Effect July
> 27 Will John Doe You if YOU Fail
> to Equip Your Car with a
> Sure-Lite-Lenz.

Smaller cards read:

> Sure-Lite Lenz Gives You Man-
> Made Daylight for Night Driving.

> Sure-Lite-Lenz Produces a Diffused
> Light That Is Safe and Sane to You
> and Other Motorists.

If you can link your displays with current events you are almost sure to attract attention and create an interest. New auto laws are events which autoists "cuss and discuss" on the street corners and you are sure to attract their attention if you can connect the display up with such events. Local accidents afford the accessory dealer a good subject around which to build his display. A local news item telling of the theft of some local party's auto makes a good setting for a locking device. A picture of a burning automobile makes an excellent setting for the display of fire extinguishers.

One of the leading features of a good show card is to have it in different colors, with the most important phrases in large letters. The show card should carry good argument for the purchase of the article displayed. Even in the wording of the show card the display man will want to use individuality and originality.

Should Display Price Tickets.

Not every dealer will believe it alvisable to have a price ticket on the goods displayed, but personally I do not think a display complete unless the price ticket is included. In countless thousands of cases it has meant the difference between a sale and no sale. Most persons like to know what a thing costs and they don't like to go inside and inquire the price. They are afraid the price may be more than they care to pay and they don't like to refuse to buy after they price an article. For that reason they hesitate to go inside and ask the price. The chances are that if the price were displayed it would not have proven too high and a sale would have resulted. Even a wealthy person wishes to know the price.

Never overcrowd the window space; it is better to display one article and display it well than to have a dozen articles half displayed. A good display of one line will usually prove more effective than a window full of various articles. It centers the attention of the onlooker on the one article and makes an impression that is not easily forgotten, and although he may not be in the market for the article at that time, some time later if he should need such an article a mental picture of that display will come and your store will get the sale.

AUTOMOTIVE ENGINEERS DISCUSS SCREW THREAD PRACTISE.

The Society of Automotive Engineers recently held a meeting for the purpose of securing the best and most comprehensible information as to what is most desirable to be recommended in regard to screw thread practise in the automotive industry of this country. The attendance was representative of the various branches of this and allied industries. Reports were made on the work of the National Screw Thread commission, recently created by Congress, and the data, secured during the recent visit of the commission to Great Britain and France, were submitted.

It was decided that, in order to accomplish the most of value to the automotive industry and to secure the best consensus of opinion for the consideration of the National Screw Thread commission or any other similar body, the best procedure would be to gather from representative manufacturers, in practical shop form, definite information as to present practise.

The Society of Automotive Engineers is assured of the support of the manufacturers in its field, and has enlisted the services of men of excellent training and long practical experience in screw thread and shop work to act as its committee to direct the collection of the industrial data mentioned. The personnel of the committee is as follows: Chairman, Paul W. Abbott, Lincoln Motor Co. R. P. Smith, Packard Motor Car Co. Lyle K. Snell, Willys-Overland Co.; Alexander Taub, General Motors Co., and W. K. Jamison, Domestic Engineering Co.

The Chinese now have a motorcycle police squad in Peking. Pictures show them on machines that appear to have been in service throughout the war.

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Transforms Ford Auto Into Attractive Racing Car

TRANSFORMING a Ford into a racing car, the new Roof 16 Overhead Valve Equipment for Ford motors has made the automobile world sit up and take notice. This equipment is made by the Laurel Motors Corporation, Anderson, Ind., and the company points with pride to laurels won by Ford car drivers through the use of its equipment.

Among these is Loren Darst, Eureka, Ill., who, it is announced, has made a record for one-mile dirt track in 50 seconds flat. His best straightaway is 92 miles.

Mr. Darst's car was equipped with the new Roof 16 Overhead Valve Equipment. with lightweight grey iron pistons, aluminite connecting rods and a high-tension Dixie magneto. The car has disc wheels. with roller bearings in the front wheels. It had the Laurel underslung parts with a drop of four inches, a special 1¼-inch carburetor, three to one gears and carried a special oiling system.

The entire equipment was furnished to him by the Laurel Motors Corporation.

The Roof 16 Overhead Valve Equipment for Ford motors is for touring cars, closed cars, trucks and speedsters. It is a great aid for hill climbing for touring cars and increases the pulling power through sand and mud. The company announces that Ford racing cars with its equipment have attained speeds from 80 to 100 miles per hour. The price, complete, is $115 f. o. b. factory. There is nothing extra to buy. The cylinder head equipment is all ready for installation, and it takes the place of the regular Ford cylinder head. The installation is simple for any mechanic.

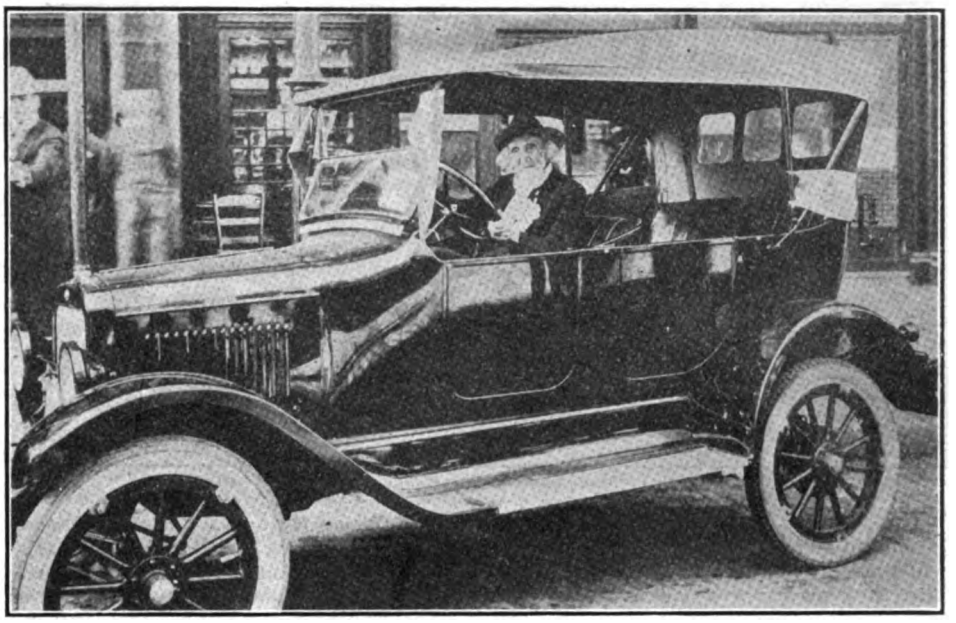
The manufacturer states that comparison brake horsepower tests of the United States Bureau of Standards gave the standard Ford motor with regulation carburetor 18.7 horsepower; the same motor with 16 valve head and regulation carburetor 22.4 horsepower, and the same motor with 16 valve head and special carburetor 29.7 horsepower. Recent tests at the Bureau of Standards with type B of the Roof 16 Overhead Valve Equipment, the company states, gave 32 horsepower.

The Laurel Motors Corporation is manufacturer and distributor of speed and other specialties for Ford cars, three to one gears, high speed camshafts, aluminite light grey iron pistons, aluminite connecting rods, racing spark plugs, racing carburetors, roller bearings, counterbalances, wire wheels, multiple speed transmission, high-tension magnetos, special oiling system, special worm and gear, steering gear, racing tires, racing bodies, hood and radiator, and parts for underslinging chassis.

Attractive agency terms are offered and the company is prepared to send upon request complete literature on how to build fast cars and double the value of the converted Ford truck and descriptive circular on speed and other specialties for Fords.

Loren Darst in Ford Equipped with Roof 16 Overhead Valve Equipment.

OLDEST MAN IN WORLD ENJOYS RIDE IN AUTO AND AEROPLANE



John Shell, Lexington, Ky., 131 Years Old Driving Overland 4.

JOHN SHELL of Lexington, Ky., 131 years old, said to be the oldest man in the world, was one of the features at the Kentucky State Fair at Louisville this month. His daughter, 97 years old, watched him with almost motherly care. He had a ride in an aeroplane and liked it at an altitude of 600 feet. After that he had a ride in an Overland 4, the new light weight car which the Willys-Overland company is putting on the market this season.

"I have ridden in a lot of automobiles," this man who has lived in three centuries said, after his ride in Overland 4, "but I do not think I have ever been in an easier riding car."

The picture shows Mr. Shell at the wheel of an Overland 4.

FOREIGN PROSPECTS GOOD.

Franc D. Mayer, president of the Essenkay Products Co.. Chicago, manufacturer of Essenkay, the tire filler, was a passenger in a recent airplane trip from London to Paris. He is abroad on an extensive business trip. He reports prospects for American business in Europe as most promising.

NORWESCO IRON CEMENT.

A new "chemically correct" product, Norwesco Iron Cement, which the maker says, will permanently repair cracks, blemishes and leaks in radiators, boilers, steam, hot and cold water pipes, threaded joints, etc., has been placed on the market by the Northwestern Chemical Co., Marietta, O.

Norwesco Iron Cement is made in powder form and manufactured under strict laboratory supervision, which insures a standard quality that will give the desired results. It was used extensively by the United States government during the war.

For the consumer's convenience Norwesco Iron Cement is put up in cans of three sizes, six ounces, one pound and five pounds.

VALUE OF EXPORTS FOR YEAR ENDED JUNE 30.

The total value, including both passenger cars and trucks of American automobile exports during the fiscal year ended June 30 was $79,047,767, while exports of parts and tires amounted to $25,650,810.

WANT U. S. CARS.

Consul North Winship, Milan, reports that the consulate is receiving letters from concerns desirous of selling American automobiles.

CAMPBELL IN CHARGE.

Chester I. Campbell, will be in charge of the automobile accessory exhibits at the Boston Fair at Readville Park, Sept. 25-27.

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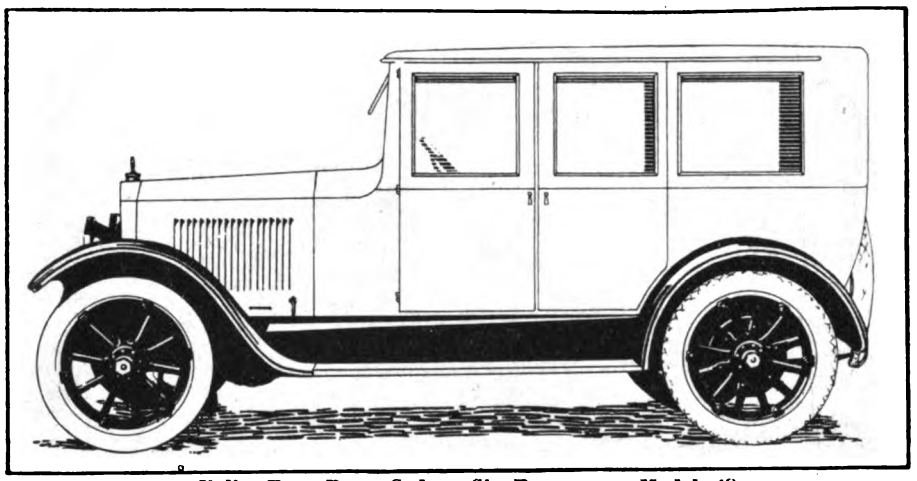
News of the Passenger Car Industry



Velie Four-Door Sedan, Six-Passenger, Model 48.

The Willys Corporation, recently formed to market the new Willys six, and which is a consolidation of the Auto-Lite, the New Process Gear and the Duesenberg Motors Corporation, will enlarge the Duesenberg plant at Elizabeth, N. J., to six times its present size, so it will have 1,200,000 square feet of floor space. All of the units are expected to be ready by March 1. Virtually a complete manufacturing plant for cars will be constructed, so that early next year a daily production of from 400 to 500 machines might be run out of the new plant. The Elizabeth plant will be known as the Duesenberg unit. The other large units will be the Process Gear Corporation at Syracuse, N. Y., and the Electric Auto-Lite Corporation at Toledo. The gear company will make transmissions, axles and similar parts for the Willys car, and the Toledo concern will supply electrical equipment. J. R. Harbeck, vice president of the American Can Co., will be vice president and general manager of the Willys Corporation.

The Nash Motors Co. announces that B. W. Twyman, formerly head of the Inter-State Motor Co., Muncie, Ind., has been appointed general manager of the new Milwaukee plant, which will produce four-cylinder cars at the rate of 100 a day by March 1, 1920.

The Maibohm Motors Co., Sandusky, O., anounces that its production schedule for 1920 calls for 7500 Maibohm sixes. This is at a daily rate of 25 cars, which is well within the capacity of the new Maibohm factory. The moving from the company's present quarters into the new works will be accomplished gradually without any break in daily production.

The Haynes Automobile Co., Kokomo, Ind., will increase the capacity output of its plant to 15,000 cars annually. Directors have voted to erect a factory and forge shop and to increase the capital stock from $3,500,000 to $5,000,000.

The Chandler Motor Co.'s directors have fixed the quarterly dividend rate at $6. Recapitalization is planned whereby the present 100.000 shares of a par value of $100 each will be changed into 300,000 shares of no par value.

The Barley Motor Car Co., Kalamazoo, Mich., is equipping a special body department and will manufacture all special bodies for its roadsters.

The Anderson Motor Co., Rock Hill, S. C., has increased its capitalization from $2,625,000 to $3,625,000, and is erecting a new steel and concrete building, 250 by 340, equipped with new machinery. Contracts have been awarded amounting to $200,000. It is expected that the new factory building will permit a material increase in the production of Anderson Six motor cars.

The General Motors Corporation, which recently purchased the plant of the old Interstate Automobile Co. and 40 adjoining acres, announces that it will spend in Muncie, within the next 18 months, between $4,000,000 and $5,000,000 in building and extensions and within two years will employ between 6000 and 8000 men.

The Jackson Motors Corporation, Jackson, Mich., recently organized with $5,000,000 paid in capital to take over the Jackson Motor and Manufacturing Co. and the United Four-Wheel Drive Truck Corporation of Chicago and Port Jefferson, N. Y., is working on an output of 4000 passenger cars and 1250 trucks for the coming year. The company also has a contract for 10,000 sedan and coupe bodies for the General Motors Corporation. The plant of the company here is being enlarged, following the dismantling of the plants at Chicago and Port Jefferson. Employment is to be provided for 1000 additional workers.

The Cole Motor Car Co. expects a total production of 6500 cars this year. The present cutput is twice that of any other year.

The Hupp Motor Car Corporation produced 9129 cars during the first half of this year. The annual report shows a surplus of $45,572 after preferred dividends amounting to $79,030. The net profit is estimated at $535,602.

The Stutz Motor Car Co. will increase its capital stock from 75,000 to 100,000 shares with no par value.

The Burford Motor Car Co., Fremont, O., has been purchased by interests headed by H. M. Hackett, Detroit.

The Pierce-Arrow Motor Car Co. announces the appointment of Floyd Smith as manager of purchases and Otto Utz assistant manager of purchases. Mr. Smith was formerly assistant purchasing agent of the Maxwell Motor Car Co. and thereafter director of purchases of the Wright-Martin Aircraft Corporation.

Truck Makers

The American Motor Truck Co., Newark, O., has appointed four new divisional sales managers—W. F. Lehman, Wright Gillies, M. A. Wiltenstein and W. D. Paine.

The Triangle Truck Co., St. Johns, Mich., is planning to enlarge its plant so as to double capacity. A new 3½-ton model truck may be offered soon.

The Traffic Motor Truck Corporation, with Vice President T. C. Brandle as the official host, recently entertained members of the production and sales departments on an evening boat ride. A series of entertainments is being planned to bring the two departments into closer cooperation.

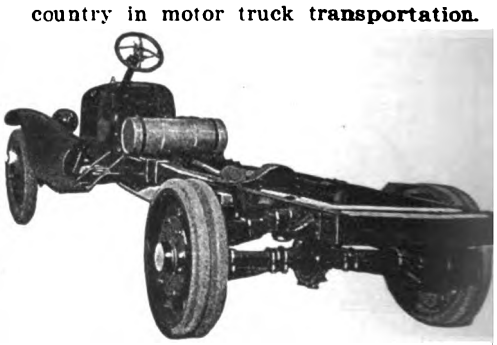
The Traylor Engineering Co., Allentown, Pa., will begin the manufacture of trucks in addition to an increased production of tractors.

The Garford Motor Truck Co., Lima, O., has appointed S. A. Taylor foreign representative. He is leaving on a trip to Africa and the Far East.

The O. Armleder Co., Cincinnati, has discontinued the horse drawn vehicle business in order to concentrate on motor trucks. Facilities are being installed to permit of a production of 20 trucks daily.

The Parker Motor Truck Co., Milwaukee, announces the appointment of C. C. Newburn as assistant sales manager. He has been identified with the company for nearly a year and was formerly with Morgan and Wright before they amalgamated. His work in the truck line has been with the sales department of Service, Diamond T, Corliss, Panhard and Traffic trucks.

The Martin-Parry Corporation, builder of commercial bodies for automobiles, states that the outlook for the motor truck industry looks very bright, at least for a period of 12 months, especially because of the interest throughout the country in motor truck transportation.



Olson Two-Ton Truck, Claimed to Be the Lowest Priced Unit of This Capacity Sold

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Miscellaneous News of the Auto Industry and Trade

Indianapolis—Increasing business has made it necessary for the Automobile Equipment Department of the Westinghouse Electric and Manufacturing Co. to reopen its Indianapolis office, which was closed during the war. The office is located at 1003 City Trust building and is in charge of Knox Easterling.

Detroit—At a recent meeting of the board of directors of the Timken-Detroit Axle Co. the resignation of Frederick C. Gilbert, vice president and director, was accepted. P. W. Hood, assistant secretary, has been made sales manager and will be assisted by Frank H. Sim, who will also remain advertising manager. C. G. Rowlette, assistant treasurer, has been elected treasurer to succeed C. W. Dickerson, who will continue as secretary and credit manager.

Philadelphia—The Hudson Motor Specialties Co. announces the appointment of Charles C. Howison as New England representative.

Memphis, Tenn.—The Engler-Stotz Auto Supply Co. has applied for a charter to conduct a general wholesale and retail automobile business, with $25,000 capitalization. The incorporators are Joseph Engler, Jr., W. J. Stotz, Bertha Stotz, H. A. Stotz and A. J. Calhoun.

Cleveland—The Lindale Auto Co. has been incorporated by Francis E. Young and others with $10,000 capitalization.

Rochester, N. Y.—The Central Motors, Inc., has been incorporated with $25,000 capitalization by G. E. Wyinkoop and C. E. and T. S. Addison, Rochester.

Cleveland—Charles G. Reed, for 15 years an automobile editor and writer, has joined the Dunlap-Ward Advertising Co. He will handle publicity and sales promotion work for large automobile and accessory firms who are clients of the Dunlap-Ward organization.

Chicago—Edgar C. Guthard, for the past five years part owner and general manager of the Northwestern Auto Supply Co., accessory jobber at Billings and Gt. Falls, Mon., and Pocatello, Ida., has sold his interests in that concern in order to devote his time exclusively to his new business, the Edgar C. Guthard Co., Chicago, manufacturer of Billmont Master Wrenches. Dan Cheerier, who for two years has been manager of the Great Falls branch of the Northwestern Supply Co., likewise leaves this month to become middle west representative for the Guthard line.

New York—The Schebler Carburetor Co., a newly incorporated company for the purpose of distributing the Schebler Carburetor in the New York territory, and now located at 1777 Broadway, has completed arrangements for larger quarters at 58-60 West 65th street, at Broadway. W. J. Connell is president.

Philadelphia—Harry M. Giles has been appointed general superintendent of the South Philadelphia works of the Westinghouse Electric and Manufacturing Co. Mr. Giles, who succeeds the late Oscar Otto, who was killed in an automobile accident last month, has risen from the ranks in the Westinghouse organization. For a number of years he has been superintendent of marine erection.

Columbus, O.—The contract has been let for a large factory building here for the Timken Roller Bearing Co. The plant will cover four acres.

Columbus, O.—After seven years' continuous connection with the local Packard sales organization, Albert E. Jones entered the manufacturing business when he purchased the Perry Auto Top Co.

New York—The Fort Lee Ferry Garage Co., Inc., Henry Friedman president, has leased a three-story building at 619 West 129th street for 21 years at an aggregate rental of about $175,000. The structure will be remodeled into a modern garage.

Newark, N. J.—A public garage will be erected at 221 Plane street for the Superior Garage Co., of which George Murphy and William S. Dunn are members. The structure will be one story, 60 by 100.

Newark, N. J.—The store at 278 Washington street has been leased by the M. & T. Machinery Co., which makes a specialty of transmissions and general automobile parts.

Newark, N. J.—The three-story property at 971 Broad street has been leased for a long term of years for the occupancy of the Pash Order Supply Co., dealer in automobile accessories.

Bridgeport, Conn.—The largest subscription received in some time for the American Legion club house fund was $250, which was sent in by the Locomobile Co.

Wilmington, Del.—The Pen-Clay Motor Sales Co. now owns the garage property at Pennsylvania avenue and Clayton street, and the firm name is taken from the first syllables of those thoroughfare names. The company has taken on the Jordan line.

Chehalis, Wash.—J. P. Kortz has leased G. W. Glover's Tower avenue garage in Centralia and will soon open a branch store in that city.

Pittsburgh, Pa.—In order to better serve its many patrons, the Rapid Motor Transit and Storage Co. has enlarged its service and is now located in the old Scarborough building at 1027 East Ohio street. The building has space for two gas and oil filling stations and accommodations for 18 cars.

Providence, R. I.—The Franklin Auto Supply Co. recently held its first outing at Crescent Park. Miss Marion Cohn was a guest of honor.

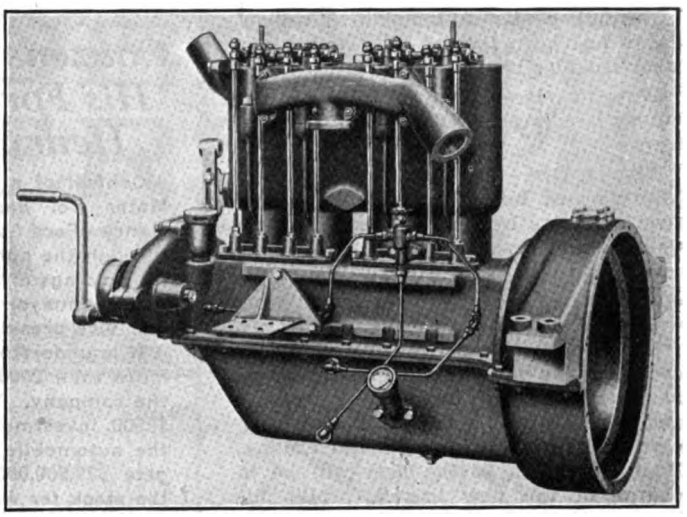
Chicago—E. Edelman & Co., manufacturer of automobile accessories, has purchased the southwest corner at Crawford and Shubert avenues for $80,000. Plans have been prepared for buildings to cost $250,000.

Scranton, Pa.—Following army service in France, Russell Ohoro has secured the agency for the Oakland in Lackawanna county, Wyoming county and part of Wayne county, including Honesdale and Hawley. He has been selling Oaklands since they were introduced in Scranton.

New York—The Sidney B. Bowman Automobile Co. has secured the Kissel franchise for distributing Kissel cars and trucks in Greater New York, eastern New York, including Albany, Troy and Schenectady; western Connecticut and northern New Jersey.

NEW GRAY "VICTORY MOTOR"

A SMALL heavy duty type engine, which is claimed by the maker to be equally well adapted for car, truck and tractor propulsion, is now being produced by the Gray Motor Co., Detroit, and is known as the "Victory Motor." The engine is unusually accessible, and all moving parts are protected against the influence of abrasives. It is a four-cylinder, water cooled, four-cycle, vertical, I head type, 3½x5, the S. A. E. formula giving 19.60 horsepower and the maker claiming 34.60 horsepower at 1900 revolutions per minute. The cylinders are cast en bloc with the water jacket and the upper half of the crankcase integral from a high grade of seasoned gray iron, and the cylinder block head is a separate unit. In reality the engine is four sections, the valve cover, the cylinder block head, the cylinder block and upper section of the crankcase and the lower crankcase section. The design of the block head is unusual in that it is so cored for two intake passages that there are two "hot spots" that are intended to heat the fuel gas and produce high efficiency and economy.



Left or Valve Side of "Victory Motor" with Rocker Arm Cover Removed.

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NOTES OF THE INDUSTRY AND TRADE

Milwaukee—An Automobile Workers' Union has been formed here and minor labor troubles have followed.

Waterloo, Ia.—The Cramer Motor Co. is now handling the Oldsmobile cars and trucks.

Albany, Ore.—The Day Motor Co. has been formed here to handle Nash and Overland cars by Earl R. Day, Kenneth Carter and Clarence Collins.

Portland, Ore.—S. D. Bornstein has opened the Bornstein service station, with O. S. Peabody as manager.

Minneapolis—Torgerson Brothers, Anaconda, owner of the Main Street Garage, has purchased the Lourance Vulcanizer and Tire Co., Billings, the largest concern of its kind in the Midland Empire. Emil Torgerson of the firm will be in charge of the new branch, while his brother, Alfred C., will remain in charge at Anaconda.

Hartford, Conn.—The Colton-Johnson-Wester Co., distributor of the Dort and Moline-Knight cars, recently gave a dinner for the 12 members of the organization in recognition of the successful start made by the company.

Dover, Del.—The General Top Co., to manufacture tops for automobiles, etc., has been chartered here, with $1,000,000 capitalization, by L. B. Phillips and M. S. Anderson, Dover.

New York—Arraignment in the Long Island court of two garage owners and three sales clerks of the Packard Motor Car Co. plant at Long Island City was the climax of a year's investigation of the theft of automobile parts and accessories at the plant.

Worcester, Mass.—Construction of the $250,000 factory building for Walden-Worcester, Inc., manufacturer of wire handle socket wrenches, has been started. The building will be on Shrewsbury street, between Aitchison street and the junction of the private way of the Worcester Consolidated Street Railway Co. The factory will be of four stories, 333 by 60 feet. It will be of reinforced concrete construction throughout. The width of the building will be divided into three parts by columns supporting 20-foot spans. The structure will represent the extreme example of daylight steel sash construction yet erected in Worcester, and will be a particularly good example of modern factory construction in this respect. General and private offices will be located in the top floor, occupying 10,000 feet of floor space. The offices will be reached from a separate administrative entrance. Employees' service rooms, including the plant hospital, will also be located on the top floor. The company has been seriously inconvenienced for lack of suitable quarters for some time. The business is the personal creation of Warren S. Bellows, general manager, who acquired some of the basic patents on the manufacture of wire handle socket wrenches, and a shop employing six men engaged in their manufacture in 1907. The business has grown under his direction until it now employs 160 hands and will require 250 employees when housed in the new quarters.

Couzens Sells All His Ford Stock to Henry and Son

Control of all stock in the Ford Motor Co. has been secured by Henry Ford and his son, Edsel, through the purchase of the minority holdings of James Couzens, millionaire mayor of Detroit and former vice president of the company.

It is understood Mr. Couzens had more than 2000 shares of stock in the company. Years ago he took a $2500 investment in the brains of the automobile genius and now he gets $29,500,000 as a result. For the stock for which he paid a little over a dollar a share he gets thousands per share.

Interests of other minority stockholders were purchased by Henry and Edsel Ford early in July for a sum said to be close to $100,000,000. Mr. Couzens refused to sell his holdings at that time.

He left the Ford organization early in the war because of Henry Ford's views on preparedness and pacificism. Up to almost the end of 1915 he had geen general manager and treasurer of the Ford concern.

ROLLS-ROYCE WILL ESTABLISH AMERICAN BRANCH SOON.

An American branch of the Rolls-Royce Co. of Derby, England, will be established within a short time, according to announcement made by Claude Johnson, managing director of the Rolls-Royce Co. Although no site for the factory has thus far been selected, the financial arrangements for establishing American company are practically completed.

It is understood that Aldred & Co., banker, New York City, will provide the capital for the undertaking, as under the present British war acts it is not permitted to transfer British capital for industrial purposes here. The stock issue will probably be $7,000,000.

The new venture is being undertaken because of the growing demand in this country for Rolls-Royce cars and other products. The parent company in England is unable to fill this demand, its capacity having been booked for the next year and a half. The chassis for the American Rolls-Royce will be identical in every detail with that turned out by the English plants. The Rolls-Royce chassis sells in this country for $10,000.

J. E. F. SPARK PLUG CO. IS VIKTRY MANUFACTURING CO.

The J. E. F. Spark Plug Co., Milwaukee, has changed its corporate style to the Viktry Manufacturing Co. and the name of its principal product will be the Viktry disc or V. D. spark plug. A new $50,000 plant has been built.

New York—The Warren-Nash Motor Corporation, heretofore exclusively wholesale distributor of Nash products, has taken over the retail sales and service of Nash passenger cars and trucks for Manhattan, the Bronx and Staten Island.

New York—George L. Riess and J. Herbert Carpenter, Jr., both of whom saw service in France, announce the formation of the firm of Riess & Carpenter to handle the sales of the Columbia Six in the metropolitan territory, for which the Charles E. Riess Co. is the eastern wholesale distributor.

New York—Henry G. McComb, 1790 Broadway, has been made New York representative of the Weidely Motors Co. He is one of the pioneers of the automobile industry and is an engineer. With his engineering ability he is well qualified to show the good points of Weidely design.

Brooklyn, N. Y.—M. C. Manship, formerly manager of the Maxwell-Chalmers branch here, has been appointed supervisor of District No. 4 of this company, with headquarters in the Union building, Cleveland.

Brooklyn, N. Y.—Charles Edwin, 42 years old, of 563 East Fourth street, manager and one of the directors of the Stewart Products Co., dealer in automobile supplies, died recently from injuries suffered in an automobile accident that occurred 10 years ago.

Baltimore—Benedict S. Berman has been appointed sales manager of the new organization that is to handle the Cleveland car. H. S. Block, 1014 Morton street, local Chandler distributor, will also represent the Cleveland in this territory, with a separate organization for each car.

Baltimore—The Maccar Motors Co., 1010 West North avenue, has been appointed distributor for Westcott cars and Maccar trucks. The Westcott franchise covers all of Maryland, while the Maccar zone embraces Maryland, West Virginia and the District of Columbia.

Ashtabula, O.—The Pearce Tire and Rubber Co. is to effect a merger with the Ideal Tire and Rubber Co., Cleveland. The business at both plants will be conducted under the name, Ideal Tire and Rubber Co. Two thousand tires will be made daily. Ideal interests are capitalized at $5,000,000.

Cleveland, O.—The Vita Manufacturing Co. has purchased a site at West 117th street and Madison avenue and will erect a modern plant for the manufacture of Rogers magnetos. The building will be 252 by 132, of modern, fireproof construction with front of velvet faced brick. A garage will be constructed in the rear for officials' cars. The new plant, it is announced, will be one of the most completely equipped magneto producing factories in the country and equipped with automatic precision machinery. Production of the Rogers magneto will be under the personal supervision of George D. Rogers, its inventor and designer. The Rogers magneto is adaptable to internal combustion motors of from two to 16 cylinders.

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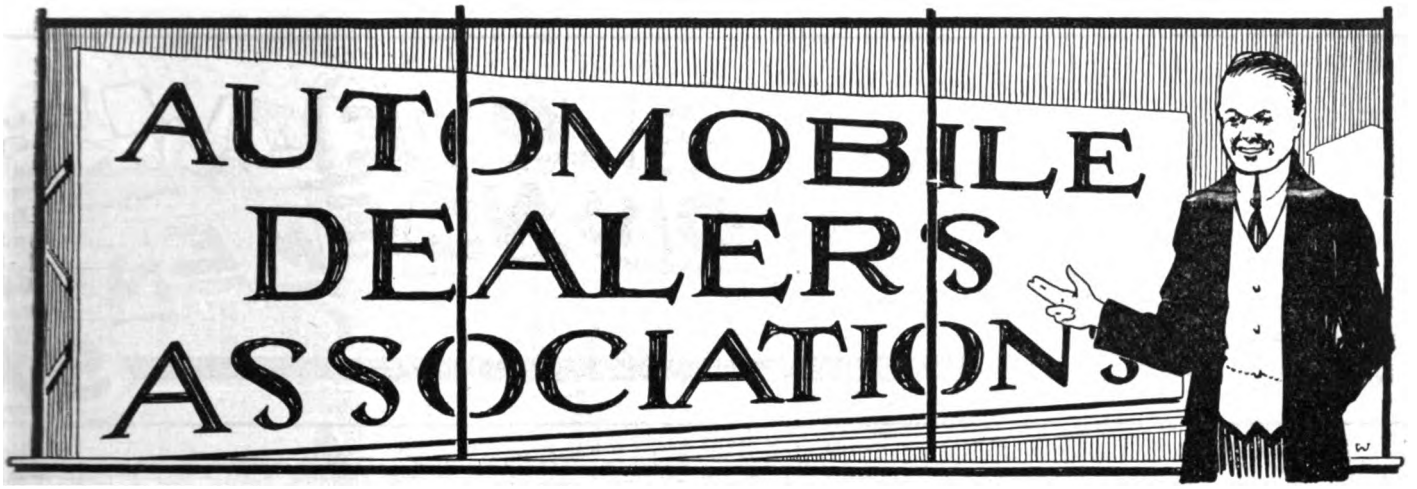

Talks to Pacific Coast Auto Dealers

The Motor Car Dealers' Association of Los Angeles recently had F. W. A. Vesper as a guest. He told the members that selling automobiles is not a "game," but a serious business. He emphasized the fact that cars are no longer considered as a luxury, but as a necessity. "At the present time," he said, "the automobile industry is the third largest in the United States. Steel and cloth manufacturing are the only ones that lead it. Nineteen years ago motor car fans who predicted a giant industry were laughed at. That gives you simply a small idea of the rapid growth of the automobile business." Ralph Hamlin, president of the Los Angeles association, presided. Mr. Rose of the Pasadena Automobile Dealers' Association, Mr. Farles of the Auto Club and P. H. Greer made brief addresses.

The San Antonio, Tex., Automobile Trades Association at a special meeting decided to make a test case of the use of demonstration license numbers Sundays by dealers who get out for a ride with their families. It has been held by peace officers in Bexar county that the dealers' demonstration numbers could not be put to personal use on Sundays. To test this contention a member of the association will submit to arrest and the association will prosecute the case. It was the consensus of opinion that the rules governing the use of automobile licenses were in a chaotic state, and the matter of driving cars from the railroad to the shops without licenses will be taken up with the attorney general and highway commission at Austin for opinions.

The Brooklyn Commercial Car Dealers' Association was recently organized. It was unanimously voted to incorporate the association. An initiation fee of $50 was decided upon. W. R. Couch, president of the Couch-Haas Co.; Charles Ohlmann, president of the Kelly-Springfield Sales Co., and Walter A. Scott of the Scott Motor Truck Co. were selected to secure the necessary corporation papers from Albany. A. S. Rampell of the L. A. D. Motors Corporation was unanimously elected temporary president. E. G. Scott of the Maxson-Richardson Corporation secretary, and W. R. Couch treasurer.

BOSTON AUTO DEALERS AND SALESMEN ACT AS TRAFFIC COPS DURING STRIKE OF POLICEMEN.

When Boston policemen went on strike there was no one to direct traffic at congested street intersections. An appeal was made to Chester I. Campbell, who recruited a small army of automobile dealers and salesmen to serve as volunteer "traffic cops." These men did the

work so well that there was not a single serious accident and no more minor ones than usual. They remained on the job for more than a week, when they were relieved by State Guardsmen.

AUTO BOOSTERS' OUTING.

The Automobile Boosters, an organization without any organization or aim in life other than to have a good time at least once a year on "Wag's farm, Smithtown, L. I., and composed entirely of men doing business on Automobile Row, New York City, and its subsidiaries, recently celebrated their 10th annual outing. There were more than 300 present. Dario Resta and Ralph De Palma were in the merry party. A ball game between "Bill" Poertner's National Sea Lions and Frank Hill's Liberty Republic Sheriffs, was a feature. Frank is a candidate for sheriff of Nassau county. Bill's boys walloped the sheriffs. Even the motor millionaires on Automobile Row were present. Everybody had a ripping good time.

N. A. D. A. Establishes Boston Office

The National Automobile Dealers' Association has appointed Charles F. Cole of Boston northeastern secretary, with headquarters at 5 Park square, Boston, where a general information and service bureau will be maintained for dealers and the motoring public.

The Ohio Automobile Trade Association will hold its third annual meeting the three days beginning Dec. 3 at Cleveland.

The Houston Automobile Trades Association of Texas is considering the advisability of adopting a standardized service and establishing a used car bureau.

The Indianapolis Automobile Trade Association recently staged the largest automobile show ever held in the city. It was held in the new Manufacturers' building at the State Fair grounds with 98 exhibitors of passenger cars, trucks and accessories. John B. Orman was manager. The show was opened with an address by President Jordan of the Jordan Motor Car Co., Cleveland.

The Dealers' Motor Car Association of Oregon will hold a passenger car and truck show in connection with the Oregon State Fair at Salem, Sept. 21-27. The committee in charge is composed of A. B. Manley, chairman; C. M. Menzies, secretary; H. H. Eling, treasurer; Howard M. Covel and M. O. Wilkins. The show manager is Mr. Wilkins.

The Minneapolis Automobile Trade Association held its annual automobile and tractor show in connection with the Minnesota State Fair. Walter Wilmot was manager. The space allotted in the building devoted to automotive industries was inadequate to accommodate all who desired space and some exhibits had to be shown in other buildings.

The Louisiana Automotive Trades Association has opened headquarters at 712 Peydras street. There are bureaus for passenger cars, trucks, tractors and equipment, each in charge of a vice president.

The Ford Dealers' Association, Philadelphia, which will establish an exchange system for Ford automobiles, has been incorporated with $5000 capitalization by E. M. MacFarland, J. Vernon Pimm and E. R. Hansel.

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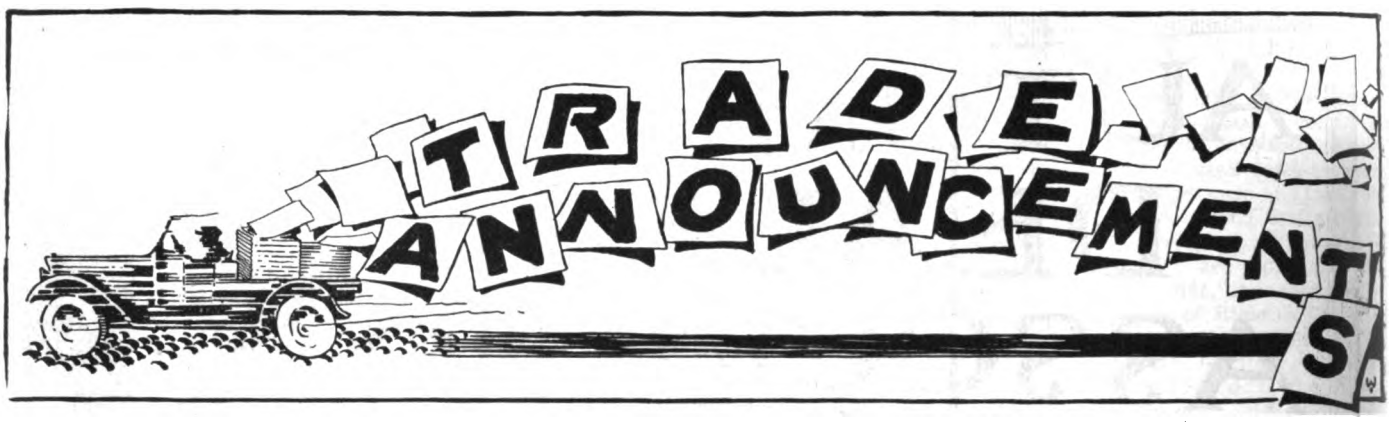
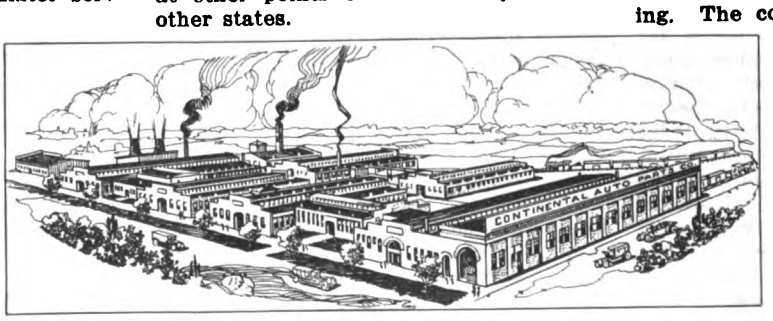


United Motors Service, the authorized service department of Delco, Klaxon and Remy, with general offices in Detroit, has opened a branch in Buffalo at 1127-33 Main street, where in addition to giving official factory service on all motor car electrical equipment, it will operate a special retail department, selling for the present the following equipment: Formost cord ties, Formost inner tubes, A. C. spark plugs, Klaxon warning signals, Jorgenson vapor primers, Jaxon rims, Weston ammeters, miniature lamps. It is not the purpose of the company in operating this retail department to handle a complete line of accessories, as found in the average accessory store. Instead, it will devote its energies to this special line of equipment, carrying out its established policy of direct factory representation on certain special lines, in order that the customer may have the advantages of purchasing his material from a direct representative of the manufacturer. United Motors Service maintains a country wide, amply equipped and efficient organization of expert factory trained workmen, giving service on the starting, lighting and ignition equipment of the Delco and Remy systems and on the warning signal equipment of the Klaxon company. This specialized selling of accessories, operated in conjunction with its electrical equipment service department, is the first of its kind established in any of the 16 branches of United Motors Service Inc. The company plans, however, to install this new service in its other branches as rapidly as possible. The first of these stores was established in Buffalo, coincident with the establishment of its branch, because the company felt that Buffalo was particularly in need of this kind of service and because Buffalo is the leading touring center of the United States. Later this nation wide line of stores will add to its line oils, tires, radiator service and Boice motometers.

The Continental Auto Parts, Co., Knightstown, states that it is being moved to Columbus, where six times the present floor space is provided in the plant formerly occupied by the Janey Manufacturing Co., builder of agricultural implements. Practically the entire personnel of the Continental organization moves to Columbus, where an almost immediate increase in production is planned to enable the firm to catch up with orders and develop several new lines. The Continental Auto Parts Co. has been building a well known line of shop equipment such as motor stands, axle stands, radiator stands, welding and assembly tables, industrial trucks, jacks, hoists, wrecking trucks, creepers, bushing presses, crankshaft straightening presses and burning in machines. This line has been in such demand that for the past two years the factory has been four to five months behind in filling orders. According to J. H. Staley, who is the originator of Continental Shop Equipment, the new Columbus plant provides the necessary space and equipment to permit an almost immediate increase in production. Seventy-five thousand square feet of floor space is available. The new quarters are completely equipped with a foundry, blacksmith shop, wood working department, paint shop, machine shops and a large warehouse with railroad connections and car level shipping platform.

The Advance Auto Service Co., which will have its principal offices in Newark, N. J., has been incorporated by Walter H. Shutt, Charles R. Hulley and others. Mr. Shutt, who has been closely identified with the H. J. Koehler Motors Corporation, Newark, for a number of years, has severed his connection with that firm to devote his time to the new company. The Advance Auto Service Co. will conduct engineering and special service departments in addition to rendering a repair, reconstruction and manufacturing service. Offices and shops of the new corporation are at 20 Orange street, Newark. It is planned to establish branches at other points of New Jersey and in other states.



New Plant of Continental Auto Parts Co. at Columbus, Ind.

The Higgins Spring and Axle Co., Racine, Wis., announces that incorrect reports have been published to the effect that it has disposed of its business, equipment and material to a new corporation formed at Edgerton, Wis., by the name of the Continental Axle Co. The real fact is that the Higgins firm sold to the new company the machinery and stock of only one department. In this department, which was organized a year ago, were manufactured motor truck, trailer and tractor axles. The Higgins company will continue to do business as heretofore, except on a larger scale in the other departments in the manufacture of springs of all kinds for passenger cars, motor trucks, trailers, tractors and replacements, as well as springs of all kinds for horse drawn vehicles. The company will also continue the manufacture of axles for horse drawn vehicles, just as it has done for many years. The Continental Axle Co. was formed to produce axles only for motor trucks, trailers and tractors on a large scale and will have nothing to do with springs for such vehicles. This new corporation is being backed by prominent men with sufficient capital for its promotion. The Higgins Spring and Axle Co. is installing the latest type of machinery to handle its present departments, which have brought great prestige to the company for the last 36 years. These departments will be greatly enlarged in every respect to meet the present demands for the high grade goods they are now producing.

The Plaza Products Co., with offices at 1777 Broadway, New York, seller of the well known Plazine brand of lubricating oil and grease, announces that it places at the disposal of the tractor or truck user its entire experience for the solution of lubrication difficulties and for the selection of the correct grade of lubricant for the particular motor or bearing. The company points out that the motor oil is, in a large majority of cases, responsible for the scored cylinder walls and bearings and also for any large carbon deposits. The proper grade of oil will greatly alleviate these conditions and save the tractor or truck user many dollars each year in repairs.

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TIRE INDUSTRY AND TRADE

The Goodyear Tire and Rubber Co., Akron, O., is meeting with success in its week-end traveling school for salesmen of its various branch offices throughout the country. Formerly it has been the custom to assemble the salesmen for instruction into one large class at the main offices at Akron for instruction, but as pressure of business made it inadvisable to follow out this plan further, because of the loss of time entailed while away from their territory, the plan of instructing these men in their own branch offices by capable instructors was adopted. Under the supervision of Lake Jones, director of sales instruction, these week-end schools are now operated in several of the Goodyear branches. "One of the advantages of this new plan," said Mr. Jones, "is that we can include the credit men, service men and office managers, along with the salesmen, and are able to give them all instruction concerning credits, policies, product and salesmanship in their own particular field, without disturbing to any appreciable extent the transaction of business."

The Pennsylvania Rubber Co., Jeannette, Pa., has purchased 120 acres immediately south of the plant upon which it is erecting modern homes for its employees. These homes are not of the type commonly known as "factory homes," but are modern, commodious residences of stucco and brick. Twelve have already been built, and they are now occupied. Thirty-three more are in the course of construction. Streets are being graded and improved and it is planned to continue until a minimum colony of 600 houses has been completed.

The Fisk Rubber Co. announces that George L. Sullivan, for three years advertising manager, has resigned to go with the J. Walter Thompson Co., New York. Miss M. G. Webber, who has been a member of the advertising department for a number of years, and who for the last three years has had charge of the outdoor advertising of the company, assumes the position of advertising manager.

The Pennsylvania Rubber Co. announces the appointment of Dan McAvoy as manager of the Omaha branch, succeeding O. A. Olson.

LAKE JONES.

Director of Goodyear Week-End Traveling School Which Is Being Successfully Conducted for the Salesmen of Its Various Branches Throughout the Entire Country.

The J. & D. Tire Co., Charlotte, N. C., announces the election of H. L. McClaren as president and active general manager. Mr. McClaren recently resigned as president and general manager of the Ajax and Racine rubber companies. He ranks as one of the most capable and experienced men in the rubber industry, and the fact that he has dropped all other interests in order to center his efforts in developing the J. & D. plant indicates that big plans are under way to make this company an important factor in the tire industry. William F. Smith resigned the presidency in favor of Mr. McClaren.

The Pennsylvania Rubber Co., Jeannette, Pa., announces that E. T. Peterson, who was formerly district sales manager for the Commercial Car Unit Co., Philadelphia, has accepted a position as manager of the Buffalo branch of the Pennsylvania Rubber Co. Mr. Peterson has a wide experience in the tire field and comes to the Buffalo branch fully equipped to look after the increasing business of the Pennsylvania.

The Standard Rubber Co. is having machinery delivered to its new plant at Newark, N. J. Already installation is under way with a complete Southwark Standard Heater Press, one of the great battery of vulcanizers to be used on Stanwood cords, also double and single opening presses and inner tube stripping machines. The latest addition to the force of experts which this new tire firm is gathering is C. O. Corey, Rochester, N. Y., who will have direct charge of all engineering operations under the supervision of Edward Hutchens, vice president and engineer.

The Zenith Tire and Rubber Co., Cleveland, O., has been organized with $10,000,000 capital. Major Alfred W. Harris, manufacturer, who served in the war as an aviator, is president. Plans of the company are to have small plants in various parts of the United States, catering to district service and product demands. The main plant will be located near Willoughby, a short distance from Cleveland. It is understood that negotiations are already under way for the purchase of one rubber company.

The Keystone Tire and Rubber Co. declared a stock dividend of 15 per cent. payable to shareholders Sept. 15. This is an evidence of the continued prosperity of the company. The company has more than 141 stores. The report states: "There is no foundation to the rumor that this company is loaded with 'seconds,' for the reason that we are continually in search for more 'seconds,' the demand being greater than the supply."

The Kelly-Springfield Tire Co. announces that work on the new Maryland factory has been in progress for some weeks and if all goes well it should be turning out tires by June 1, 1920. The effect of this production should be to give Kelly-Springfield in 1920 gross sales 70 per cent. greater than in the fiscal year to Dec. 31, 1918.

The Portage Rubber Co., Akron, announces that at a special directors' meeting at Barberton, O., a quarterly dividend of 1¾ per cent. was declared on all outstanding preferred stock of record Sept. 20, payable Oct. 1.

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Oppose Special Tariff On Auto Imports In England

A CABLE dispatch from England states that Sir Auckland Geddes held out no hope to a deputation of British commercial motor manufacturers that the government would impose a special tariff on foreign commercial motors and agricultural tractors. The manufacturers declared that American competition would seriously damage the motor industry of the country.

The president of the Board of Trade said that he could not understand the demand for a special tariff to afford home industry a special measure of protection. At the present moment, he added, there was in England a much greater measure of protection than was ever dreamed of before the war.

In the case of private cars the existing duty added to the freight charges, cost of packing, insurance and loss on exchange, meant in the case of America, he said, an actual rate of protection of over 88 per cent, while in the case of commercial cars the difference of exchange, high freights, insurance, etc., gave a protection to the industry of at least 45 per cent.

The government, he said, could not agree to impose an additional 33 per cent. on American lorries. It was unthinkable.

Dealing with the possibility of competition from America, Sir Auckland said that for some time they had little to fear from such competition.

"Unless America takes more goods from us," he said, "there is not likely to be any flood of imports from America. Exchange is against that for one thing."

AUTO CENSUS ABROAD.

An automobile census of foreign countries has been compiled as of July 30, 1919, by the American Exporter, as follows:

Algeria, 5,000; Argentina, 25,000; Australia, 25,000; Austria, 19,300; Barbadoes, 700; Belgium, 12,000; Bolivia, 500; Brazil, 10,000; British East Africa, 900; British Honduras, 50; British South Africa, 11,500; British Guiana, 700; Bulgaria, 1000; Canada, 300,000; Ceylon, 3500; Chile, 8500; China, 1500; Cochin-China, 950; Colombia, 1000; Costa Rica, 350; Cuba, 20,000; Curacao, 150; Denmark, 7500; Dominican Republic, 1000; Dutch East Indies, 12,000; Dutch Guiana, 100; Ecuador, 400; Egypt, 1500; Finland, 2000; France, 200,000; French Guiana, 100; Germany, 75,000; Great Britain, 415,000; Greece, 1000; Guadaloupe, 300; Guatemala, 300; Haiti, 265; Hawaiian Islands, 6340; Honduras, 110; India, 4500; Italy, 35,500; Jamaica, 1500; Japan, 3000; Martinique, 540; Mexico, 15,000; Morocco, 1000; Netherlands, 20,000; Newfoundland, 500; New Zealand, 14,665; Nicaragua, 150; Norway, 3500; Panama, 560; Paraguay, 100; Peru, 1500; Philippine Islands, 9220; Porta Rico, 5085; Portugal, 5000; Portuguese East Africa, 150; Roumania, 2500; Russia, 15,000; Salvador, 100; Siam, 1300; Spain, 14,000; Straits Settlements, 3200; Sweden, 10,000; Switzerland, 6140; Trinidad, 825; Tripoli, 700; Tunis, 500; Turkey, 500; Uruguay, 5000; Venezuela, 1500; miscellaneous, Asia and Africa, 1000; total, 1,384,250.

GETS CONTRACTS ABROAD.

E. E. Bloom, export manager of the Haynes Automobile Co., has returned from a two months' trip to Europe. Haynes dealers are now located in the larger cities of Norway, Sweden, Denmark, Holland, France, Belgium, England, Spain and Italy. Mr. Bloom closed many dealer contracts.

FOREIGN TRADE OPPORTUNITIES.

(Reserved addresses may be obtained from the Bureau of Foreign and Domestic Commerce, Washington, D. C., or from district or co-operative offices.)

30,555—A firm in Norway desires to secure agencies for lightweight and also large, heavyweight trucks, and lightweight and heavy automobiles. Correspondence may be in English.

30,546—An automobile sales company with repair shops and garage in Czechoslovakia desires to purchase and secure an agency for the sale of motor trucks, automobiles, accessories and tires. Payment to be in United States currency. Reference.

30,541—A commercial agent in Spain desires to secure an agency for the sale of paper, automobiles, hardware, etc. References.

30,538—An agency is desired by a man in France for the sale of automobiles, agricultural implements, general merchandise, etc. Reference.

30,514—An agency is desired by a man in Rumania for the sale of agricultural machinery, tractors, etc.

30,571—A corporation in Poland, establishing a taxi service, requires low priced cars, 50 landaulet bodies, 30 limousine bodies and 20 torpedo bodies, with taxi meters. It is requested that quotations be cabled c. i. f. Danzig, with time of delivery. Payment, half on shipment and half on arrival at Danzig. Inquirers willing to pay cable charges should send offers through the Office of the Foreign Trade Advisers, State Department, for transmission to consul.

30,626—A business man in the north of France has established a commission and export house for purchasing and selling of all industrial articles, engines, leathers, motor cars, industrial oils, motors, gasoline, etc., for firms not already represented, and now desires to secure agencies from such firms. Correspondence may be in English. Reference.

30,589—A dealer in France desires to purchase or to handle on commission or consignment, automobiles, motorcycles, tires and accessories. Reference.

30,590—The American office of a firm in Sweden desires to be placed in communication with manufacturers with a view to securing agencies for the sale in the Scandinavian countries of agricultural machinery, belting, technical and industrial machinery, motor trucks, engines, etc. References.

30,620—A business man in Egypt desires to secure an agency for the sale of tools, machinery, hardware, automobiles, bicycles, leather and all general merchandise.

30,592—An American export corporation is soon to send a representative to Europe and invites immediate offers from manufacturers of iron and steel articles, hardware, machinery, farming implements, medium priced automobiles, tires and rubber goods. Catalogues in duplicate and price lists, subject to confirmation, are requested. Reference.

30,617—An agency is desired by a man in England for the sale in that country and Switzerland of machinery of all kinds, motor cars and also an agency for an engineering firm. Reference.

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Sane Optimism Is Keynote At M. A. M. A Session

Convention Proves Most Successful and One of Most Important Ever Held By the Association

ALTHOUGH the two-day business session at the third annual credit convention of the Motor and Accessory Manufacturers' Association in Buffalo, N. Y., were devoted primarily to credit subjects, general conditions in the business world, and particularly the automotive industry, were discussed from all angles.

Sane optimism was the keynote and this attitude was unanimously reflected by the attendance of approximately 150 representative executives of the industry, including credit managers and general officers of leading automotive equipment companies throughout the country.

Charles E. Thompson, president of the association, made this statement concerning the convention:

"The automobile industry was never in healthier condition than it is today. The paramount problem before us is to maintain this health and safeguard this prosperity. Optimism is, of course, desirable and warranted, but it is likely to prove a snare and a delusion unless it is built firmly on sound business principles, and qualified by caution and prudence.

"Sane optimism is the predominate keynote among the leaders of the automotive industry today. This attitude was reflected in all the addresses and discussions at our convention.

"We had with us at this convention approximately 150 credit managers, credit assistants and other executives. Nothing could be more valuable in determining the present condition of the automobile industry than the report of such a gathering of men.

"Business interests in general and particularly men in the automobile industry, should take keen gratification on the sane, constructive and forward looking note of optimism sounded at this convention.

Safety Valve of Industry.

"We are looking not through rose-tinted spectacles, but through far-seeing, unblurred glasses. We appreciate the unprecedented prosperity of the present, but we are constantly endeavoring to prepare for the future.

"The wise credit man is the safety valve of the industry; but he is not merely a negative force—he is a producer, an organizer and a stimulator of sales and activity as well.

"For these reasons I feel safe in saying that the convention just closed was not only the most successful convention yet held by the association, but in a real sense, one of the most important get-together meetings in the recent history of the automobile industry." . .

L. M. Wainwright, treasurer of the association and president of the Diamond Chain and Manufacturing Co., Indianapolis, said:

"I am an optimist as to business generally, and the automobile industry in particular. The obstructionists, whether Bolshevists, I. W. W.'s, or similar class distinctionists, will fail in their purpose. I believe in and have an abiding faith in the independent thought and initiative of the vast silent majority of true American citizens. Their vote is sealed, but not yet delivered. Trust the silent majority."

Business interests in general and particularly men in the automobile industry, should take keen gratification on the sane, constructive and forward look of optimism sounded at this convention. We are looking not through rose-tinted spectacles, but through far-seeing, unblurred glasses. We appreciate the unprecedented prosperity of the present, but we are constantly endeavoring to prepare for the future. —Charles E. Thompson, president of the Motor and Accessory Manufacturers' Association.

S. S. Meyers, general counsel, said:

"The Motor and Accessory Manufacturers' Association has sounded the keynote not only for itself and the automobile industry, but for the business world as a whole, by its clarion call for optimism, not mere optimism based upon day dreams and the belief in miracles, but constructive optimism, substantial optimism and an optimism based firmly upon sound commercial and industrial principles. The dominant figures in the automobile industry do not believe in miracles, but rather in a strong structure built by the careful and prudent use of brick and mortar. We are living in an era of extraordinary prosperity today, but at the same time by viewing that prosperity in a forward looking manner, are laying the foundation for continued prosperity and further progress on the high roads of industry. The achievements of today should act as an incentive for the advancement of tomorrow."

To Enlarge Credit Service.

Important plans for the further enlargement and expansion of the credit service of the association were outlined by C. A. Burrell, manager of the association's credit department. In the informal discussion that followed most of the addresses, many of the members present exchanged their viewpoints and ideas on the general usefulness of the association in cooperative work, as well as on its specific service to the membership in matters affecting credit, railroad transportation, legislation, the administration of the excise tax and the broad field of other activities vital to the industry.

The proposed standing creditors' committee of the association was outlined by E. R. Ailes, treasurer of the Detroit Steel Products Co. This proposed committee involves an important and extremely valuable extension of the association's activities, and provoked considerable discussion.

The viewpoint of the National Association of Credit Men, with respect to the proposed standing creditors' committee of the association, was stated by E. B. Moran, manager of the Credit Interchange Bureau of the National Association of Credit Men. The referee's viewpoint was expressed by C. D. Friebolin, referee in bankruptcy of Cleveland; the bankers' viewpoint by Joseph A. Bower, vice president of the Liberty National Bank of New York, and the members' viewpoint by J. M. McComb, assistant treasurer of the Crucible Steel Co. of America.

Other important phases of the credit work of the association were discussed by F. R. Wilhelmy, assistant treasurer of the Standards Parts Co., Cleveland, and M. C. Dittmann, vice president and general manager of the American Bronze Corporation, Berwyn, Pa.

M. L. Heminway, general manager of the association, and C. A. Burrell, manager of the credit department, expressed keen gratification over the success of the convention. An informal banquet was held Thursday evening and Saturday was devoted to a golf tournament and a trip to Niagara Falls.

FACTORY RADIATOR SERVICE.

The United Motors Service, Inc., has inaugurated at its New York City branch, 239-41 West 56th street, Harrison factory service on all types of radiators in addition to service on Delco, Remy and Klaxon electrical equipment. J. L. Elwood, general manager of the branch, states that there has been practically no radiator service, neither the radiator or power vehicle manufacturers giving this the attention that is believed necessary, for there is general recognition of the possibilities for radiator damage and there is no doubt the cooling sections wear more quickly than the other units of the assemblies.

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PRACTICAL SUGGESTIONS FOR AUTO MECHANICS

SPINDLE ARM BUSHING FOR FORD TIE ROD.

On practically all Ford machines the tie rod connecting the steering arms of the front wheels will rattle. This is due primarily to wear and if owners knew just how easily this could be prevented they would surely make the necessary change. An old spindle body bushing can be forced into the spindle arm and the shoulder of the bushing will make a longer bearing surface for the steering arm connecting rod.

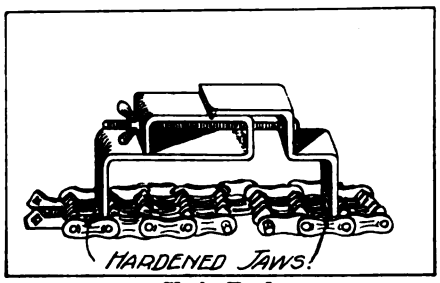
The shoulder of the bushing should be placed at the top, so that it will carry the weight of the steering arm connecting rod. About one-sixteenth of an inch, or even a little more, should be filed off each side of the steering arm. This will afford more room for the shoulder, or flange of the bushing. After driving in the bushing file off any part of it which may project through the spindle arm. Now file off the flange of the bushing to a snug fit with the yoke of the steering arm connecting rod.

FORD IGNITION SYSTEM.

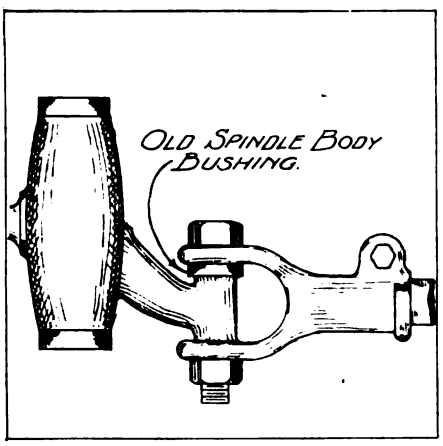
The Ford ignition, starting and lighting system is of the two-unit type, having a separate generator and starting motor. A wiring diagram is shown on this page. The generator is gear driven from the timer gears. It is of the standard six-volt capacity and is supplemented by an 80 ampere-hour storage battery that is carried on the left running board of the car.

The starting unit is equipped with Bendix drive that engages the gear teeth cut on the rim of the flywheel. A suitable instrument board to accommodate the coil switch, ammeter, primer, etc., is provided for these electrically equipped models.

It is not possible to apply this equipment to older Ford models because of the difference in form of the castings necessary for the "built in" equipment.



Chain Tool.



Spindle Arm Bushing.

TESTING VENT PIPES.

It is well in filling the radiator of a car to allow enough water to pass in to bring the level over the end of the vent pipe. If this pipe is clear, as it always should be, the fact will be indicated by the overflowing of the water through it. If it is not clear the water will overflow through the filter cap and not the vent pipe, and it should be attended to at once.

CHAIN TOOL FOR REMOVING LOCK LINK OF MOTOR CHAINS.

Removal or replacement of the lock link of motor chains, such as used for driving the generator, is greatly facilitated by the use of a tool that will hold the chain together while the work is being done. This tool is simple in construction and is well worth the trouble of making.

The tool comprises two steel hooks that may be caught into the links at each side of the lock link and contracted by a thumb screw and bolt. In order to insure durability it is advisable to have the steel jaws case hardened.

ARMATURE TESTING STAND.

The armature testing stand is an adjustable stand used in testing open or short circuits in an armature after it has been removed from the frame. It consists of two wooden rests notched to hold the armature shaft. One rest is adjustable and may be locked in any position, so that practically any armature may be accommodated. Attached to the binding posts on the sliding rest are two copper wire brushes, so bent that they rest on opposite sides of the commutator.

In making the test a single dry cell is attached to these binding posts. Leads are then taken from the telephone receiver and placed in rotation on adjacent bearings of the commutator, and the commutator slowly rotated. Absence of a buzzing sound indicates a short circuit; a large buzz indicates an open circuit.

A three scale voltmeter could be used in a similar manner instead of the receiver. In the absence of a lathe these rests may be used as a support in refinishing the commutator surface, drive being effected through a belt placed over the armature winding.

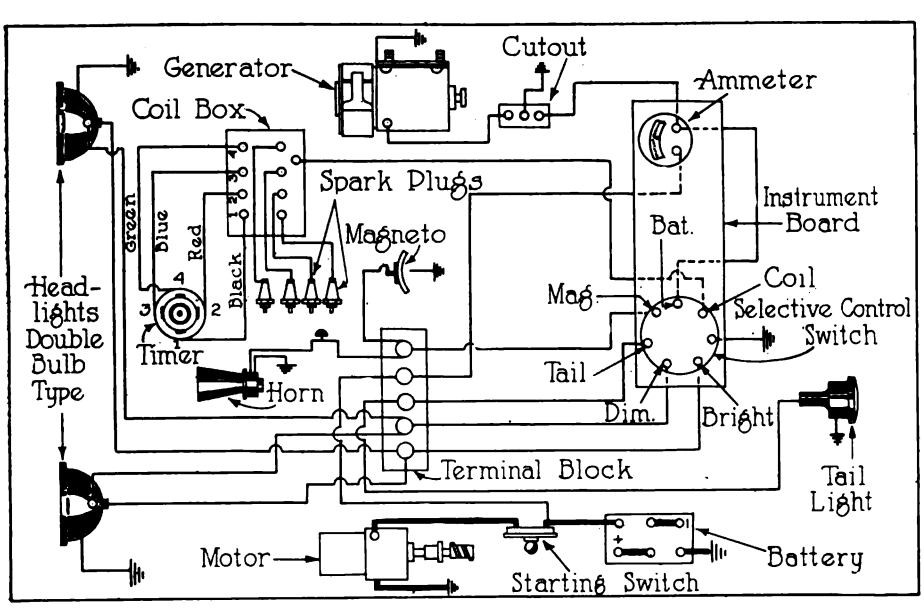
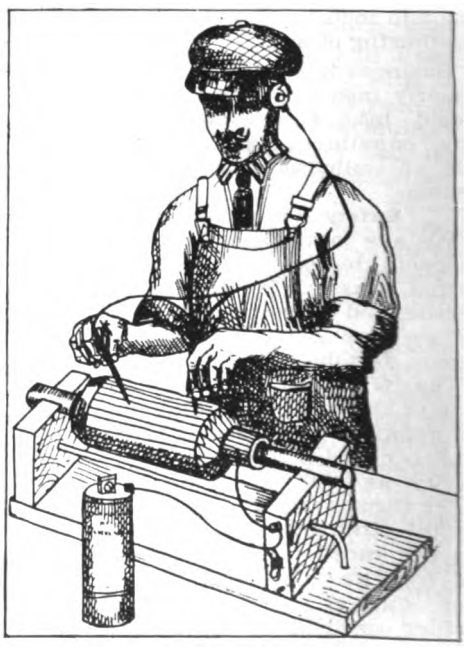


Diagram Showing the Wiring in the Ignition, Starting and Lighting System Employed in the Ford Sedan and Coupe 1919-20.



Armature Testing Stand.

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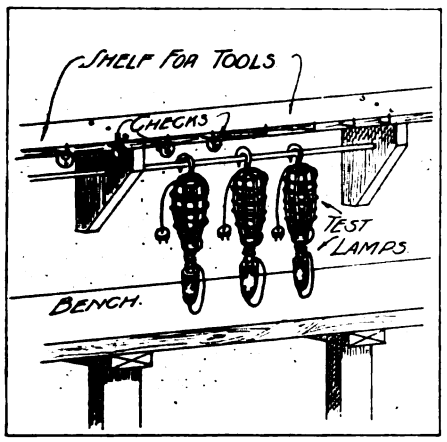
Mechanical Suggestions for Garage Men



Inspection Lamp System.

INSPECTION LAMP SYSTEM.

One of the great losses in the repair shop is through breakage and theft of drop lights, or inspection lights as they are sometimes called. This loss may be reduced by only issuing inspection lamps to the workmen on the receipt of a tool check, and requiring each workman to return the lamps each night. The lamps may be kept in the tool room suspended on a steel wire fastened along the wall, and the workmen's checks, on the lamps that are out, may be placed on hooks above the lamps. Jacks, pumps, etc., may be issued in the same manner.

PNEUMATIC DOOR OPENER.

Much time is lost in opening and closing garage doors not fitted with door openers. In winter heat is lost through leaving the door open. A mechanical door opener will soon pay for itself. The door opener illustrated herewith is operated by compressed air. It consists of a piston operating in a metal cylinder and connected to a system of levers attached to the door. Air pressure applied to the piston forces it down the cylinder, pulling the door open through action of the levers. The door is closed by the action of a weight, attached to the door by a rope running over a pulley when the pressure is released from the piston. The valves for admitting the air to the cylinder may be placed in any convenient point in the building, preferably in the office. At the sound of a horn at the door the door is opened by opening a valve in the office, admitting air to the cylinder.

HOISTING RIG.

Handling tires in a shop can only be done with good equipment if economy of time and labor is a factor. The wheels of trucks will weigh up to 1500 pounds and these must be taken from and put on to the axles, and they must be lifted to and removed from the tire press. Chain hoists are usually used to raise and lower tires, and with these two men are generally needed to handle the heavy wheels.

In one shop where tires are handled in large numbers, each press is equipped with a ring with which one man can hoist or lower or place any wheel or tire, no matter how heavy, quickly and easily. The rig may cost from $15 to $20, but this will practically save the wage of one man, will insure against danger that might impend when lowering and swinging a wheel with an ordinary chain hoist, and greatly lessen the work for the man making the tire changes.

A chain hoist is hung directly above the side member of a press frame, the only requirement being that there shall be sufficient height for the rig. One or two guides that may be U shape are bolted on the edge of the press frame. The ends of the side members of the guides are drilled for two or three heavy bolts. The width of the guides may be from two to four inches, with the U having 2¼ inches clearance inside.

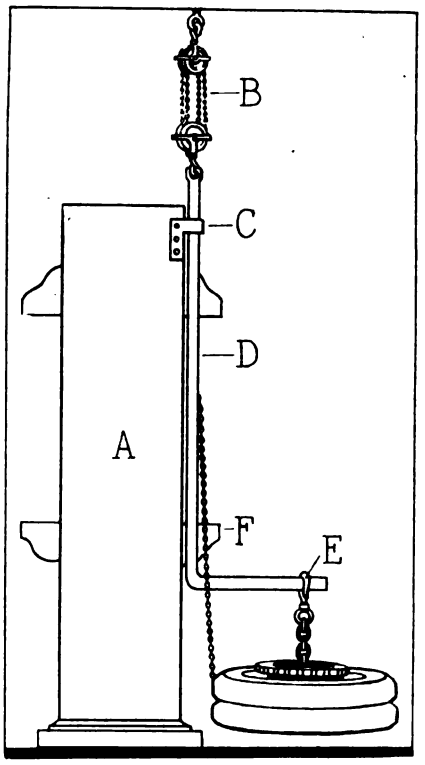


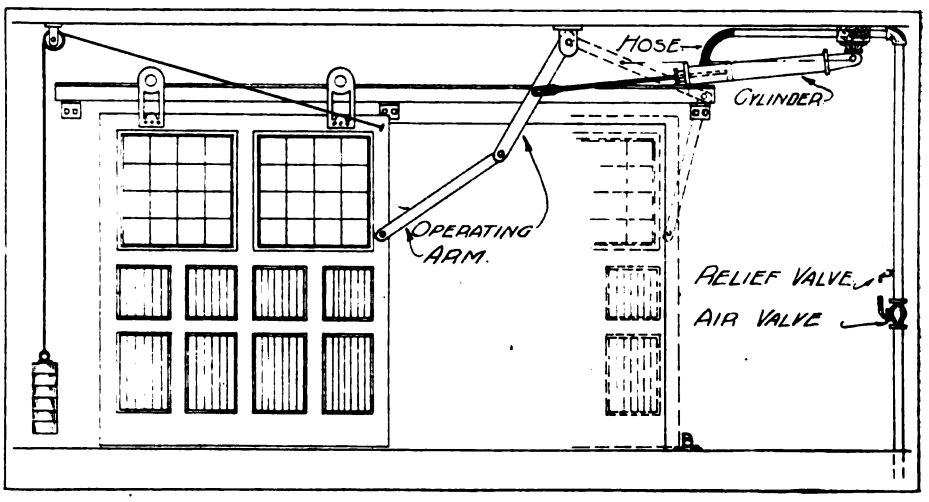
Diagram of Hoisting Rig: A, Tire Press; B, Chain Hoist; C, Guide on Press Frame; D, Steel Shaft Bent at Right Angle; E, Chain Sling for Lifting Wheels; F, Tire Press Table.

A piece of two-inch steel shafting, approximately the same length as the height of the press frame, should have one end bent at right angle to form an arm that will extend four to six inches beyond the center of the press table when the long end of the shaft is parallel with the edge of the press frame.

The ends of the shaft should be drilled with half-inch holes in which should be heavy welded rings that will take the hook of the chain hoist and the hooks of a short chain sling.

The edge of the press frame should be drilled for the bolts of the guides at such heights that the shaft can be raised so that the arm, which is the lower end, the short chain sling and the wheel, will swing clear of the press table, and the shaft can be lowered so that the wheel can be placed on the floor. The chain hoist ring at the upper end of the shaft should clear the upper guide. With this rig, which is illustrated by diagram, one man can do practically any work with the largest sized wheel. The shaft will slide in the guides freely and it may be swung the greater part of a circle. It can be positioned wherever desired with reference to the table.

A wheel can be placed on the floor near the press so that a chain sling through the center can be carried to the ring in the end of the shaft arm. With the hoist the shaft can be drawn to such height that the wheel will clear the press table and press bands, when these are used, and then swung to position the wheel on the bands. Tires can be handled with the same equipment, and when the work has been completed the wheel can be placed on the floor as quickly and conveniently.



Pneumatic Door Opener.

Underinflation is injurious to tubes. When the underinflated tire passes over a stone both casing and tube are jolted against the rim and sooner or later a leak will develop.

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COMBINATION SERVICE STATION

A Concrete Fireproof Single Story Building with Exceptionally Large and Attractive Show Room and Ample Facilities for Storage.

IN THE layout accompanying is presented an idea that may be incorporated in a building if the locality is suitable, and it should produce good results for the owner. The problem of housing both trucks and passenger cars is never determined for any locality, so that the natural tendency is to erect buildings that will meet the requirements of vehicle owners. Of course, care, judgment and thought must be exercised in deciding just what type of construction is to be followed and the relation, or arrangement of the units of which the edifice is composed.

Compactness of the layout of the different departments and their relative positions to each other not only provides large storage area, but also affords the maximum of efficiency, making possible better workmanship with contentment prevailing among those who must have to do with the operation of these departments. The sketch shows a structure one story high, covering an area of 100 by 140 feet, totaling 14,000 square feet in all.

As will be seen from the plan, the greater part of this space is devoted to storage; in fact, four-fifths of it. Yet there is ample room to devote to the show room, repair departments, etc. The truck section has the greatest space, owing to the size of some of the larger trucks. A clear span is shown, eliminating posts that might cause more or less care in placing or moving a machine into or from a given position.

Entrance is made from two streets, with the car entrance and show room fronting on the main thoroughfare, while the truck entrance is located in the side street or lane.

At the front of the building is the large show room, which as planned is 80 feet long and 33 feet wide, having two entrances from the street and three from the garage, which is designed to make possible an unusually complete show of cars and trucks. The room may be made extremely attractive by treatment of the walls with simple but impressive color schemes and decorations. The floor can be tile, with tile inlays or borders, in whatever design might be approved, with white cement mortar joints for dark faced tile and black cement mortar for light tile. The wall panels could be plaster with battens or of wood. The ceiling could be beamed and columns and pilasters used. The walls could be hard plaster or a rough sand finish. The color treatment would be to individual taste. The office adjoins the show room with entrance to it and the garage, and off the office is the women's toilet. The men's toilet is off the show room.

At the rear of the garage proper is a machine shop, a repair section, an oil and stock room, a wash stand, a toilet and wash room. A stairway leads from the toilet and wash room to a boiler room, situated underneath the machine shop. The space devoted to this need not be any larger than required to house a boiler of ample capacity, with storage for at least 10 tons of coal.

The machine shop is about 20 by 25 feet, lighted by a large skylight as shown, and should be fully equipped to handle work of any nature. The repair section is in the open, ample room being afforded for all sizes of cars and trucks. Work benches are along the walls of this section, sufficient in size to meet demands. The lighting is by a huge skylight. The toilet with wash room, combined as shown, is sufficient in size for the number of employees who would be engaged in a plant of this size.

Brick, concrete and steel are the elements that have been incorporated into this structure. Its nature is one of those called fireproof, having little or no combustible material in it.

The foundation is of concrete, 16 inches thick, or in compliance with the laws of the locality. The mixture should be fairly good, especially in the colder climates, so that suggested is as follows: 1-3-5. An extra good one is 1-2-4. Brick comprises the main walls throughout, having 12-inch panels and 16-inch piers, at least three feet wide.

The roof is supported by steel trusses at the truck section and I beams in the remainder, having steel purlins with wood cushions or plates to receive planking of roof. Plank should be of a good quality, hard pine, at least three inches thick, not spanning over 10-foot lengths. As a finish, tar and gravel should be applied.

The floor should have a good granolithic finish, one inch thick on at least five inches of rough concrete with a cinder bed. Drains should be placed as shown, ample to insure dryness at all times.

Windows are of steel sash type with wired glass. Doors are of wood or metal covered if law requires. Plumbing should be of a good standard make, as this will insure perfect satisfaction at all times.

Heating is by steam with wall radiation, this proving the most satisfactory method for this type of work. The gas pump is located on the street in a position convenient to all, enabling the handling of transient trade at all times.

The approximate cost of a structure of this type would range from $15,000 to $18,000. Any further information desired may be had upon application to the Architectural Department of this publication.

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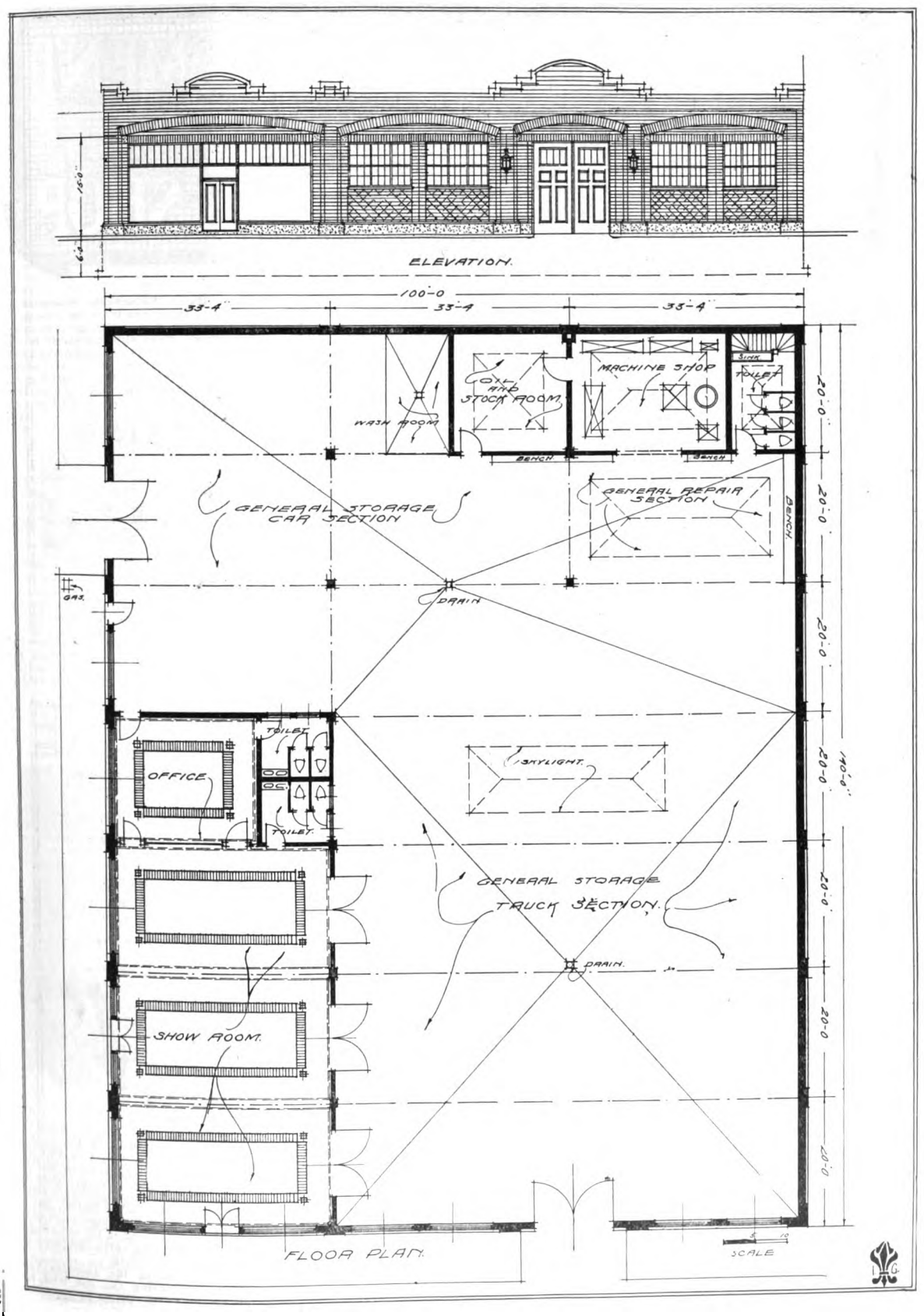

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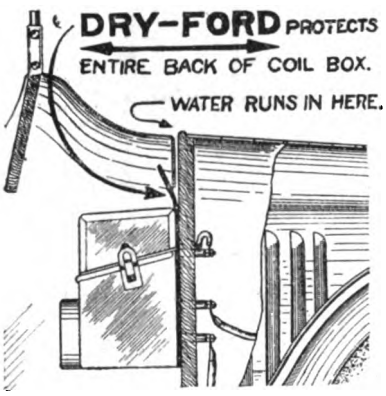
ACCESSORIES, EQUIPMENT AND TOOLS FOR THE GARAGE AND REPAIR SHOP

The Dry-Ford is a coil protector for Ford cars to prevent the water during rain from running down into the coil box and damaging the ignition. The protector is made of rubber and is placed between the back of the coil box and the dash, the porcelain terminals extending through

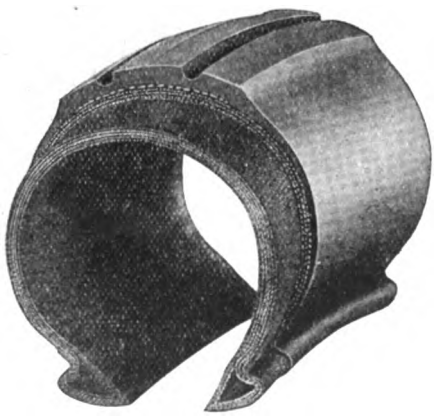


the rubber, which fits very tight around them. The top lays out slightly over the top of the coil box and all the water runs between the rubber and the dash so that the coils and coil box are kept dry. This device has been tested under severe conditions and has proved its merits the manufacturer claims. It is easily attached.

Manufactured by Peter Gray & Sons, Inc., Boston, Mass. Price, 75 cents.

Ever Last Retread. One of the biggest items of expense in maintaining a car is that of tire repairs. Very often this expense is equal to the cost of fuel and car depreciation. The main reason why most car owners have such large tire expenses is because they discard the tires before they are fully worn out.

Large percentages of tires are never really destroyed through use. The costly

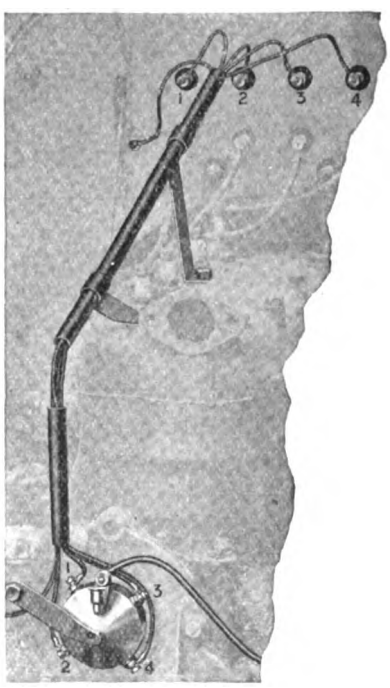


part of the shoe, the body, or carcass as it is termed, is usually in condition when the tire is thrown into the junk heap. It stands to reason, therefore, that a new tread can be put upon the old carcass and the resulting tire will last and give practically as good service as when new.

The Ever Last Tread Co., Inc., 126-128 E. New York St., Indianapolis, Ind., makes a specialty of furnishing treads for worn out shoes. These treads are fully cured and need but be applied to the old carcass. The treads are built in exactly the same manner as the original treads on the tires, that is, they have side walls, a breaker strip and surface tread. The garage man can apply these treads, make a sizable profit and do the work at about one-half the price of a new tire. This means that the automobilist can obtain practically a new tire at half price. Garage men should write to obtain the company's proposition.

Manufactured by the Ever Last Tread Co., Inc., 126-128 E. New York St., Indianapolis, Ind. Write for prices and other information.

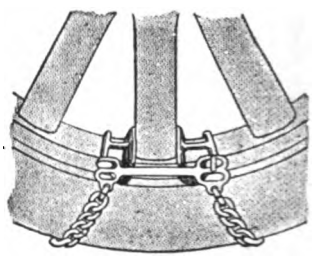
The Midway Overhead Wiring Assembly for Ford Cars consists of a wire grouping arrangement for the placing of the necessary ignition and lighting wiring of the Ford in a position where it will be high and dry and not affected by either oil or water. The wiring is enclosed in a suitable insulated tubing, supported at two points on the engine head and by a tub-



ing that fits the wiring loosely where it passes down the front of the engine to the timer. This construction makes the wiring easily accessible and as each wire is a different color it is easily traced from the coil and switch to the timer and lights.

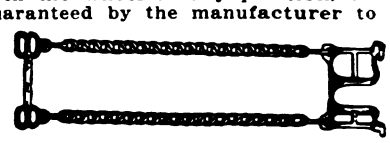
Manufactured by the Midway Mechanical Co., St. Paul, Minn. Price, $1.50.

Bear Quick Detachable Non-Skids for the motorist or truck owner comprise a simple chain device for preventing the rear wheels from slipping either in mud or on icy pavements. It consists of a suitable fastening device that passes around the spokes of the wheel, having two chains attached that pass over the tread of the tire. The chain castings are made



of malleable iron and if too loose to fit around the spoke may be placed in a vise and bent in till a fit is obtained. The chain is of a quality to withstand wear and is allowed to fit the tire loosely.

The chains may be placed on the tire with the wheel in any position, and are guaranteed by the manufacturer to give

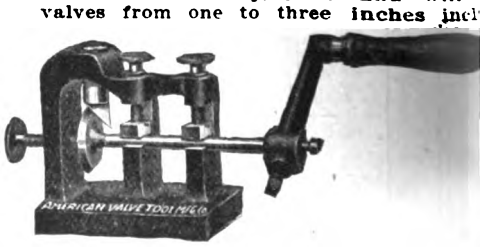


traction under all conditions. A set of eight is considered a full set, or four for each wheel.

Manufactured by the Bear Manufacturing Co., Rock Island, Ill. Prices for passenger cars, complete for set of eight sections, from $8 for three-inch casings to $15 for 5½-inch casings; for trucks, from $12.50 to $18.

American Adjustable Valve Grinding Tools consist of two tools, one for refacing the seat of the valve and the other for trueing the valve face.

Each tool is adjustable and will fit valves from one to three inches inclusive. The valve facer is a bench tool that occupies a small space on the bench, is operated by hand and does its work with a precision of a higher priced machine, smoothing off the face, preparing the valve for grinding and insuring a perfect fitting valve, the maker states. The valve seating tool cuts off all unevenness of the valve seat, preparing it for the grinding and reception of the valve, insuring a perfect tight fit after grinding.



Manufactured by the American Valve Tool Manufacturing Co., 354 West 51st street, New York. Prices on application.

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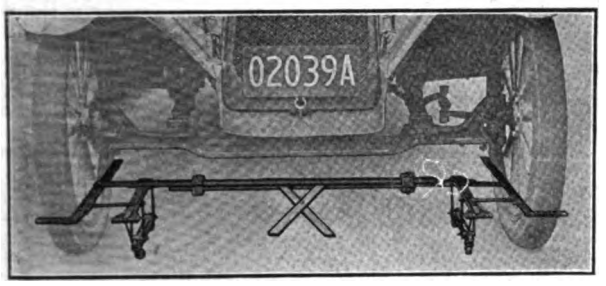


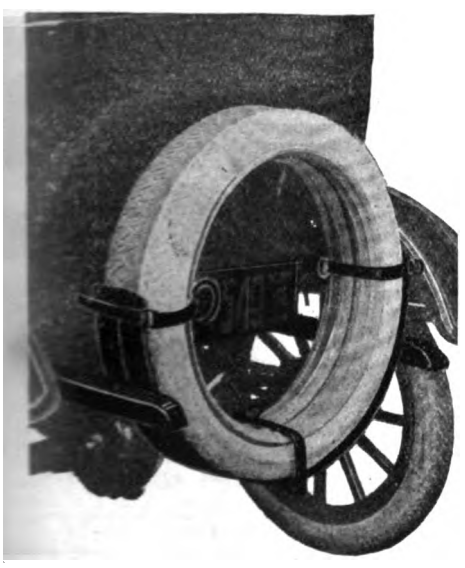
Duby's Wheel Gauge consists of a metal gauge on casters that is placed on the floor of the garage between the two front wheels of a car or truck and by means of suitable indicators shows the alignment of the front wheels either at the front or back or both. Arms at the side in the form of a tri-square fit across the front of the tire and pass back along the inside of the wheel.

The arms are manipulated by two crossed levers at the center that are positioned by hand. Two metal rods connect the arms with the center levers, being held in place by clamps, the rods are allowed to slide loosely in the clamps. It is claimed by the manufacturer that this device is a time and labor saver in the service station and that it will show the alignment of several cars during the time taken to show one by some of the old methods.

Manufactured by J. F. Duby, 1357 Blue Hill Ave., Mattapan, Mass. Price, $15.

Yankee Combination Tire Holder and Rear Guard for Ford Cars is an unusually heavy, well braced tire carrier that is fastened at the rear of either the Ford roadster or touring car and acts as a rear guard or bumper, as well as a tire carrier equipped for carrying two tires.

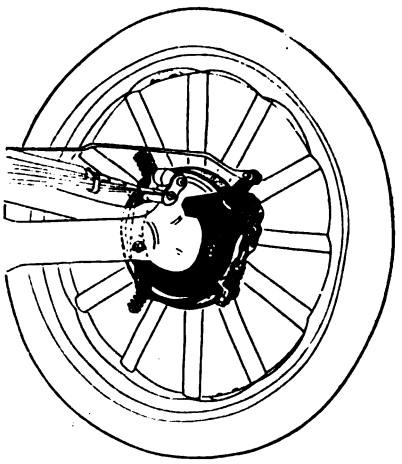
The construction of the carrier is steel throughout, providing ample strength for travel over rough roads. The cradle is rib reinforced and is further supported by a firmly riveted cross brace, which also makes a secure fastening, and a protected position for the license tag and rear lamp. The side arms are of steel, pressed into



angle shape, of unusual strength. Shoulders are provided on the arms which butt up against the cross member of the frame, allowing great strength when acting as a rear guard. Two lag screws fasten the carrier to the body, holding it in place securely by means of the screws and shoulders. Special fixtures are provided where wire wheels are to be carried.

Manufactured by the International Metal Manufacturing Co., Philadelphia. Price, $11.85.

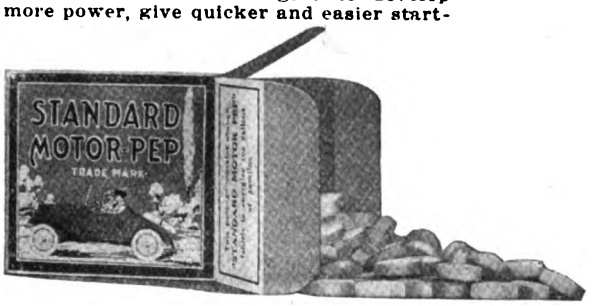
P'a-Safe Brake for Ford Cars is a brake shoe that fits over the brake drum of the Ford rear wheel and takes the place of the regular emergency brake. The band to which the lining is fastened is of steel, supported in such a manner that the shoe will not drag on the drum. The manufacturer claims that the shoe will not rattle or ride the drum. Suitable toggle joints are provided for the action and release of the shoe and also provides for fastening



the shoe to the axle flange. The usual emergency brake lever is connected to the shoes in much the same manner as when used with the regular brake. The device is made throughout of the best of material and is easily attached by anyone handy with tools. The claim is made that the brake is positive in action and will hold the car on the steepest grades.

Manufactured by the Pia-Safe Brake Co., Brookville, Pa. Price, $12.50 per set.

Standard Motor-Pep is a chemical compound in tablet form that is dissolved in the gasoline and energizes it. The manufacturer claims that its use will cut the fuel bills, enable the engine to develop more power, give quicker and easier start-



ing, snappier pick up and one-eighth more mileage on the gasoline consumed.

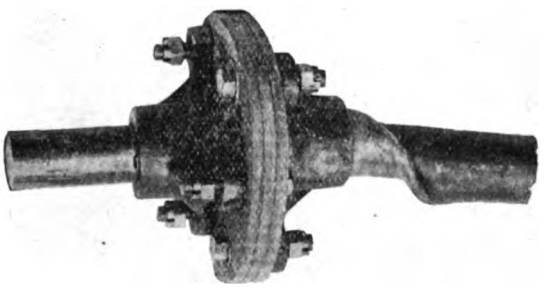
Manufactured by the Utilities Co., Cleveland, O. Price, 50 cents per box. Jobbing trade solicited.

The Hamilton Strictly High Grade Heavy Red Antimony Inner Tube is an unusually heavy red tube that the manufacturer claims is heat resisting, conforms readily to the casing, will not leak at splice or valve, is durable and economical from a service standpoint and is fully guaranteed.

This tube is particularly a jobbing house or accessory supply store proposition and the company manufacturing it

wishes to hear from this class of trade, as it has a particularly interesting offer.

Manufactured by the Hamilton Rubber Manufacturing Co., Trenton, N. J. Prices and literature on application.



Thermoid-Hardy Joints are composed of three sections, each made of several thicknesses or sheets of fabric and rubber placed fanwise to each other so that the layers of cotton fabric overlap one another, giving great strength. After the layer is completed, holes are made, spaced the proper distance apart and reinforced with fluted steel washers. The three layers are placed side by side and bolted to the joint ends by bolts and castillated nuts, the nuts being securely held in place by cotter pins.

The Thermoid-Hardy Joints are used for universal connections on the drive shaft of trucks, passenger cars and tractors and during the war were used on the tanks.

The manufacturer claims that their use

causes a saving in wear and tear on the gears in the transmission case and rear system, allowing the car or truck to start with a more gradual application of power, thereby reducing the strain and shock to the car. The flexible discs are so elastic that when the clutch is thrown in and the forward end of the propeller shaft can revolve five degrees or more before the axle is forced to turn. The result, the maker states, is a smooth, gradual application of power with no shock or vibration.

Manufactured by the Thermoid Rubber Co., Trenton, N. J. Prices on application.

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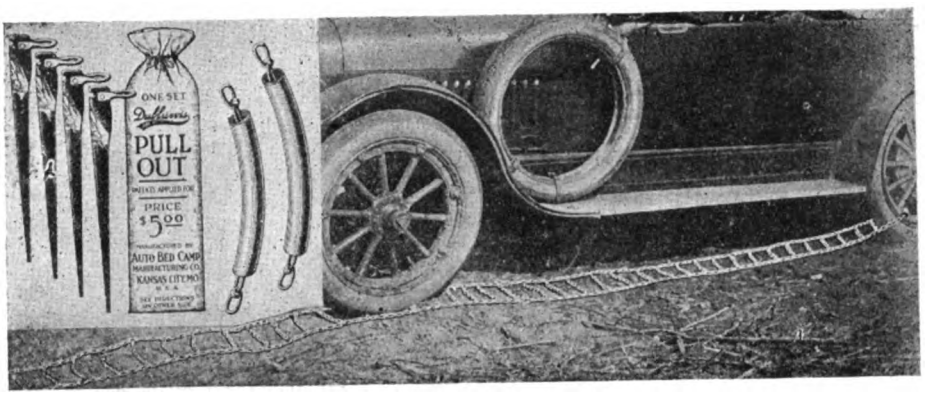


The A-B-C Dubliservis Pull Out is a device to be used by the motorist when the rear drive wheel of a car is in the mud, its use providing traction in such a manner that the car is able to move out of the mud under its own power. It consists of four steel stakes and two pieces of chain with rubber sleeves.

The chain is laid out on the ground either ahead of the wheel or back according to the direction in which the driver wishes to go. The ends are securely fastened around a spoke and the felloe of the wheel. The forward end of the chain is fastened by the stakes driven into the ground, with the notches of the stakes in the forward position or against the pull.

The manufacturer states that the stakes should be forced into the ground in a vertical direction and not on a slant. In very soft ground it is simply necessary to force the stake into the ground lightly, the friction of the chain upon the surface of the ground being sufficient to hold the chain tight. In very soft stretches of sand or mud two mud chains should be joined together and spread out forward under tread of the front tire.

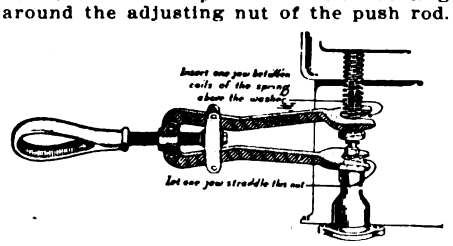
Manufactured by the Auto Bed Camp Manufacturing Co., 554 10th Avenue, New York and 1504 Grand Avenue, Kansas City, Mo. Prices on application.

The Raybestos Attaching Kit consists of a supply of the proper size rivets and the necessary tools, instructions, etc., for attaching Raybestos lining to the brake shoes of automobiles and trucks. The kit

is supplied in a neat wooden box, having each article in a separate compartment. The instructions are very explicit and besides showing each step in applying the lining, tells which tool to use and how to use it in completing the operation.

Manufactured by the Raybestos Co., Bridgeport, Conn. Price, $3.75.

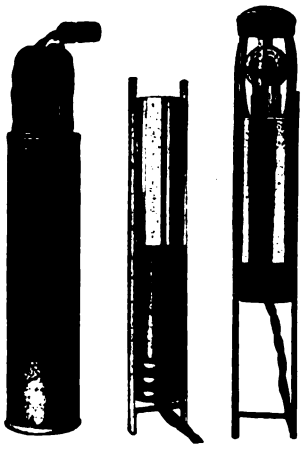
The Vichek Valve Lifter is a tool for compressing the valve springs while removing the key or pin at the bottom of the stem. It consists of two forked arms fastened at the top by means of hinged joints to a center plate. The bolt that operates the tool passes through a threaded opening in the plate to a center cross plate that is movable on the forked arms. To operate the tool the forks are placed one at the bottom of the spring and the other over the push rod and resting around the adjusting nut of the push rod.



Turning the bolt forces the center plate carrying the end of the bolt to slide toward the hinged joint of the arms, compressing the spring and allowing the pin in the end of the stem to be removed. Loosening the bolt allows the tool to be removed and placed in position for compressing the next spring. The device is a drop forging, guaranteed against breakage, is quick in action and has a very powerful lift.

Manufactured by the Vichek Tool Co., Cleveland, O. Price, per dozen, $15.

The Extension Night Lamp consists of a black enameled wood handle fitted with an Ediswan type socket, 10 foot cord and hard rubber plug connector. The bulb is protected against breakage while in use by a spring nickel guard, projecting from the socket mounting. A brass tube fitted over the handle slides over guard and bulb. By sliding the tube either a general illumination or a concentrated light may be obtained. A brass frame is attached

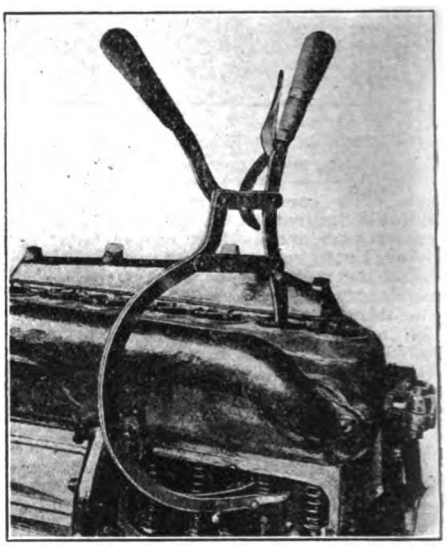


to sliding tube and serves as a reel for winding up the cord when the lamp is not in use. The sliding tube and reel frame are finished in a rubberoid black enamel, all other parts being nickel plated.

The type CB is equipped with concentrated bulls eye and is convenient for reading road signs, house numbers, etc. Dimensions of lamps are 1¼ inches diameter by eight inches long. Each lamp is packed in a substantial screw cap tube.

Manufactured by the Cuno Engineering Corporation, Meriden, Conn. Prices, type C, single and double wire, each, $2.20; type CB, bulls eye, single and double wire, $2.40.

Mapson's "Perfection" Valve Lifter is a device for compressing the valve springs on L and T-head engines and which exerts a powerful pressure with little effort on the part of the operator. The fork is adjustable for any size stem. It consists of a long arm that passes out and around the engine to the top, where it is securely held by two hinged joints, the upper end terminating in a suitable handle. The other arm has a pointed end that centers in the head of the valve, the upper end joining the first member by the hinged fastenings and terminating at the top in a handle. A ratchet and release are provided so that the operator may hold the spring in the compressed position as long as desired. Releasing the ratchet frees the arm and allows the spring to assume its natural position. The device is heavy and powerful enough to compress the



springs on heavy truck engines as well as the springs on the lighter passenger c engines. The manufacturer also makes a lighter compressor for the Ford car on the same principle.

Manufactured by the Mapson Manufacturing Co., 622 E. Eighth Street, Los Angeles, Cal. Price, $15. Ford size, $2.50.

The Se-Co Roller Bearing for Fords and Chevrolet 490 Cars is designed to replace the front bearings of the Ford and Chevrolet 490 cars with a permanent roller bearing. It consists of an outer race with a tapered bore and an inner race tapered on the outside. Between the inner and outer races are inserted rolls which are held in line by a suitable cage. The rolls are tapered to conform with the tapers of the two races and all tapers converge at one point on the axis of the journal.

The Se-Co roller bearing is constructed from chrome steel of about .60 carbon. The races are hardened all through and are machine tooled rough and finished by grinding to an accurate limit by a gauge, both for size and angularity. The roller

is made from soft steel and case hardened. The manufacturer states that the hardening process does not distort the roller even to the extent of .00025 of an inch. This roller is machined, before hardening to within .0005 of an inch, and polished after the hardening process. By this method, it is claimed, a uniform case is obtained, the soft center of the roller giving the maximum amount of resistance against breakage.

The retaining cages for these rollers are pressed out of cold rolled steel, with the depression to receive the conical end of the rollers struck at the same time, thus leaving sufficient clearance between the roller and the cage to allow for the free action of the rollers to align themselves properly with the tapered axis of the bearing.

It is claimed that this method of construction eliminates all excess friction usually found in bearings of this type. All bearings are thoroughly tested before leaving the factory by a special testing apparatus with "go" and "no go" gauges.

Manufactured by the Stacks Engineering Co., 216-218-220 West Ontario St., Chicago. Prices and literature on application.

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Ammeters, Voltmeters and Volt-Ammeters. The "Handy" pocket, portable, direct current ammeters, voltmeters and volt-ammeters are a newly designed line for the use of the garage and service station repairer and the motorist. The "Handy" is small, compact and light. The line comprises milli-ammeters and ammeters up to 50 amperes; milli-voltmeters and voltmeters up to 150 volts and volt-ammeters up to 50 amperes and 150 volts, all self-contained. The ranges are increased beyond that by the use of appropriate shunts and multipliers.

Mechanism is of the permanent magnet, moving coil type, insuring uniform scale divisions and dead beat indications. Magnets are two in number, well aged and of high grade tungsten steel. The moving coil is light and very rigid. Jewels are carefully selected Ceylon sapphires. Pivots are hardened steel, accurately ground and pointed. The staff is solid, preventing friction troubles. Springs are accurately ground and well aged. The entire mechanism is mounted on one base.

The dial is pure white bristol board with easily readable figures, and is so attached to the dial pan as to prevent buckling. The pointer is light, but rigid aluminum and is of the knife edge type, enabling close readings. All instruments are individually calibrated and guaranteed accurate within one per cent. of full scale value. The scale is 2¾ inches long.

The case is drawn brass and has a black rubberoid finish. The base is of selected, close grained wood, which will not warp and being a non-conductor the instrument may be laid on top of the battery without short-circuiting it. Terminals are of the non-removable top type.

Manufactured by the Roller-Smith Co., 233 Broadway, New York. Prices on application.

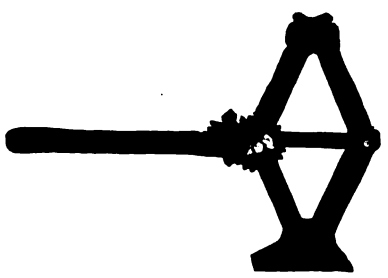
The Hi-lo Jack employs a somewhat different principle from that usually followed in jack construction. It is unique in design and has many advantages not usually found in the ordinary jack.

The construction is based on the toggle principle. As a result of tests made by the manufacturer and by users it is claimed that the jack is able to operate in places where it would be impossible to use the ordinary jack. For instance, when a truck or passenger car becomes mired in the mud the jack may be placed under the axle of the truck and the vehicle raised out of the mud.

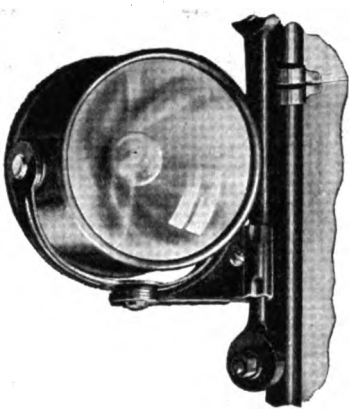
When folded the jack occupies little space in the tool box, being only five inches long when in this position. It will start to lift at six inches and has a range from six to 17 inches, and the higher it is extended the greater the lifting power.

Hi-lo jacks are made in six different sizes for passenger cars and the heaviest trucks. They are constructed from a combination of drop forgings, high grade malleable castings and cold rolled steel, so made that they have a large margin of safety over rated capacity.

Manufactured by the Rowe Calk and Chain Co., Plantsville, Conn. Prices and literature on application.



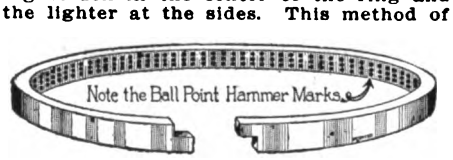
The Stewart-V-Ray Searchlight is made throughout of the best material and is nicely finished in black enamel baked on. It is suspended from the side of the windshield by suitable brackets of the clamp type and may be turned either to the side, inverted or turned to the ground. At the rear of the lamp is a mirror that enables the motorist to see traffic at the rear.



The reflector is deep and is fitted with a high power lamp that enables the driver to see the road without difficulty. The lamp is supported by trunnions at the side and a swivel joint at the top, allowing a wide range in which the light may be turned.

Manufactured by the Stewart-Warner Speedometer Corporation, Chicago, Ill. Price, $6.

American Hammered Piston Rings are made by a process different from that usually employed in the manufacture of oil proof piston rings. Each ring is cast separately so as to insure proper cooling. The rings are turned in a lathe and the interior of each is then treated to a hammering process, the heavier blows being struck in the center of the ring and the lighter at the sides. This method of



enlargement makes it possible for the ring to fit the wall of the cylinder perfectly and as the ring is the same thickness all around it fits the grooves of the piston evenly.

The maker states that carbon formations in the piston grooves are prevented and that oil from the base will not work up by the rings and cannot form on the head of the piston and in the combustion chamber. The rings have a tendency to increase the compression of the engine cylinders and increase the power of the engine. They are especially adapted to Ford engines.

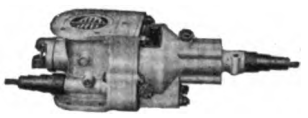
Manufactured by the American Hammered Piston Ring Co., Newark, N. J. Prices and literature on application.

The Cone-Denser is fastened to the radiator cap of the automobile and serves the double purpose of giving an alarm when overheating of the engine occurs, either through lack of lubrication or water, by giving a whistling sound, caused by the steam pressure in the radiator, that is easily heard by the driver. It also condenses the cooling medium when alcohol is used with the water during the winter months, returning it to the radiator to be used over again. By this method, the manufacturer claims, the waste of alcohol is eliminated and the cooling medium is kept at its proper strength at all times.

The device consists of a series of baffle plates having a large amount of cooling surface. As the steam or vapor rises it collects in the cone-denser, is cooled and the liquid returned to the radiator in a liquid state. It also prevents evaporation of the non-freeze alcohol solution.

Manufactured by the Cone-Denser Manufacturing Co. 116 Plymouth Bldg., Minneapolis, Minn. Price, $6.

The Duplex Universal Governor for Ford Cars is simple in construction and is easily attached to any Ford engine. The governor proper is attached to the engine manifold between the carburetor and the engine. The power to operate the governor is obtained from the timing gear case in the Ford, and in other types of cars, such as use a sliding gear transmission, a double drive system is used.



Power for this system is obtained from the transmission and the end of the camshaft at the rear of the engine, each drive using a separate cable, with both cables centering at the governor. The shutter of the governor differs from the shutter ordinarily used in that a grid construction is employed.

The manufacturer claims that this construction allows the gas to enter slowly and has a tendency to break up the gas before entering the combustion chamber,

TRADE MARK
NONE OTHER

allowing the engine to operate to better advantage. The action of the shutter is positive and easy, and racing of the engine is prevented by taking the drive from the engine timing gears, it is also claimed.

Manufactured by the Duplex Engine Governor Co., Inc., 36 Flatbush Ave. Extension, Brooklyn, N. Y. Price and literature on application.

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The Stewart Hub Odometer for Ford Trucks is easily attached to the front hub by removing three bolts and fitting the odometer in place. The driving mechanism receives its power from a suitable connection on the axle. The odometer is guaranteed by the manufacturer, who claims that by its use one can check the number of miles traveled and get an ac-

curate account of the gasoline and oil consumed. From these figures it is possible to tell what it costs per mile to operate the truck. It is also possible to keep track of the mileage made by the tires.

The odometer is fitted with an oil plug and the spindle and bearings may be lubricated without removing the hub cap. A cap screws into the end of the hub cap, covering the face of the odometer, keeping it clean and readable. It is easily attached in a few moments without extra tools.

Manufactured by the Stewart-Warner Speedometer Corporation, Chicago, Ill. Price for Fords, $12.

Rayfinish for Passenger Cars is a chemical product for brightening the painted surface. It consists of a liquid that is applied to the surface to be cleaned with a piece of cheese cloth and after drying slightly is removed with a clean piece of cheese cloth or other soft cloth material, leaving the painted surface in a polished state.

The manufacturer claims that by its use cars that have first been washed and thoroughly dried may be gone over with

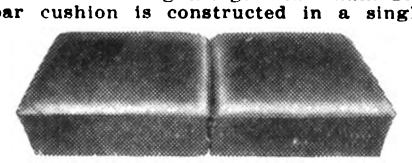
RAYFINISH
AUTO PASTE POLISH

Rayfinish, removing all stains, dullness, tarnish, oil and grease spots. Polishing with the dry cloth will restore the luster to the finish that will save the expense of repainting. Rayfinish is easy to apply and requires very little rubbing.

Manufactured by the Ray Chemical Co., New York, N. Y., and Newark, N. J. Prices on application.

The All-Wanta Ford Seat Cushions for the Ford car are different from the cushions ordinarily used in the Ford. They are constructed of better material, have longer and better springs and are covered with a better grade of leatherette.

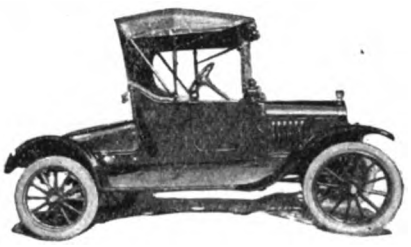
The cushion for the front seat is divided, allowing one-half the cushion to be lifted when filling the gasoline tank. The rear cushion is constructed in a single



section. The All-Wanta seat cushion is made with a steel frame construction, electrically welded, and has 32 high tempered coil springs securely fastened to the steel frame.

Manufactured by the Fort Pitt Bedding Co., Liverpool and Preble Avenue, N. S., Pittsburgh, Pa. Price, $10.

The Utility Disappearing Truck for Fords consists of a box made of heavy gauge steel and finished in black baked enamel to match the finish of the Ford. No rivets or bolts are used in its construction, as all joints and seams are ace-



tylene welded. It is placed at the rear of the Ford roadster and when not in use slides in and is covered by the turtle deck of the Ford. It is easily installed by anyone with a hammer and wrench in one hour the manufacturer claims.

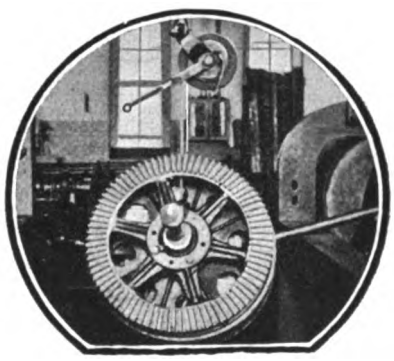
By its use the Ford may be used for a passenger car with no suggestion of the

truck showing. When called upon for truck work the deck is lifted, the box slides out, forming a body that is capable of carrying 1000 pounds.

Manufactured by the Hill Pump Valve Co., Archer Avenue, Canal and 23rd Streets, Chicago. Price, $38.50.

The Bickley Power Puller consists of a a pulling device operated by hand by which the power of the pull is multiplied many times. The manufacturer claims that the ratio of pulling is adjustable from 90.1 to 150.1, which makes it possible for one man to exert a draw bar pull up to a ton easily.

The pulley is enclosed in an oil tight case operating on roller bearings and lubricated with graphite, as are also the

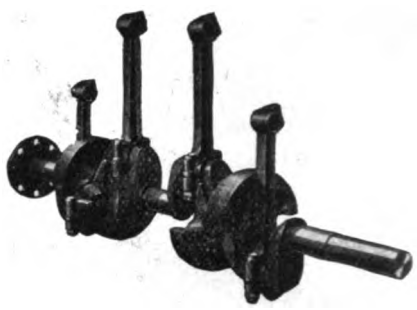


gears by which the reduction is gained. The pulley is operated by a short lever. When in use a wire rope is fastened to the eye of the pulley and passed around some stationary object, like a post, beam or tree. The tow line is then fastened to the object to be towed and by working the lever forward and back the towed article is easily moved.

The maker recommends this device to automobilists, as it may be easily carried in the tool box for emergency use as when stuck in the mud or fording streams. The device weighs 12 pounds and packs into a box 8¼ by 7¼ by 3½ inches. The cable supplied is one-quarter inch steel and enough lengths are furnished to make up 23 feet total.

Manufactured by Bickley Manufacturing Co., Philadelphia, Pa. Price, $19 complete. Guaranteed.

Dunn's Counterbalances for All Ford Cars consists of four weights that are attached to the crankshaft of the Ford engine at the oblique arms between the connecting rod bearings. Each is composed of two weights fastened together by means of two bolts passing through their centers. The object of their use is to steady the motion of the crankshaft



and in a measure eliminate vibration, allowing engine to operate smoothly. The weights are easily installed by a mechanic, an hour usually being sufficient, and once in place they become a permanent part of the car.

Manufactured by the Dunn Counterbalance Co., 115 North 15th Street, Clarinda, Ia. Price, per set, $12.

The McCaskey Safe Register System is a system of account keeping that is suitable for the service station and garage owner who wishes to have his accounts in such shape that he may refer to any account at a moment's notice.

The outfit consists of a cabinet, suitably indexed and equipped with clips for each account, and trays for holding the accounts. The outfit is only limited to

the number of accounts so kept and occupies but little space in the garage or service station office.

By its use the manufacturer claims it is possible for the customer to see at the time the transaction takes place, and while the details are fresh in his mind, whether or not his account is correct after the charge has been added or a credit deducted. It enables the customer to know at all times what he owes, so that he can provide to meet it.

The McCaskey system enables the garage or service station owner to realize fully on his credit, and, in addition, to handle all charge transactions; make the original entry, post and balance the account with a statement to date for the customer, with but one writing, the original entry. In doing this every safeguard is thrown around the account both with regard to errors and possible loss by fire.

Manufactured by the McCaskey Register Co., Commercial Department, Alliance, O. Prices and literature on application.

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The Rhodes Shaper and Slotters comprise a complete line for the service station machine shop and the garage repair shop, with several sizes in both power and electric motor driven machines.

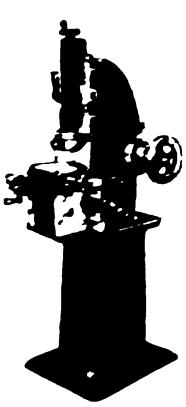
In the Rhodes shapers the column is of unusual length, giving a longer and wider bearing to the ram. The main gear is attached close to the side of the column so that in making heavy cuts there can be no springing of the walls of the column. The cone pulley is mounted on a bearing fastened rigidly to the column, which receives all strain from the tension of the

belt. The base is designed to afford a rigid foundation.

The ram is heavy and has a long, wide bearing in the column, obtaining the maximum wearing surface. The ram has a quick return and is provided with felt oilers, which keep the bearings lubricated. The position of the ram in relation to the work and the length of the stroke can be changed instantly. The ram is equipped with a gib extending the whole length of the column and has an adjustment for taking up wear.

The driving cone has three large diameter steps, arranged in regular progression, by which it is possible to obtain the necessary cutting speeds on all metal from soft brass to hard steel. The cone is mounted on a sleeve bearing, which insures proper meshing of the driving pinion and adds life to the running parts. The driving pinion and driving shaft are made of one piece steel, making a rigid construction. The cross rail is strongly gibbed to the column by a square gib on one side and an angular gib on the opposite side, which assures perfect alignment, and the gibs are adjustable to allow for taking up wear. The tool head is graduated and swivels to any angle through an arc of 90 degrees. The down feed screw has a graduated collar, reading to .001. The tool post screw is made of special steel and hardened, as is also the tool rest.

The table is of standard box form with T slot on top and V slot on the side, and the side of the table is drilled to allow the clamping of work in any desired position. The table is of ample size for supporting and strapping down a large variety of work when the vise is removed, and is equipped with a taper gib for taking up wear. The vise is of strong construction and is graduated to 90 degrees either side of 0. The jaws are made of tool steel, hardened and ground. The vise is equipped with swivel jaw.



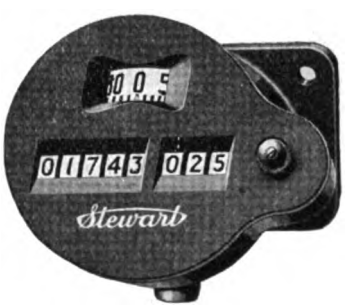
The cross feed is equipped with a lifting and turning pawl, which is used for engaging or disengaging feed. It adjusts itself automatically for any position of the cross rail and does not require loosening or tightening of set screws to adjust. The cross feed screw is equipped with a graduated collar reading to .001.

The regular equipment of the seven-inch horizontal shaper includes swivel vise, wrenches and counter shaft. This size is the one usually recommended for the service station machine shop and answers practically all purposes where a shaper is required. However, for those who wish to combine the horizontal and vertical shaper in one machine, the company manufactures a second machine for this type of work, having a vertical head. The specifications for this latter machine are similar to those of the horizontal type and the heads are interchangeable. One may purchase the two heads for the one machine, making use of the single base. Where it is required to drive such a machine with an independent motor, the Rhodes company is prepared to furnish either style with the motor drive.

Manufactured by the Rhodes Manufacturing Co., Hartford, Conn. Prices and literature on application.

The Stewart Truck Speedometer differs from the passenger car speedometer and is of heavier construction to stand the strain and vibration of truck service. It is built as carefully as the passenger car type and of the same materials.

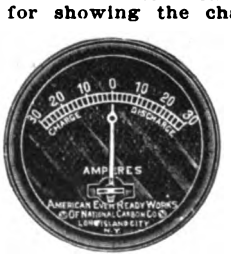
Instead of setting flush with the dash the truck speedometer is held away from the dash by a suitable mounting. The unit is bolted to the dash by four bolts.



The speed registers from 0 to 50 miles, the trip to 100 and the total to 100,000 miles. The trip may be set back to zero from any point up to 100 miles by a knurled nut at the side.

Manufactured by the Stewart-Warner Speedometer Corporation, Chicago, Ill. Price, $35.

Eveready Pocket Meters and Dash Board Instruments. Eveready Pocket Meters for testing dry cells and dash board instruments are for showing the charge and



discharge of a generator and storage battery outfit in a car. The pocket meters are of a handy size and the cases are built of brass, heavily nickel plated and polished. The dials are of metal, etched in black with raised figures on dull silver background and are accurately scaled. Each meter is supplied with a 10-inch lead fitted with proper terminals. The instruments are "dead beat," giving a correct reading instantly and regardless of whether the meter-terminal is placed on the positive or negative pole of the battery. No permanent magnet is employed.

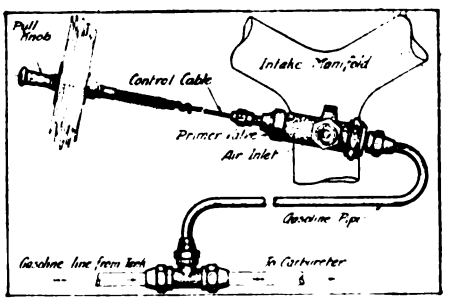
The dash instrument is simple and rugged in construction, dust and water proof. Movement of the pointer is "dead beat" through the use of an aluminum vane moving in a partially closed air chamber. The moving element is light and is supported on hardened steel pivots. The pointer will instantly follow the smallest change of current flow, and, as the torque produced by the magnetic field is very high, the vibration of the car will

not affect the reading. Regularly finished in dull black enamel with black dial, but may be furnished in polished nickel with silver finish dial if desired.

Manufactured by the American Ever Ready Works, Atlanta, San Francisco, Long Island City, N. Y., and Chicago. Price, pocket meters, No. 1002, 0-35-amps., $1; No. 1003, 0-35-amps., $1.30; No. 1005, 0-10-volts, $1.10. Dashboard instruments, $3.50 each.

The Copley Primer may be attached to practically any car or truck and greatly facilitates the starting of the engine, especially during cold weather. It consists of a priming wire located on the dash, a pump fastened to the inlet manifold by a threaded connection and a short length of copper tubing connecting the pump with the gasoline line.

Gas is drawn from the gasoline feed line into the pump by the suction of the pistons in the cylinders. By pulling out the rod in the dash and allowing it to spring back, raw gasoline is injected into the intake manifold of the engine for starting. The manufacturer claims that the primer



is so made that it is possible to operate the engine after the initial start for several minutes by means of the primer without depending upon the carburetor. At the side of the pump chamber a small air inlet is located and this opening, which is governed by a check valve, allows a predetermined amount of air to enter with the gas, giving the engine the proper mixture for operating a short time.

The gasoline, in passing from the pump chamber, passes through a choke chamber, entering the manifold at a high velocity. The gasoline is thoroughly atomized and broken into a mist before reaching the combustion chamber.

Manufactured by the Bay State Pump Co., 100 Purchase St., Boston, Mass. Price, $5.

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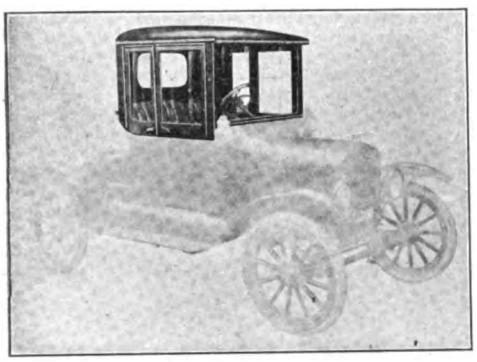
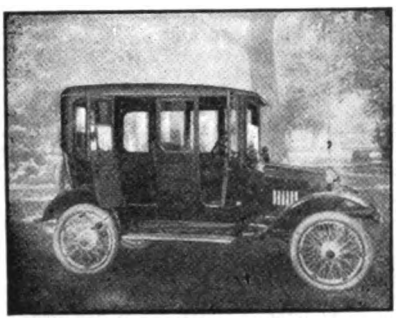
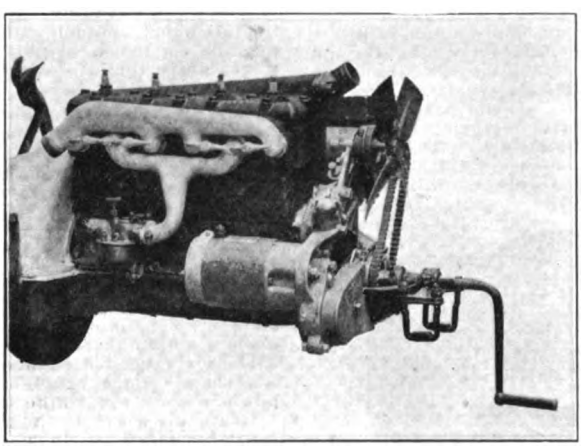




Miller All-Season Top for Ford Cars. The maker states that this is an unusually well made convertible top for the Ford owner, the top being made from the best of material throughout, and having heavy glass panels at the side and rear. The covering is of "Neverleak" material, with metal troughs along the sides to allow the water to be carried away. The inside is lined with a mohair material having a spotted effect. The sides are removable, allowing the car to be used during the warm months with comfort.

The glass in the rear doors is in two sections so that the upper section may be lowered for ventilation. Curtains may be purchased for summer driving if desired, as they are not included with the top, many owners preferring to refit their old curtains. A patented device facilitates the opening of the doors and the glass above from either the inside or outside. The top is made for either the roadster or touring car.

Manufactured by the Miller Auto and Body Manufacturing Co., Caro, Mich. Prices, Ford roadster, $80; touring car, $107.50 f. o. b. Caro.



A. B. C. Starter for Ford Cars. The A. B. C. system of starting and lighting for Ford cars consists of a motor mounted on the upper section of the Ford engine base and connected to the crankshaft by reduction gears, a silent drive chain and sprockets. The sprocket on the crankshaft has an automatic release, allowing the motor to stop after the engine has been started. The generator is securely fastened to the opposite side of the engine cylinder block and connected to the crankshaft by a silent chain. The sprocket on the crankshaft that drives the generator is keyed to the shaft. The hand starting crank is left in its usual position and is ready for instant use.

The chain from the motor to the crankshaft is enclosed partially by a housing to keep the dust from entering the gear case of the motor. A dash set is included with the unit, having an ammeter, dash light and switch for the control of the lights. The ignition is obtained from the magneto of the Ford in the usual manner. A storage battery is included and may be placed in a box on the running board. The fan is driven by a grooved pulley on the generator shaft and is adjusted in the usual manner.

The clutch of the motor has been redesigned. The manufacturer claims that it is quiet and smooth in operation, requires no attention and is entirely free from the engine after engine starts. The starter turns the engine rapidly, insuring starting in cold weather.

Manufactured by the A. B. C. Starter Co., Detroit, Mich. Price $115 f. o. b. Detroit.

The Kramer Valve Spring Releaser and Retainer not only releases the spring but also retains the valve spring, leaving both hands free. It holds the spring until ready to replace, or the spring may be removed and afterwards replaced in the tool and compressed ready for inserting. The releaser and retainer consists of two jaws hinged at the upper end and joined by a hinged bar in the rear of the jaws, the upper end of this hinge being fastened to a center rod forming a bolt at the top. The jaws are operated by a winged nut fitting the threaded bolt. Turning the nut to the right forces the jaws together, compressing the valve spring, while turning the nut to the left releases the spring. The jaws are adjustable sideways to fit around the different sizes of valve stems from 9/16 to 1¼ inches. With each tool is included a complete set of instructions for the grinding of valves.

THE KRAEMER RELEASER & RETAINER
WITH ADJUSTABLE JAW

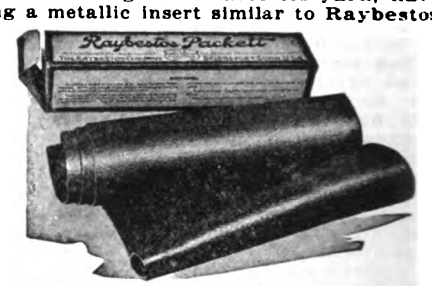
Manufactured by the U. S. Compass Co., Cedarburg, Wis. Prices on application.

The Gardner Thermostat Carburetor is of the puddle type for the Ford car. It is made to handle the later heavier fuel and makes use of a thermostat control that allows a heavy flow of fuel at the start, and when the engine warms the fuel is automatically cut down. One setting of the needle valve is all that is necessary, and the manufacturer claims that this adjustment will not change or need changing, as the carburetor is entirely automatic and will adjust itself to climatic changes due to the thermostatic control.

A point that the manufacturer emphasizes is that the carburetor is so constructed that the gasoline before entering the combustion chamber is thoroughly vaporized and enters as a fine mist, causing complete combustion.

Manufactured by the Gardner Carburetor and Brass Works, Detroit. Prices on application.

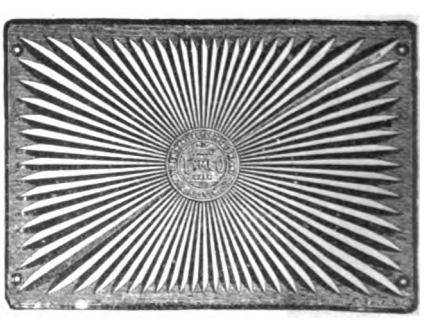
Raybestos Packett consists of a roll of asbestos packing, weighing 1½ pounds, 40 inches long and 10 inches wide. It is a woven sheet of very close weave to insure strength and the material is made of the finest grade of asbestos yarn, having a metallic insert similar to Raybestos brake lining. The packing is graphited on one side so that it may be easily removed and many times used again.



Raybestos Packett is intended for use on gasoline or steam engines where packing is subject to great heat and high pressure, and is especially adapted for use on cylinder and manifold gaskets on gasoline engines, the manufacturer claims.

Manufactured by the Raybestos Co., Bridgeport, Conn. Price, $2.50.

The Tyler Safety Step Plate for the running board of the passenger car is made of heavy canvas backing faced with rubber on each side, the top or wearing surface ribbed to take the wear. Type C is in one color, while type D is manufactured with a colored center or medallion having the manufacturer's name and trade mark plainly stamped upon it.



Manufactured by the Tyler Manufacturing Co., 64 Pearl Street, Boston, Mass. Price, type C, $1.50; type D, $1.75.

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The Hamilton Multometer is a new recording device for passenger cars and enables the motorist to know the mileage of each tire. It records gasoline mileage for the season or trip and tells if the engine is running at full efficiency. It gives warning for carburetor adjustments or for cleaning the engine by checking on the fuel used, registers the amount of oil consumed on each trip or for the season and also shows whether the engine is using too much oil.

The manufacturer for years has been manufacturing watches and other instruments requiring accuracy, and this instrument is in the same class as the firm's other products.

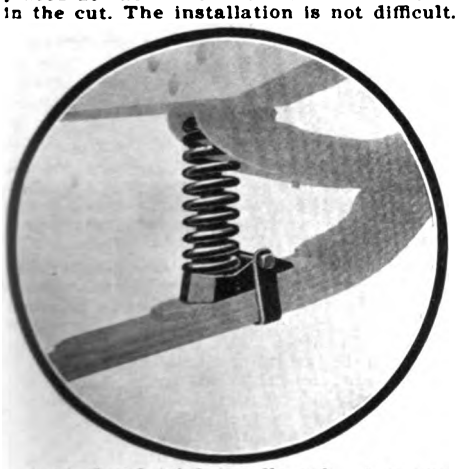
The instrument is placed in the dash of the car and operates similar to a

speedometer by a flexible shaft to gearing on the front wheel hub. The dial, besides showing the speed of the car on a rolling dial, also shows across the center of the main dial the mileage of any tire from one to six. To get the reading of any tire, turn the knurled nut at the right of the dial which operates the large ring surrounding the dial until the record of the tire desired comes opposite the knurled nut and the reading of that tire mileage will be shown.

The device covers the four tires used on the car and also two extras carried at the rear of the car on the tire carrier. Gasoline and oil mileage is obtained in the same manner. Adjustment instruction is given for the carburetor when the car has been driven 500 and 1000 miles, speed is shown from one to 75 miles an hour, with trip mileage to 1000 miles and season mileage to 100,000 miles.

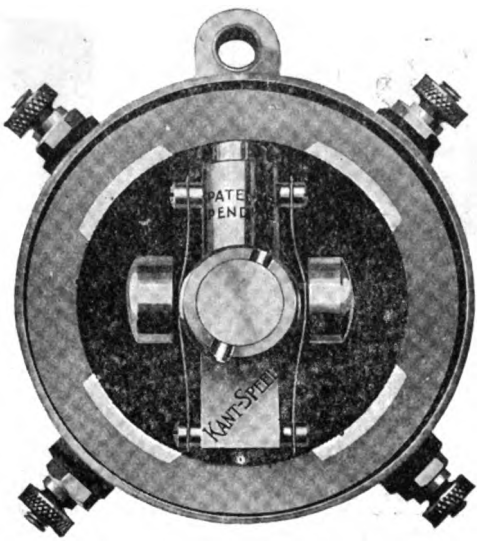
Manufactured by the Hamilton Corporation, Lancaster, Pa. Price f. o. b. Lancaster, $60.

The Double Duty Spring Support for the Ford Truck or Sedan gives to the light Ford truck double carrying capacity, the manufacturer claims. It is attached to the rear spring of the Ford light truck or sedan (not the ton truck) midway of the spring, between the end and center, with the top of the coil bearing against the cross member of the frame. The support consists of two heavy coil springs, one placed at each side of the center as shown in the cut. The installation is not difficult.



A 10 days' trial is allowed. Any part that is found defective within one year from date of purchase will be replaced by the factory free of charge when transportation has been prepaid both ways.

Manufactured by the Dotti Manufacturing Co., Madison, Wis. Price, $8 per set.

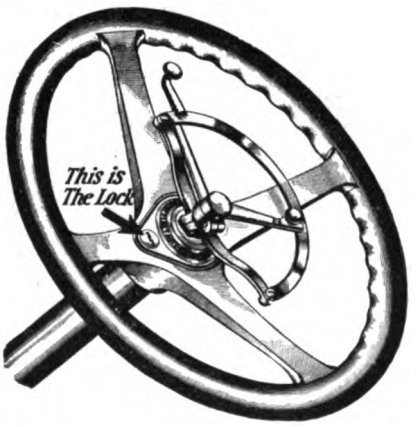


The Kant-Speed Governor for Ford Trucks, Passenger Cars and Taxicabs, consists of a timer cam that replaces the regular Ford cam in the timer case. When the speed of the Ford engine reaches 1400 to 1600 revolutions per minute, at which speed the engine reaches its rated horsepower (20 to 22½), the weights attached to the cam swing out as in a ball governor and cut out the ignition. Below that number of revolutions the balls swing in, the timer brush makes contact and the firing in the cylinders is resumed. It is easily attached.

The manufacturer claims that it cannot be tampered with, that it will prevent racing of the engine and will not impair the running qualities of the car. It is not connected with the flow of gas in any way and operates on the ignition alone.

Manufactured by the Autowar Corporation, Detroit, Mich. Price, $10.

Perry Locks for Fords are attached below the steering wheel and when locked with the Yale key and lock the wheel turns freely and it is impossible to steer the car. It consists of a hub having the top shaped similar to a hexagon nut. A second section fits over the hub and in use acts similar to a socket wrench fitting

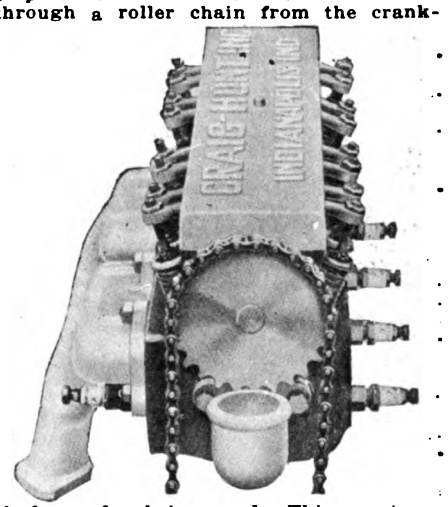


the hexagon nut. A nut having a perfectly smooth edge fits over the end of the steering rod and is covered with a lock washer which protects the nut and prevents it from being removed by a pipe wrench. The unit is fitted on top of the top of the steering housing in which are the planetary gears used in steering, and forms a suitable cover for the gears. Other sizes are manufactured for any car and include, beside the lock, the steering wheel and arms.

Manufactured by the Perry Auto-Lock Co., 2635 S. Michigan Ave., Chicago. Price for the Ford, $6 complete; claw type, No. 4, complete, $15; De Luxe type, No. 5, $20.

The Craig-Hunt 16-Valve Peugeot Type Racing Head for Fords was designed for use on racing speedsters and sport cars where speed and power is the chief requirement. It embodies all the well known features of the Peugeot and the 16-valve Stutz-Wisconsin racing engines, and is applicable to the Ford.

It consists of a detachable head to take the place of the regular Ford head, having 16 valves operated by a camshaft running the length of the head and driven by a sprocket at the front end. The drive is through a roller chain from the crank-

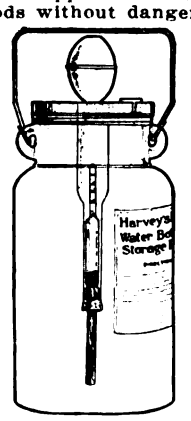


shaft, no fan being used. This construction allows four valves to each cylinder, two inlets and two exhausts. The valves are 1½ inches in diameter and are operated by rocker arms of the forked type. Each rocker arm is operated by the overhead camshaft, which runs on three ball bearings, all of which are enclosed in an oil contained aluminum housing. The cams are of the roller follower type, each of which dips in oil and lubricates the roller end of the rocker arm.

The special intake manifold furnished with the head is flanged for either 1½ inch or 1¼ inch carburetor. The head is amply water jacketed, each valve seat being entirely surrounded by water to prevent warping.

Manufactured by Craig-Hunt, Inc., Indianapolis, Ind. Price $150 f. o. b. Indianapolis.

The Geneco Distilled Water Bottle and Storage Battery Filler consists of a two-quart water bottle containing distilled water, a hydrometer syringe for supplying the water to the cells of the battery and testing the electrolyte, and an indicator on the cover conveniently marked with the days of the month. There is an indicator at the side of the cover so that the operator may know when the battery was attended to last. By this method distilled water is supplied to the battery at regular periods without danger of outside



contamination. The outfit is patented under the Harvey patent.

Manufactured by the General Scientific Equipment Co., Inc., North Philadelphia, Pa. Price, $1.75; west of the Mississippi, $2.

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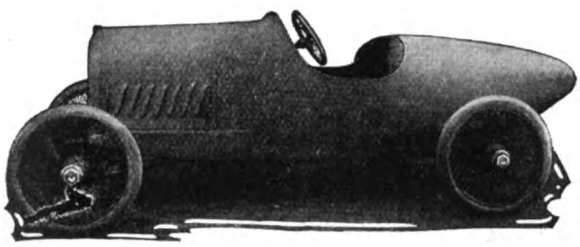


The Craig-Hunt Speedway Bodies for Ford Cars are copied from the fastest foreign and American speed styles. The metal work is of 21 gauge auto steel and all important seams are welded and finished. The flared cowl has a tendency to direct air currents over the driver's head.

The body is heavily bound with round metal, which makes it rigid and free from vibration. All wood work is of oak, fastened together with glue and screws. The seating capacity is exceptionally comfortable for two persons, having ample leg room, and the cushions, which are 32 inches wide, are upholstered with a good grade of manufactured leather over curled hair and long coiled springs.

The hood is hinged top and sides with suitable catches. The tail is of the famous French Peugeot torpedo design. It is formed over a canoe type light wood frame and is exceptionally rigid, all seams being welded.

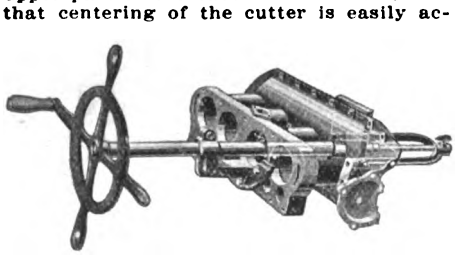
The radiator shell furnished with the body has a filler cap which screws into place in the regular Ford radiator, making it unnecessary to use another radiator, and entirely does away with the Ford appearance, the manufacturer claims.

The apron or drop is a permanent part of the body and is designed to give the car a lower appearance, covers the frame and assists in forming a streamline effect. Ample room is provided at the rear of the seat for carrying pump, jack and tools. The tool box is reached by unsnapping and removing the seat cushion. The Ford gasoline tank may be used in the tail by shortening the tank. Opening for filling the tank is on the right side in the rear of the mechanic's seat. The manufacturer states that the body is easily installed.

Manufactured by Craig-Hunt, Inc., Indianapolis, Ind. Price $150 f. o. b. Indianapolis. Bodies shipped with priming coat unless otherwise ordered. Price for color painting, $25 extra. Shipping weight, 250 pounds.

Heiser's Improved Cylinder Reboring Machine for the Ford Engine embodies new features for this class of work. The manufacturer claims that with the tool it is possible for a mechanic to turn out satisfactory reboring.

The tool is placed in the cylinder and fastened at each end by bolts passing through the top of the cylinder and the upper part of the base. The maker states that centering of the cutter is easily ac-



complished after a trial and once properly set does not have to be changed to rebore the others. Hand power is applied by a handle on the wheel for reboring and reversing the cutter. It is claimed that the cutter is self-sharpening. The tool weighs 45 pounds.

Manufactured by the Heiser Special Tool Co., Kingston, Mo. Price $42, cash with order. Over-size pistons, complete with rings, pins and bushings, .015, .031, $1.60; .045, $1.90.

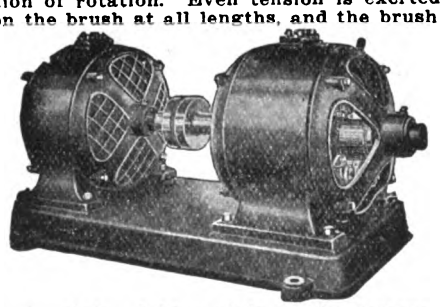
The Kantmar Autowash consists of a new substance for which the manufacturer makes many claims. In using, place a wine glassful in a pail of water and this amount, the maker claims, will be sufficient to cleanse thoroughly the dirtiest car. By its use the highly polished finish of the car is not damaged, the manufacturer states. Kantmar attacks both mud and grease with equal effectiveness, and is as cheap in price as the ordinary soaps sold for this purpose, according to the maker.

Manufactured and sold by the Woodtite Laboratories, Modesto, Cal. Prices on application. Sold to the trade in eight-ounce bottles and one-gallon cans.

The Eck Motor Generator Sets for Charging Storage Batteries, while not new to the trade, having been manufactured for the past 12 years, incorporate many novel features not generally known. They are usually wound for direct current where it is necessary to reduce the voltage from a higher to a lower voltage suitable for charging purposes. They may also be purchased for duty on alternating current such as is usually supplied in cities, transforming this current by means of the motor and generator to a direct current of suitable voltage for charging purposes.

The armature core is of thin sheet steel with slots accurately aligned, keyed to the shaft by projections in the punchings, and the windings are well insulated. The armature is baked, then dipped in armature varnish and again baked.

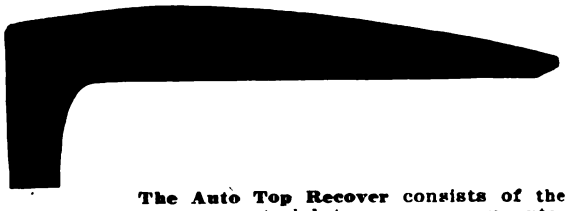
Brush holders are of an improved box type and are suitable for either direction of rotation. Even tension is exerted on the brush at all lengths, and the brush



is in plain sight and is easily removed when replacing new brush. Oiling is by means of a well located below the bearing and a ring over the shaft that brings the oil from the well, distributing it evenly over the bearing while the set is in operation.

A fan attached to the armature shaft supplies a current of air over the armature, keeping the interior of the motor cool. The temperature rise will not exceed 45 degrees C. All parts are standardized and are interchangeable. The usual guarantee is given by the manufacturer as to workmanship and material. Instruction books fully describe the operation of these sets.

Manufactured by the Eck Dynamo and Motor Co., Belleville, N. J. Prices and literature on application.



The Auto Top Recover consists of the necessary material to recover any automobile top, including the rear curtain, and a selection of the light to be used, either glass or celluloid.

In ordering, one should specify the name of the car, year, model and the type of light desired in the rear curtain. The recover is made at the factory with the roof and quarters sewed together and the rear curtain ready to apply to the car by the owner. Printed instructions accompany the recover, and the manufacturer claims that the recover and curtain are easily applied by anyone who can drive a car. The recover is furnished complete with all necessary fasteners, tacks and binding. A perfect fit is guaranteed when the correct name, year and model of the car are given.

Manufactured by the Liberty Top and Tire Co., Cincinnati, O. Prices and literature on application.

The Kobzy Signal for Passenger Cars has three swinging arms enclosed in a dust and dirt proof case extending from the rear number hanger and above the rear light. It is operated by a small lever located within easy reach of the driver. To operate it is not necessary to remove the hand from the wheel, as the signal is easily reached by the fingers. During the day the signal is plainly seen from the rear and at night it is illuminated by means of a special light enclosed in the top of the arm case. Current for this light is obtained from the storage battery of the car and, as the light required is small,

only a small amount of current is required. This device is especially desirable when operating a closed car. Three positions of the arms are shown, stop, left and right.

Installation is quickly and easily accomplished on any car without special tools. The signal arms are made of sheet aluminum, triple painted and varnished and self-cleaning. The lever box with the handy light attachment is adjustable to any height, length and angle to fit the convenience of the driver and is fastened solidly to the wheel post. The Kobzy Signal is guaranteed for one year and will be replaced or repaired during that length of time if it does not give satisfaction.

Manufactured by the Chicago Die and Specialty Co., 327 So. La Salle St., Chicago, Ill. Prices, East of Rocky Mountains, $17; West of the Rocky Mountains, $18.

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Whittmann Storage Batteries are manufactured for replacement purposes and may be fitted to practically all cars by simply changing the battery terminals. They are made in five shapes and will easily fit the battery boxes of the cars for which they are intended. These batteries are standard size and in all cases they comply with the recommendations of the Society of Automotive Engineers, states the manufacturer.

Taper terminals are made to be used either as right or left outlet, as can also the lead end wire terminals. This policy of standardization greatly reduces the problems of the service station and the battery repairer and reduces the cost to the motorist.

Batteries are shipped with terminals detached so that the service station man may put on any style of terminal that his customer may wish, and in this manner any size of stock battery may be used for many different types of cars.

Taper terminals are made in five sizes, to fit all the different taper plugs in use. A, B and C terminals are tapered 3/16 inch to the inch, but the holes vary in size. D and E terminals are tapered ⅜ inch to the inch. The maker issues to the trade a neat booklet covering the line of batteries and the parts for them.

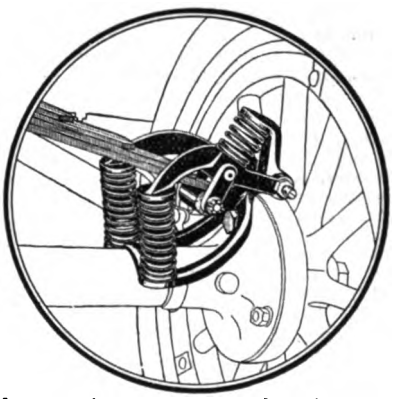
Manufactured by the Whittmann Batteries, 207-9 South 11th St., Lincoln, Neb. Prices and literature on application.

The New Hydrate Cell Tester, a device for testing storage battery cells, consists of two hex special steel prods three inches apart at the points with the upper ends assembled in a handle. A special patented nickel-chromium resistance of .01 ohm connects the prods. Suspended on props between the prods is located a voltmeter

with 2-0-2 volt scale. The patented resistance varies but imperceptibly with change in temperature and will not oxidize or rust, the manufacturer claims. The voltmeter is of the moving coil type of rugged construction.

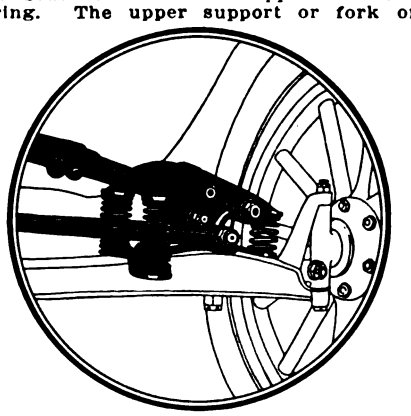
Manufactured by the Service Station Supply Co., Detroit, Mich. Price, $15.

The Float-A-Ford Absorber for Ford Cars, the maker announces, embodies a new principle in absorber construction. For installing on the front axle a special perch is supplied, accommodating the radius rods and supporting the absorber. The absorber consists of three springs, supported by suitable brackets, the lower bracket lying parallel with the axle and supporting the springs in cup-shaped holders at each side of the axle and the holders joining one another by a



bridge passing over the axle. An extension of the lower bracket passes back of the perch and supports the spring in a cup shaped base. From the top of the perch another bracket fastened to the perch passes forward, dividing into two arms, each arm forming the top support for the springs by means of suitable cup-shaped holders. This bracket also passes to the rear, forming a cup-shaped top support for the spring. A suitable shackle connects the end of the spring with the bearing point of the absorber.

The rear spring absorbers are attached in a different manner. The supporting bracket for the bottom of the springs fastens rigid to the flange of the axle housing, divides into two forks extending parallel with the axle housing and is supported on the housing by a cross band joining the two forks. The upper part of this bracket forms the support for the spring. The upper support or fork of

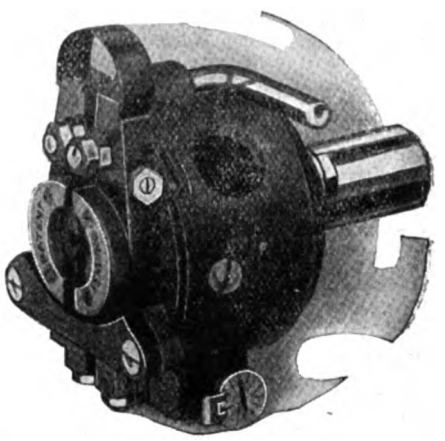


the absorber is fastened to the lower bracket at a point over the brake drum and passes forward over the spring end where it is shackled to the spring end by a short coupling or shackle, the bracket passing forward and dividing into two forks that form the upper support for the springs.

The manufacturer claims that this absorber will "float" a Ford over the rough spots in the road, that the device allows free spring action and does not disturb the chassis construction.

Manufactured by the Burpee-Johnson Co., 301-313 Kentucky Ave., Indianapolis, Ind. Prices on application.

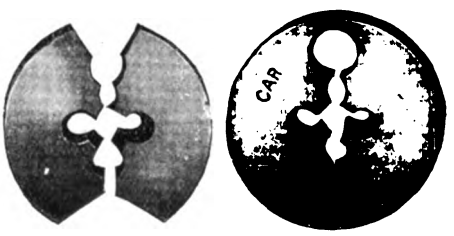
The Federal Self-Opening Die Head is a patented device for use within the turrets of hand or automatic screw machines, but may be used on a lathe. It consists of a



special head in which may be placed any of the standard button dies obtained from supply houses, and by splitting them and grinding off the rough corners they are adapted for use in the Federal Die Head. Chasers are not required for cleaning the thread after cutting, as the head may be opened and withdrawn, leaving the thread clean. The cutter or die is cleaned by slipping it from the head and immersing in gasoline.

By using the split form of die it is possible to sharpen it. The die is closed before starting the thread by pressing the button on top of the holder, or may be closed automatically by a lever device adapted to the turret of the machine on which it is used. For added ease of operation there is a self-alignment feature.

It is claimed that it will cut any thread that a button die can cut and with all the



accuracy for which button dies are famous. On Nos. 3 and 5, where one cut may not give the special refinement of product desired, an attachment to permit the operator to take both a roughing and finishing cut is supplied. The die opens automatically when the travel of the turret ends or at any point in the cut by stopping the turret slide. When the forward travel of the turrent is interrupted the rotation of the work draws the jaws ahead until they clear the jaw blocks and open in response to the action of the crown spring.

Made in sizes Nos. 1, 2, 3-A, 3 and 5; capacity, bolt threads from 3/32 to ⅞ of an inch.

Manufactured by the Federal Products Corporation, 393 Harris Ave., Providence, R. I. Price, with one button die, No. 1, $30; No. 2, $35; No. 3-A, $40; No. 3, $45; No. 5, $60. Literature on application.

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RECORD OF BUILDING OPERATIONS FOR SEPTEMBER

Contracts Made and Plans Contemplated for Alterations or Erection of Garages, Repair Shops, Service Stations and New Plants.

CONTEMPLATED PLANS AND SPECIFICATIONS.

Birmingham, Ala.; John W. O'Neill; one-story brick garage, 80x100; cement floor, composition roof; $18,000.

Birmingham, Ala.; Atlanta Battery Service Co.; Atlanta, Ga.; one-story battery service station, 75x140.

Birmingham, Ala.; H. B. Odell, agent Packard Motor Car Co.; one-story garage, service and repair shop; 33,000 square feet floor space; $60,000.

Ensley, Ala.; Ensley Motor Car Co.; two-story brick garage site, 70x140; cement floor; $5000.

Earle, Ark.; L. L. Burham; one-story garage; $10,000.

Antioch, Cal.; A. D. Ports; one-story garage, 40x100.

Sacramento, Cal.; S. W. McKinn and C. E. Phipps; one-story garage; $10,500.

San Francisco, Cal.; Phillip B. Arnold; one-story garage; $10,000.

San Jose, Cal.; W. A. Platt; one-story garage; $9000.

Stockton, Cal.; Joseph Losekann; one-story garage, 100x150; $16,000.

Stamford, Conn.; Mrs. E. D. Smith; one-story frame garage, 21x22; $2500.

Washington, D. C.; Harry Wardman, 1430 K street; two-story garage, 80x100; $100,000.

Washington, D. C.; Mrs. Hayne Ellis; one-story garage; $10,000.

Washington, D. C.; Frank Myers, 1033 Park road; one-story garage, 25x95; $15,000.

Washington, D. C.; Hill & Tibbitts, 1407 H street, N. W.; three-story garage and show room, 100x100; brick and reinforced concrete, at 14th street and Ohio avenue; $15,000.

Miami, Fla.; J. C. Heepling, Chicago; one-story concrete garage; $5000.

Monroe, Fla.; W. L. Suelson; one-story garage; $30,000.

Augusta, Ga.; Johnson, Reynolds & Ferguson, 944 Ellis street; one-story brick garage, 40x136; concrete floor, standard truss roof; $8000.

Colquitt, Ga.; Clahoun; one-story garage, 50x100.

Statesboro, Ga.; Averitt Automobile Co.; one-story gasoline filling station, 60x60.

Chicago, Ill.; E. M. Newman, 30 N. La Salle street; one-story garage, 100x189; $20,000.

Chicago, Ill.; G. G. Rocky, 2718 Wentworth avenue; one-story brick garage, 100x125; $12,000.

Chicago, Ill.; Holton Seeley & Co., 140 South Dearborn street; two-story garage, 21x22, at 47th and Halsted streets; $35,000.

Clinton, Ill.; O. H. Clemous; one-story garage, 60x120.

Decatur, Ill.; J. J. Moran; one-story garage, 80x110; $7000.

Decatur, Ill.; Dr. George W. Weye, 225 Park place; one-story garage, 40x115; $15,000.

Decatur, Ill.; Dennis & Son, 611 N. Water street; 1½-story public garage, 80x100; $15,000.

Peoria, Ill.; J. Frye; one-story public garage, 50x85; $10,000.

East Chicago, Ind.; C. Steffler, 4314 Forsythe avenue; one-story garage, 100x140; $15,000.

Gary, Ind.; Garrett Verplank; one-story garage; $20,000.

Gary, Ind.; Broadway Garage and Machine Shop; one-story garage; $2000.

Indianapolis, Ind.; Hoosier Auto Hotel Co.; 10-story garage and auto storage building, 111x202; $600,000.

Indianapolis, Ind.; Standard Oil Co., Davidson and Lord streets; one-story garage and service station, 37x136; $30,000.

Rockport, Ind.; Parker & Montgomery; one-story garage, 82x135; for Richards & Kinkaid.

Royal Center, Ind.; Arthur Dunn; one-story concrete block public garage, 66x132; $20,000.

Rushville, Ind.; J. D. Case; one-story brick public garage, 80x100, at Perkins and Second streets; $18,000.

Waterloo, Ind.; William Reichart; one-story garage, 60x100.

Winchester, Ind.; Leslie Colvin, Motor and Hiawatha streets; one-story garage and salesroom, 80x160, for Hecker & Doyle; $35,000.

Des Moines, Ia.; Lisle Co.; one-story garage, 140x140; $40,000.

Manning, Ia.; F. D. Ross; one-story garage, 90x150; $20,000.

Oelwein, Ia.; Oelwein Auto Co.; one-story garage, 40x100; $60,000.

Oelwein, Ia.; Frank R. Kint; one-story garage; $45,000.

Rhodes, Ia.; B. F. Cummings; one-story garage, 60x140.

Tabor, Ia.; M. L. Lyman; one-story garage, 62x109; $15,000.

Tabor, Ia.; R. F. Weatherhead; one-story garage for Sherbourn & Williams; $14,000.

Truesdale, Ia.; Edward Spooner; one-story public garage and auto sales building, 50x100; $14,000.

Butler, Kan.; John and Paul Warner; one-story garage, 50x100.

Elkhart, Kan.; Liberty Motor Co.; one-story garage, 59x140; $25,000.

Iola, Kan.; New Buick Garage; one-story garage, 100x181; $16,000.

McPherson, Kan.; John Hohn; two-story garage, 80x120; $30,000.

Osage City, Kan.; Central Motor Sales Co.; one-story garage, 100x120; $12,000.

Salina, Kan.; G. L. Hudkins; one-story garage; $35,000.

Louisville, Ky.; H. M. Dunlop; one-story garage; $20,000.

Louisville, Ky.; Louisville Paint and Trimming Co., 728 Fourth street; one-story auto paint shop, 45x150.

Louisville, Ky.; A. G. Ronald, 537 South Seventh street; one-story garage; $15,000.

Maysville, Ky.; Caproni Brothers; two-story garage, 74x146, at Second and Sutton streets; $30,000.

Lake Charles, La.; B. F. Singleton; one-story garage and salesroom, 50x100; $10,000.

Baltimore, Md.; Fenway Apartment Co.; one-story public garage, 54x67 and 19x25; $18,000.

Baltimore, Md.; Mrs. M. A. Green, 1008 Pennsylvania avenue; one-story garage, 18x60; $5000.

Baltimore, Md.; H. S. Block; one-story garage, 45x100; $50,000.

Fedualsburg, Md.; Harry T. Eddington; one-story garage, 65x100.

Hagerstown, Md.; Lewis Meyers, 331 West Washington street; one and two-story public garage, 40x82; $40,000.

Boston, Mass.; William London, one-story garage; $75,000.

New Bedford, Mass.; Manuel Perry; one-story garage, 52x104.

Worcester, Mass.; E. T. Chapin, 340 Main street; one-story garage, 52x120; $12,000.

Detroit, Mich.; F. G. Brandt, 884 Michigan avenue, 1½-story public garage, 65x100.

Detroit, Mich.; J. C. Zajkowski, 1496 Joseph Campau avenue; one-story public garage, 30x101; $6500.

Detroit, Mich.; Frederick A. Evans, 70 Book building; one-story garage, machine shop and show room; $30,000.

Detroit, Mich.; H. Pelavin, 40 Congress building; one-story brick and stone, 95x96; $12,000.

Detroit, Mich.; Johns Brothers, 757 Gratiot avenue; one-story garage, 100x140; $30,000.

Detroit, Mich.; Auto Electric and Service Corporation, 11 Selden avenue; one-story brick and steel service station, 90x175.

Detroit, Mich.; Morris Zack, 237 E. Kirby street; one-story garage and service station, 50x60; $15,000.

Flint, Mich.; Childs Estate, care Mrs. W. D. Kerne, Detroit, Mich.; one-story garage and salesroom, 65x86; $10,000.

Kalamazoo, Mich.; H. L. Vander Hoist; one-story garage and salesroom, 81x90x21, at W. Main street, for Dr. Bernstein.

Eden Valley, Minn.; Busch & Bischof; one-story garage, 70x100.

Stillwater, Minn.; G. A. Myers; one-story garage; $7000.

Storden, Minn.; Storden Auto Co.; one-story garage; $1200.

Glasgow, Mo.; Ludwig Abt; three-story garage, 90x90; $40,000.

Jefferson, Mo.; William C. Schmidt; one-story fireproof garage; $30,000.

Kansas City, Mo.; Tenth Street Garage and Sales Co., care W. M. Clayton, 2807 E. 33rd street; three-story garage, 100x140; brick and reinforced concrete stone trim; $225,000.

St. Joseph, Mo.; Grant Motor Co.; two-story garage, 120x140.

St. Louis, Mo.; C. F. May, Merchants Laclede building; one-story garage, 80x120; $20,000.

Great Falls, Mont.; Mahooa Brothers; one-story garage, 50x80.

Libby, Mont.; W. M. Cady; one-story garage and repair shop, 50x115.

Gothenburg, Neb.; C. J. Bowell, Grand Island, Neb.; one-story garage, 75x140; $15,000.

Omaha, Neb.; O'Dall, Hamilton Co., 1411 Jackson street; two-story garage and salesroom, 132x132; $75,000.

Omaha, Neb.; J. F. Flack; one-story garage; $15,000.

Omaha, Neb.; North Side Garage Co.; one-story garage at 20th and Ames avenue; $25,000.

Omaha, Neb; Drake Realty Construction Co., 22nd and Jones street; one-story garage, 90x115; $125,000.

Plattsmouth, Neb.; John Bauer, Jr.; one-story garage and shop, 40x140; $14,000.

Atlantic City, N. J.; Bertram Ireland, Guarantee Trust building; two-story public garage, 50x175.

Garfield, N. J.; Kornhoff & Woodford; one-story garage, 50x100.

Jersey City, N. J.; Lewis Max, 52 Green street; one-story public garage, 92x100; $20,000.

Newark, N. J.; Rose Wilson; one-story garage, 25x37; $1500.

Newark, N. Y.; Charles Washington; one-story garage, 20x39; $1000.

Newark, N. J.; Frederick Castle, 26 Center Market; two-story reinforced concrete garage, 95x115 and 53x67; southwest corner Bloomfield and Mt. Prospect avenue; $75,000.

Newark, N. J.; Christopher Yost; one-story garage, 16x59, at 896-98 Bergen street; $5000.

Newark, N. J.; Henry M. Doremus & Co., 36 Orange street; one-story garage and storage station, 40x61; $4000.

Newark, N. J.; Patrick Campbell, 428 High street; one-story garage, 34x66; $4000.

Newark, N. J.; Aetna Realty Co., 728 Broad street; one-story garage, 100x143; $18,000.

Newark, N. J.; Judson G. Prosser and John Venier; one-story garage, 54x199; $12,000.

Newark, N. J.; Frederick G. Ross & Co.; one-story garage, 33x35; $2000.

Newark, N. J.; Samuel Nass; one-story garage, 19x34; $1500.

Newark, N. J.; Felix Echardt; one-story garage; $1200.

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Newark, N. J.; Cohen & Panken; one-story garage, 50x100; $12,000.

Newark, N. J.; Israel Cohen; one-story garage, 58x165; $20,000.

Newark, N. J.; Barney McGovern; one-story cement block garage, 50x100; northeast corner Cabinet and Bergen streets; $10,000.

Newark, N. J.; Union Brewing Co.; one-story brick garage, 41x100, at Hunterdon street and Springfield avenue; $12,000.

Newark, N. J.; Behrer & Defkowitz, 85 Somerset street; one-story garage, 26x73, at 383-85-87 S. 11th street; $14,000.

Newark, N. J.; Dr. L. J. Fischbein, 48 16th street; one-story brick garage, 100x112, at 308-14 Broad street; $25,000.

New Brunswick, N. J.; B. Elfant; one-story garage; $20,000.

Elizabeth, N. J.; David Peters, 135 Rahway avenue; one-story garage; $23,000.

Hoboken, N. J.; George J. Pickney; one-story cement block garage, 45x50; wood roof; $7000.

Trenton, N. J.; Allfather, care Fowler & Seaman; one-story community garage, 54x64; $5500.

Albany, N. Y.; James J. Flanagan, 222 Second street; one-story garage, 32x125.

Arverne, L. I., N. Y.; Commuters Construction Co., 375 Fulton street, Brooklyn; 32 one and 1½-story garages; $25,000.

Binghamton, N. Y.; F. A. and R. B. Moffitt, 32 Collier street; two-story concrete garage, 120x160; $30,000.

Binghamton, N. Y.; B. O. Moffit Sons, 28-34 Collier street; one and two-story garage and salesroom, 93x166; $15,000.

Brooklyn, N. Y.; Boyd Realty Co., Inc., 723 81st street; one-story concrete garage, 10x18; south side 81st street, west 19th avenue; $3000.

Brooklyn, N. Y.; Thomas F. Martin; one-story garage, 137x225; $75,000.

Brooklyn, N. Y.; Tampa Construction Co., 594 Prospect avenue; one-story garage, 16x19, at southeast corner 76th street and 15th avenue; $4000.

Brooklyn, N. Y.; Realty Construction Co., 44 Court street; one-story garage, 100x159, at southeast corner President street and Franklin avenue; $45,000.

Brooklyn, N. Y.; D. R. Healy, 735 Prospect avenue; one-story garage, 50x100, north side Bergen street, east Grand avenue; $15,000.

Brooklyn, N. Y.; S. Kaplan, 38 Henry street; one-story garage, 40x80; south side Butler street, east Hogt street.

Brooklyn, N. Y.; Midboro Realty Co., 1466 40th street; eight one-story brick garages, 18x18 each; west side Kenmore place, south avenue K; $5500.

Brooklyn, N. Y.; Goldberg & Fogel Building Construction Co., 1162 President street; one-story garage, 18x120; $8000.

Brooklyn, N. Y.; Philip Carroll, 141 96th street; one-story garage, 69x128; $30,000.

Brooklyn, N. Y.; William Robb, 2838 W. 30th street; one-story garage, 17x71; $3500.

Brooklyn, N. Y.; Edward MacDonald, 394 Graham avenue; one-story garage, 53x100; $7500.

Brooklyn, N. Y.; Ernest Zimmerman, 117 Eckford street; two-story garage and shop, $7000.

Brooklyn, N. Y.; Flush-Bocker Improvement Co., Inc., 381 Christopher avenue; one-story garage, 110x115, at George street and Knickerbocker and Flushing avenues; $35,000.

Brooklyn, N. Y.; Henry Hurrell, 833 St. Johns place; one-story brick garage, 45x158; at northwest corner Stanhope street and Myrtle avenue; $30,000.

Brooklyn, N. Y.; J. W. Welx, 1582 Myrtle avenue; one-story garage, 100x155; at southwest corner Troy avenue and Carrall street; $75,000.

Brooklyn, N. Y.; S. and J. Triana, 228 York avenue; one-story garage, 30x100; southeast corner Green lane and York street; $15,000.

Brooklyn, N. Y.; Max Smith, 798 Franklin avenue; one-story brick garage, 50x131; north side President street, west Franklin; $12,000.

Brooklyn, N. Y.; 59th Street Building Co., 44 Court street; one-story brick garage, 50x85, south side Snyder avenue, east Bedford street; $10,000.

Brooklyn, N. Y.; Regents Realty Co., 126 Kosciusko street; one-story brick garage, 33x100; north side Lexington avenue, east Reid avenue; $10,000.

Brooklyn, N. Y.; Vincent Brothers, 347 Frontman street; one-story brick garage, 22x80 and 22x40; north side Frontman street, east Irving avenue; $10,000.

Brooklyn, N. Y.; A. G. Hoagland, 116 St. Marks avenue; one-story brick garage, 25x100, west side Underhill avenue, south Dean street; $7000.

Brooklyn, N. Y.; Mr. Lundin, 833 St. Johns place; one-story frame garage, 10x17; southwest corner 10th avenue and 81st street; $6000.

Brooklyn, N. Y.; Ashwick Building Corporation, 493 Ashford street; one-story garage, 18x78, west side 17th avenue, north 45th street; $5000.

Brooklyn, N. Y.; Posner Construction Co., Inc., 1391 Madison avenue; one-story brick garage, north side 77th street, east 15th avenue; $4000.

Brooklyn, N. Y.; Senator Holding Co., 501 68th street; one-story garage, 18x18; south 78th street, west Seventh avenue; $3500.

Brooklyn, N. Y.; George N. Seeger, Passaic, N. J.; one-story garage, 103x135; $25,000.

Brooklyn, N. Y.; L. R. Building Co., 189 Montague street; one-story garage, 67x100; $15,000.

Brooklyn, N. Y.; Midwood Building Co., 44 Court street; one-story brick garage, 100x100, at northwest corner 10th and 23rd street; $25,000.

Brooklyn, N. Y.; H. J. Nurick, 772 Broadway; one-story garage, 60x100; $13,000.

Brooklyn, N. Y.; Dennis Morton, 301 Douglas street; one-story garage, 60x100; $7000.

Brooklyn, N. Y.; A. B. Stromsoarser, 287 Vermont street; four one-story garages, 10x17 each; $3000.

Brooklyn, N. Y.; Samuel Jaffe, 167 Stockton street; one-story garage, 30x50; $5000.

Brooklyn, N. Y.; J. Skar, 133 Floyd street; one-story garage, 100x150; $35,000.

Brooklyn, N. Y.; B. H. and W. N. Whinster, 459 Stone avenue; six-story garage, 75x100; $125,000.

Brooklyn, N. Y.; Carolyne D. Foley, care M. Black Realty Co., 361 Stone avenue; one-story garage, 85x125; $25,000.

Brooklyn, N. Y.; R. Fenster, 48 Myrtle avenue; one-story garage, 100x100; $20,000.

Brooklyn, N. Y.; Novelty Building Co., 436 Marks avenue; one-story garage, 18x18; $4000.

Brooklyn, N. Y.; B. S. Ageloff, 126 Reid avenue; one-story garage, 100x120; $25,000.

Brooklyn, N. Y.; M. Liebowitz, 741 Howard avenue; one-story garage, 80x90; $12,000.

Brooklyn, N. Y.; J. B. Silman, 1511 Emmons avenue; one-story garage, 107x125; $25,000.

Buffalo, N. Y.; Ellicott Motor Service Corporation; two-story garage, 80x130; $50,000.

Buffalo, N. Y.; City of Buffalo, Department of Public Works, Municipal building; one-story brick garage, 25x40; $10,000.

Buffalo, N. Y.; W. G. Hopkins, Mutual Life building; one and two-story garage and salesroom, 92x100, on Main street, between Utica and Ferry streets.

Buffalo, N. Y.; Battistoni Brothers, 2442 Seneca street; one-story brick garage, 50x78x16, at 57-59 Myrtle avenue; $10,000.

Buffalo, N. Y.; Vicent Motor Mart Corporation, 736 Main street; one-story gasoline station and show room, 50x50; $35,000.

Buffalo, N. Y.; Henry C. Krueger, 453 E. Ferry street; one-story garage; $1000.

Buffalo, N. Y.; Joseph Argime, 301 Swan street; two-story garage, 28x32; $3000.

Buffalo, N. Y.; Joseph P. Fell, 181 Morris avenue; two-story garage, 28x36; $3500.

East Williamsburg, L. I., N. Y.; William Wrigley, Jr., 5 N. Wabash avenue, Chicago; one-story garage, 65x67; $10,000.

Flushing, L. I., N. Y.; Frank McKenna; one-story garage, 50x65; south side Amity street, west Union; $70,000.

Hicksville, L. I., N. Y.; A. McIntosh, 1½-story garage, 20x40; $4000.

New York, N. Y.; Ames & Co.; one-story garage, 125x150; $380,000.

New York, N. Y.; 15th Street Garage Co.; one-story garage, 98x100; $45,000.

New York, N. Y.; Phillip Rosen; one-story garage; $6000.

New York, N. Y.; J. C. Zehe; one-story garage, 80x98; $20,000.

New York, N. Y.; Payne Estate, Inc.; one-story garage, 74x92; $10,000.

New York, N. Y.; Alfred Alpp, 310 E. 136th street; two-story garage, at 920 Tinton avenue; $5000.

New York, N. Y.; Jacob Pederson, Third avenue and 148th street; one-story garage, 63x155.

New York, N. Y.; George F. Wagner, 732 St. Nicholas avenue; one-story garage, 15x28; $4000.

New York, N. Y.; G. E. S. Motor Car Service Co., Inc., 3706 Park avenue; one-story garage; $20,000.

New York, N. Y.; Edwine Construction Co., 579 W. 50th street; one-story garage, 100x200; $35,000.

New York, N. Y.; Jerry O'Deary, 227 E. 57th street, 55x100; $50,000.

New York, N. Y.; Silvia Maresca, 2677 Eighth avenue; one-story garage, 75x78; $35,000.

New York, N. Y.; Vale Realty Co., 1018 E. 163rd street; one-story garage; $12,000.

New York, N. Y.; Benensen Realty Co., 148th and Willis avenue; one-story garage, 62x100; $15,000.

Long Island City, L. I., N. Y.; Nelson Doncaster; one-story garage, 49x98; $7000.

Long Island City, L. I., N. Y.; Louis Gold, 44 Court street, Brooklyn; one-story garage, 100x200.

Long Island City, L. I., N. Y.; Ace Service Garage, Inc., 255 11th avenue; one-story garage, 50x100; $8000.

Niagara Falls, N. Y.; Alexander Zalesk, 13th and E. Falls streets; one-story garage, 33x35; $3500.

Olean, N. Y.; E. S. Brown; two-story garage, 50x140; $30,000.

Rochester, N. Y.; A. Bwustein, 328 Frank street; one-story garage, 80x93; $15,000.

Rochester, N. Y.; A. Frederichs, 70 Lake avenue; one-story garage, 20x36; $1000.

Sea Cliff, L. I., N. Y.; J. E. Curley; one-story garage, 35x40; $5000.

Schenectady, N. Y.; Charles A. Heidrich, 423 State street; one-story garage, 30x50; $7000.

Asheville, N. C.; City Asheville; two-story brick and concrete garage, 60x60; concrete floor, asphalt shingle roof, steam heat, electric lights.

Goldsboro, N. C.; People's Garage; two-story fireproof garage, 75x114.10; $30,000.

Winston-Salem, N. C.; Coff-Noble Co.; one-story garage, 50x100.

Fargo, N. D.; W. E. Heller; one-story garage; $25,000.

Fargo, N. D.; T. L. Berry; one-story garage; $25,000.

Fargo, N. D.; Edward Boren; one-story garage, 65x90.

Madan, N. D.; Western Auto Co.; one-story garage, 100x140; $40,000.

Minnewaukan, N. D.; Minnewaukan Auto Co.; one-story garage, 50x100.

Akron, O.; Charles C. Botzum, 71 N. Main street; three-story commercial garage, 65x150; $75,000.

Cincinnati, O.; William B. Poland & Co., 1114 First National Bank building; two-story garage, 50x90, at 530 Reading road; reinforced concrete floor and roof; $20,000.

Cleveland, O.; George King, 306 Permanent building; one-story garage and salesroom; $40,000.

Cleveland, O.; Central Garage Co.; one-story garage, 150x400; $450,000.

Cleveland, O.; M. J. Hinkle, 817 Prospect avenue; two-story brick and stone trim garage and salesroom, 120x125, at 70th and Carnegie avenue.

Columbus, O.; Columbus Oldsmobile Co., 134 E. Clay avenue; two-story garage, salesroom and service station, 63x183; brick and stone trim, concrete floor, concrete columns, steel roof; $70,000.

Dayton, O.; Wampler Auto Co.; one-story garage and salesroom; $75,000.

Dayton, O.; C. B. Clegg; one-story garage; $39,000.

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Mansfield, O.; Patrick Cotten & Son; one and two-story garage, 50x180; $25,000.

Rittman, O.; R. Frederick Rittman Savings Bank; two-story commercial garage, 50x130; $12,000.

Sandusky, O.; Griswold Wagg Co.; two-story brick and reinforced concrete garage, salesroom and service station, 67x135; $50,000.

Warren, O.; R. S. Hempel and John Reynolds; one-story garage; $10,000.

Youngstown, O.; Anthony Parilla, 2438 W. Federal street; two-story commercial garage, 50x107; $25,000.

Norman, Okla.; Acre Oil Co.; one-story garage, 50x140; $9500.

Oklahoma City, Okla.; Sinclair Refining Co.; one-story filling station; $10,000.

Oklahoma City, Okla.; Texas Co., Mercantile building; one-story filling station, 18x32, at 714 N. Hudson street; $7650.

Oklahoma City, Okla.; J. H. McIlvain; one-story garage, 50x140.

Oklahoma City, Okla.; State Board of Affairs, care George Clark, secretary, State Capital; one-story garage, 20x37; $5000.

Okemah, Okla.; R. A. Ryle; one-story salesroom; $2500.

Pawhuska, Okla.; F. Button; one-story garage, 40x50.

Tulsa, Okla.; E. K. Porter; one-story garage; $15,000.

Tulsa, Okla.; J. J. Gaston; one-story garage; $4750.

Tulsa, Okla.; Texas Co., Mercantile building, Oklahoma City, Okla.; one-story brick garage, 28x60; $7000.

Portland, Ore.; Auto Equipment Co.; one-story garage, 100x100; $18,000.

Easton, Pa.; Louis Sulkin, 4th and Snyder streets; one-story public garage, 60x110; $35,000.

Harrisburg, Pa.; Eureka Co., care A. D. Bailey, 610 North street; one-story public garage, 60x60; $15,000.

Mohnton, Pa.; Werner Supply Co.; two-story public garage; $8000.

Pittston, Pa.; Southern & McMillan, 10 Sutherland place; one-story private garage, 45x65; $5000.

Philadelphia, Pa.; Patrick Grant; one-story public garage and machine shop; $40,000.

Philadelphia, Pa.; E. Allen Wilson, 1208 Chestnut street; one-story public garage, 95x120; $35,000.

Philadelphia, Pa.; A. Dosson; two-story garage, 16x48, at Eighth and Mountain streets; $40,000.

Philadelphia, Pa.; F. C. J. Dursch, 848 Woodlawn street; two-story garage, 60x62.8, at 318 East Chelton avenue.

Philadelphia, Pa.; Seraphin Schaeffer, 5424 Chester avenue; one-story public garage, 95x120, at 52nd street and Pentridge street; $35,000.

Uniontown, Pa.; Craig Motor Co.; one-story garage, 60x100.

Wilkes-Barre, Pa.; John Lukeis, 112 Scott street; two-story public garage, 54x81; $15,000.

Wilkes-Barre, Pa.; Jacob Papky, 212 E. Market street; two-story brick public garage, 42x78; $16,000.

York, Pa.; Pfaltzgraff Battery Co.; one-story private brick garage, 54x29x65, including machine shop; $10,000.

Providence, R. I.; Silverman Brothers, 225 Public street; one-story public garage, 100x150; $45,000.

Anderson, S. C.; W. L. Hayes; one-story garage; $30,000.

Anderson, S. C.; Brown & Watson; one-story garage; $15,000.

Greenville, S. C.; Thomas M. Walker Co.; two-story brick, stone and wood auto show room, 25x90; tar and gravel roof, concrete floor; $80,000.

Spartanburg, S. C.; Elwood F. Bell; four-story garage; $50,000.

Lake Norden, S. D.; Oscar Koistinen, Watertown, S. D.; one-story commercial garage, 100x100; $25,000.

Jasper, Tenn.; A. P. Pryor; one-story garage, 100x100.

Pulaski, Tenn.; T. M. Booth & Son; one and two-story garage and salesroom, 83x173; $40,000.

Beaumont, Tex.; R. E. Masterson; one-story garage; $3000.

Dallas, Tex.; J. E. Rose; one-story garage; $15,000.

McAllen, Tex.; J. H. Woodstock; one-story garage and salesroom; $1200.

Lynchburg, Va.; James R. Gilliam, Jr.; one-story garage, 22x42.

Newport News, Va.; R. R. Cunningham, First National Bank building; two-story public garage, 50x100, at 34th and Huntington street; $22,000.

Newport News, Va.; Enterprise Garage Corporation; one-story garage; $50,000.

Norfolk, Va.; Bell Motor Co.; one-story brick garage; $15,000.

Norfolk, Va.; David Cain; one-story garage, 75x100; $40,000.

Norfolk, Va.; C. W. Bohlken & Co.; one-story garage, 50x100; $31,000.

Norfolk, Va.; Travelus Garage; two and three-story concrete public garage, 86x117 and 118x200, at corner Plume and Cove streets; $200,000.

Richmond, Va.; C. J. Rolker, 924 Mutual building; two-story brick and concrete garage and machine shop; $25,000.

Richmond, Va.; John E. Carr, 2508 East Broad street; two-story reinforced concrete garage, 40x120.

Richmond, Va.; Seventh Street Garage Co., 9th and Franklin streets; three-story storage garage, 130x132x35, at Seventh and Leigh streets; $40,000.

Staunton, Va.; G. L. Baughter; one-story public garage, 50x120; $15,000.

Winchester, Va.; Hicks Motor Co.; two-story brick and reinforced concrete public garage, 112x180; $50,000.

Blewett, Wash.; Brender & Aberling; one-story garage, 58x120.

Centralia, Wash.; Bower & Null; one-story garage, 50x100; $8000.

Moclips, Wash.; A. Larson; one-story garage, 100x140.

Seattle, Wash.; E. W. Bader; one-story garage, 106x120; $12,000.

Seattle, Wash.; Pioneer Auto Co.; one-story garage; $10,000.

Seattle, Wash.; E. R. Peoples; one-story garage, 76x105; $20,000.

Seattle, Wash.; Adolph Eberharter; one-story garage, 60x108; $25,000.

Spokane, Wash.; V. L. Walser; one-story garage; $3500.

Janesville, Wis.; Charles E. Tallman; one-story private garage, 24x24.

Janesville, Wis.; Robert S. Chase; one-story public garage, 60x90.

Marion, Wis.; Hoffman Brothers; two-story garage, 40x80; $5000.

Milwaukee, Wis.; Chevrolet Motor Co., New York City; one-story garage, salesroom and service station; $100,000.

West Allis, Wis.; Stenz Realty Co., 5205 National avenue; one-story garage and repair shop, 40x60.

CONTRACTS AWARDED.

Birmingham, Ala.; F. M. Fossett; one-story brick garage for Ike Adler; $40,000.

Gladsden, Ala.; Vaughn Garage Co., Birmingham, Ala.; one-story garage, 50x50.

Wilmington, Del.; J. Frank Olvens, Jr., 2503 Market street, Philadelphia; two-story garage, 70x85, for W. W. and S. Jackson, Taylor and Pine streets, Wilmington.

Washington, D. C.; S. R. Harris, 710 40th street; two-story garage and salesroom, 70x200; $75,000.

Atlanta, Ga.; Southern Ferro-Concrete Co.; three-story pressed brick and terra-cotta garage, 100x180; for United Motors Service Co.; $125,000.

Macon, Ga.; W. D. Griffin; one-story garage, 60x135; for L. Goldman; $10,000.

Chicago, Ill.; B. Heller & Co., 3925 Calumet avenue; one-story private garage, 24x38; $3600.

Chicago, Ill.; Phillip Brady, Kingsbury and Huron streets; one-story brick garage at 407-9-11 West Superior street; $10,000.

Chicago, Ill.; H. A. Smith, 9963 Prospect avenue; one-story brick garage; $6000.

Chicago, Ill.; F. Dabelstein, 1476 Huron street; one-story garage, 72x100, at 407-9-11 W. Superior street; for P. Brady, Kingsbury and Huron streets; $10,000.

Chicago, Ill.; G. K. Heiser, 1916 Webster avenue; one-story garage, 50x90, at 1916-18-20 Webster avenue; $12,000.

Galesburg, Ill.; Harry L. Richley, Quinby building, Monmouth, Ill.; one-story garage, 82x132; $22,000.

Jacksonville, Ill.; Vasconcella & Son, 217 S. Main street; one-story garage; for Fred Regg; $2500.

Stoughuist, Ill.; Harry L. Richly, Quinby building, Monmouth, Ill.; one-story garage, 22x50; for T. C. Kinuston; $12,000.

Liberty, Ind.; Central Motor Co.; one-story garage, 56x145; $9000.

Boston, Mass.; George W. Harvey, 99 Chauncy street; six-story public garage, 150x210; for Eliot Street Garage Corporation; $150,000.

Boston, Mass.; Berenson Construction Co.; garage and service station at 18-20 Brighton avenue; for Mashie Berenson, 20 Pemberton square; $300,000.

Somerville, Mass.; M. J. Ryan, 22 Fayette street, Cambridge, Mass.; one-story garage, 74 Webster ave.; for H. Winter, 484 Columbia street, Cambridge, Mass.; $22,000.

Worcester, Mass.; James Miles & Son, 393 Main street; one-story public garage, 50x70; for H. A. Johnson, 470 Park avenue; $10,000.

Worcester, Mass.; F. W. Mark, 4 Walnut street; one-story private garage, 60x100; for Crompton Knowles Loom Works, 93 Grand street; $15,000.

Kansas City, Mo.; C. E. Peterson, 3934 Wyoming street; one-story garage, 50x136, at 3020 Prospect avenue; for J. A. Miller, 2814 Prospect avenue; $18,000.

Kansas City, Mo.; Hedrick & Huff, 506 Interstate building; four-story garage, 96x120; for Frank Bales, $125,000. Lessee, Automobile Club of Kansas City, 1020 Oak street.

Kansas City, Mo.; J. R. Vansant Construction Co., 314 Dwight building; one-story private garage, 120x170; for Ridenor Baker Grocery Co., 933 Mulberry street; $6000.

Omaha, Neb.; Dudee Garage Co., 4918 Dodge street; one-story garage, 45x220; $60,000.

Nashua, N. H.; Kennedy & Peterson, 7 Water street, Boston, Mass.; one-story garage and service station, 20x100; for Smith & Co.; $30,000.

Atlantic City, N. J.; R. Layton, 806 Artic avenue; one-story garage, 83.6x101.6, at 2215 Fairmount avenue; for Seashore Husted Express Co., Mississippi and Fairmount avenues; $10,000.

Merchantville, N. J.; H. W. Applegate; one-story public garage, 50x50; for Merchantville Auto Co.; $10,000.

West New York, N. Y.; John Aragona, 717 Hudson avenue; one-story public garage; for Charles Volz, 228 23rd street; $5500.

Albany, N. Y.; John Keenan, 348 Third street; one-story garage, 25x82, at Quail and First street; for William Klein, 76 Quail street.

Brooklyn, N. Y.; John Beatty, 1469 Dean street; one-story garage, 50x100; for Dennis P. Healg, 135 Prospect avenue; $15,000.

Buffalo, N. Y.; J. M. Robinson, 22 Lonsdale road; two-story garage, 61x150, at 177 Ellicott street; for George H. Schlicker & Son, 911 White building; $20,000.

Buffalo, N. Y.; Peter H. Frank, 229 Depew avenue; one-story garage, salesroom and service station, 80x125, at northeast corner Main and Rodney streets; for Quale Garage Co., 2675 Main street; $25,000.

Herkimer, N. Y.; Stephen Hines, 307 North Prospect street; one-story public garage, 50x100; for Smith Brothers, $10,000.

New York, N. Y.; Frank Hagan, 211 W. 147th street; one-story garage, 50x122; for Daniel Reardon, 237 South street; $15,000.

New York, N. Y.; Lindsay & Peiser; five-story garage, 78x114, at northeast corner Greenwich and W. Houston streets; for Community West Houston Street Garage Co., Inc.

Rochester, N. Y.; George Garrison, 1 Comfort street; one-story garage and show room, 97x120; for T. J. Northway.

Utica, N. Y.; Griffiths & Pierce, 61 Charlotte street; one-story garage and salesroom; for M. Lewis and Dr. Rinehart; $7000.

Dayton, O.; Joe E. Lowes, Schwind building; two-story public garage, 40x132 at Fifth and Perry streets; for Mary L. Beck; $56,000.

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Cincinnati, O.; George Probst, 6821 Montgomery avenue; one-story garage, 20x103; for K. W. R. Building Co., 901 Union Central building; $16,000.

Enid, Okla.; A. F. Stewart & Co., 1213 State National Bank building, Oklahoma City; two-story garage and salesroom, 50x150; for Joseph Morris; $60,000.

Braddock, Pa.; Hodder Construction Co.; two-story garage, 52x110; for H. S. Deighton; $22,000.

Bethlehem, Pa.; Robert Pfierle, Church alley and Elm street; one-story public garage, 31x65; for Ludwig Godycki, 445 Birch street; $18,000.

Easton, Pa.; Howard Holkenson, 42 S. 5th street; one-story public garage, 12x116; for H. E. Smith, 912 Norhampton street; $20,000.

Montrose, Pa.; Shephard Construction Co., Miners' Bank building, Wilkes-Barre, Pa.; one-story garage, 60x74; for Glenn L. Foss; $15,000.

Northumberland, Pa.; Albert Boyer; one-story garage, 54x120; for Edgar Winters; $10,000.

Pittsburgh, Pa.; Hugh McMullen, Banksville, Pa.; one-story commercial garage, 68x180; for Joseph Kossler, 148 Wabash street; $20,000.

Philadelphia, Pa.; Milton W. Young; one-story garage, at 6342 Sherwood road; for G. H. Barth; $2200.

Philadelphia, Pa.; Milton W. Young; one-story garage, at 6386 Drexel road; for C. Taylor Poulterer; $2700.

Philadelphia, Pa.; Joseph Roff; one-story auto show room, 80x97, east side 53rd, north Chestnut street; for Gertrude Shear; $370,000.

Philadelphia, Pa.; A. P. Smith; one-story garage at 153 West Walnut lane; $1000.

Philadelphia, Pa.; John Hurley & Co.; one-story garage, 50x90, east side Musgrave street, south Duval; for John S. Byrne; $4000.

Philadelphia, Pa.; Louis Kober; one-story brick garage, 18x122, northwest corner Kensington avenue and J street; $6000.

Philadelphia, Pa.; L. D. Loper; one-story garage at 5407-9-11 Wyalusing avenue; $700.

Philadelphia, Pa.; J. W. Bishop; one-story brick garage at northwest corner Hope and Tusculum streets; for Franklin Process Co.; $7300.

Philadelphia, Pa.; Heist & Dougherty; one-story garage at 1235-37-39 Cabot street; for Thomas Hyde & Son; $5000.

Philadelphia, Pa.; John Cohdori; one-story brick garage, 15x16, at 5614 Walnut street; for William Fehrenbach; $380.

Philadelphia, Pa.; C. E. Lloyd, Jr.; one-story garage, 18x18; northeast corner Seventh and Chelten avenue; $1000.

Philadelphia, Pa.; Frank W. Zebley; one-story garage at 2920-22 Ditman street; for John Kensil; $4500.

Philadelphia, Pa.; Joseph Saklove; one-story brick garage, 18x20, at 1303 68th street; for Nathan Cramer; $1850.

Philadelphia, Pa.; William H. Chambers; one-story garage, 18x190, rear side Springfield avenue, east 51st street; $3500.

Philadelphia, Pa.; J. G. Miller; one-story garage at 23rd street and Allegheny avenue; for George Gross; $3500.

Philadelphia, Pa.; H. T. Campbell; two one-story brick and hollow tile garages, each 15x22, at 2814-16 Girard avenue; $1000.

Philadelphia, Pa.; William Hass; one-story garage at 241 East Ruscomb street; for E. Doebsam; $600.

Philadelphia, Pa.; E. B. Miller; one-story brick garage, 16x19, at 4406 North Eighth street; for E. Singer; $700.

Philadelphia, Pa.; Barclay, White & Co.; one-story iron on iron frame garage, south side Blavis street, east 17th street; for M. M. Bynon; $3000.

Philadelphia, Pa.; M. Moister & Co.; one-story iron garage, 18x22; southeast corner Second street and Duncannon avenue; for Philadelphia Building Supply Co.; $500.

Philadelphia, Pa.; Joseph Shaw; one story stone garage, 16x20, at 918 North 64th street; for James Adams; $1300.

Philadelphia, Pa.; Berkelbach Co.; one-story brick garage, 18x18, west side Melrose street, north Wakeling; for M. K. Henry; $1000.

Philadelphia, Pa.; Frank Knapton; one-story brick garage, 15.6x23, southwest corner 20th street and Cora street; for Lena E. Bracewel.

Philadelphia, Pa.; West Philadelphia Contracting Co.; one-story brick garage, 50x100, at 5222-24 Broomall avenue; for C. Haller; $6500.

Philadelphia, Pa.; M. Knox; one-story stone garage, 18x19; north side Luray street, east Wayne avenue; $600.

Philadelphia, Pa.; W. R. Graham; one-story brick garage, 20.6x26, at 115 West Tulekocken street; for Mrs. Juleswellins; $3000.

Philadelphia, Pa.; H. T. Campbell; one-story brick garage, 21x38.9, at 2814-16 Girard avenue; $1500.

Philadelphia, Pa.; D. Snyder; one-story brick garage, 20x60, southwest corner 24th and Harold streets; $2000.

Philadelphia, Pa.; Louis Muhr; one-story garage at 2833 North Lambert street; $1500.

Philadelphia, Pa.; William H. Forge; one-story brick garage, 20x60, at Hermit lane and Ridge avenue; $2000.

Philadelphia, Pa.; George H. Evans; one-story garage at 2402 North 54th street; for William Golden; $1500.

Philadelphia, Pa.; M. J. Welsh; one-story garage at 2518-22 South 71st street; for S. Scott; $3000.

Philadelphia, Pa.; John E. Dare, 17th and Chestnut streets; one and four-story public garage and show room, 130x150; for Atlantic Truck Co., 1210 Chestnut street; $60,000.

Philadelphia, Pa.; A. Hartman, 309 Finance building; two-story garage, 48x94; for W. R. Parker; $26,000.

Williamsport, Pa.; William E. Stringman, 735 Center street; one-story private garage, 37x63; for National Silk Dyeing Co., 1300 E. Jefferson street; $7000.

Brookings, S. D.; A. Fricks; one-story public garage, 30x80; $10,000.

Redfield, S. D.; Brickell Construction Co., Watertown, S. D.; one-story garage and service station for State Board of Corrections and Charities; $90,000.

Brownwood, Tex.; Ernest Fay; one-story garage, 50x70; for T. Carlson; $7000.

Richmond, Va.; S. Lubicuski, 200 E. Main street; one-story garage, 25x75x12, at 210 S. Second street; for I. Lapland, 1914 Broad street; $34,000.

Richmond, Va.; C. H. Archer, 2515 Hanover avenue; one-story garage, 85x41x10; for Harvey Wilson, 117 South Boulevard; $5100.

Rocky Mount, Va.; W. L. Coleman, Roanoke, Va.; one-story public garage, 50x100; for Central Garage; $15,000.

Logan, W. Va.; Theodore Stark & Co., Cedar Rapids, Ia.; three-story garage, 57x85; for Armour & Co., Chicago, Ill.

Janesville, Wis.; E. F. Kelly, 726 Pleasant street; one-story garage, 24x24; for Charles E. Tallman.

Milwaukee, Wis.; P. Zils, 317 Frederick place; one-story garage, 30x75; for Joseph Klaisto, 2441 Lisbon avenue; $10,000.

NEW CONCERNS RECENTLY INCORPORATED

Monthly Record of New Business Houses for which Charters Have Been Issued in the Various States and Classified According To Nature of Business.

NEWLY ORGANIZED MANUFACTURERS OF CARS, TRUCKS AND TRACTORS.

Wilmington, Del.; Revere Motor Sales Co., Inc.; $150,000; to deal in, sell, manufacture and let for hire, pleasure and commercial automobiles and trailers.

Boston, Mass.; Fulton Motor Truck Co.; $50,000; to manufacture and sell automobiles and trucks; T. L. Croteau, H. E. Knox, S. E. Dill.

Buffalo, N. Y.; Johnson Rim and Parts Co., Inc.; $50,000; to manufacture automobile or other vehicle rims; L. D. Large, H. R. Large, P. T. Large.

New York, N. Y.; Frank Motor Products Corporation; $55,000; L. B. Miller, H. S. Frank, L. S. Frank.

New York, N. Y.; Fullerton Truck Co.; $100; C. Ahouston, J. H. Fullerton, P. J. Fullerton.

Tulsa, Okla.; The Tulsa Auto Manufacturing Co., $500,000; R. M. McFarlin, R. O. Holleron, A. H. Rogers.

Salem, Ore.; Auto Sales Co.; $5000; to manufacture, sell and buy automobiles; Frank L. Waller, M. E. McDermott, Maurice Seitz.

San Antonio, Tex.; Grant Motor Co.; $5,000; W. T. Nesbit, S. D. Price, S. B. Price.

PARTS AND FITTINGS MAKERS.

Dover, Del.; American Electric Storage Battery Co.; $1,000,000; F. R. Hansell, E. M. MacFarland, J. Vernon Pimm.

Wilmington, Del.; Auto Products Manufacturing Co.; $250,000; to manufacture automatic safety steering and centering devices.

Wilmington, Del.; Bendford Auto Products, Inc.; $1,000,000; to manufacture all parts of automobiles.

New Haven, Conn.; Cleveland Auto Sales Co.; $30,000; to deal in automobile parts; B. E. Krall, Hyman Krall, Louis Rubin, J. H. Rubin.

Waterloo, Ia.; Waterloo Body Corporation; $200,000; to conduct a manufacturing and repair bodies for motor vehicles; A. W. Frantz, John Kropf, T. E. Milliken.

Augusta, Me.; The Ingram Motor Co.; $4,000,000; to manufacture and deal in all kinds of engines, motors, carburetors, machinery and devices.

Boston, Mass.; Stanley-Gidden Co.; $50,000; to deal in automobile parts; Raymond P. Dellinger, Robert A. B. Cook, Mary E. Sheehan.

Detroit, Mich.; Auto Trimmers Supply Co.; $48,000; to manufacture, buy and sell at wholesale and retail automobile parts, machine parts, nuts and bolts; Sylvester L. Jackson, Frank L. Southerland.

Detroit, Mich.; Norde Manufacturing Co.; $100,000; to manufacture and deal in automobile parts and accessories; S. D. Callender, Frank M. Paull, Frank G. Paull.

Grand Rapids, Mich.; Wolverine Storage Battery Co.; $50,000; Carl P. Palmer, R. E. Clare, R. B. Lacey, Henry M. Kuhn.

Buffalo, N. Y.; The Johnson Rim and Parts Co.; $50,000; to manufacture automobile parts; Lottie D. Large, H. R. Large, P. T. Large.

New York, N. Y.; Copp Auto Body Co.; $25,000; C. J. Austrian, W. C. Bode, G. W. Copp.

New York, N. Y.; H. J. Walker Co.; $18,500,000; to deal in motors for automobiles and other parts; T. L. Croteau, H. E. Knox, S. E. Dill.

Syracuse, N. Y.; Syracuse Auto Parts, Inc.; $35,000; W. B. Carrol, F. D. Russell, P. N. Schober.

Dayton, O.; Reliable Spark Plug Co.; $10,000; E. E. Kumler, W. L. Schleman, Hallie M. Kumler, Nellie Schleman, Edward R. Mueller.

Youngstown, O.; Youngstown Auto Electric Co.; $15,000; Amos Mellinger, W. S. Westbrook, Jack T. Gougler, Della Mellinger, Minnie Westbrook.

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Dallas, Tex.; Gould Battery and Service Co.; $6000; William Tobian, H. Lange, W. B. Clayton.

GARAGE AND REPAIR SHOPS.

Vincennes, Ind.; Vincennes Auto Radiator Co.; $2000; to repair, manufacture and rebuild automobile radiators; Leo E. Beck, William H. Duchane, John M. Fitzgerald.

Louisville, Ky.; The Miles-Hughes Automobile Co.; $20,000; to operate a garage and to do a business in the sale and rent of automobiles; T. J. Miles, A. C. Hughes, E. M. Hoehler, W. W. Wooley.

Estherwood, La.; Bradford-Parsons Co., Inc.; $10,000; to operate a garage and sell automobiles; Will H. Bradford, James O. Modisette.

Portland, Me.; Wheelock Garage Association, Inc.; $10,000; to conduct a general automobile garage business; Ingram B. Wheelock, Albert C. H. Lorentzen, William Henry.

Boston, Mass.; Jamaica Pond Garage Co.; $50,000; Grober O. Burkhardt, Max Burkhardt, Solomon Wolfson.

Newark, N. J.; Auto Motive Equipment Co.; $200,000; to repair automobiles; R. J. Harding, James Mange, R. C. Duerr.

Buffalo, N. Y.; Cold Spring Garage, Inc.; $10,000; J. G. Roberts, A. E. Abbott, L. H. Vogel.

Brooklyn, N. Y.; Little Garage, Inc.; $10,000; E. Z. Vermylen, A. Z. Vermylen, P. Granelli.

East Greenbush, N. Y.; East Greenbush Garage Co., Inc.; William J. Coulson, David E. Hicks, Archie E. Wianman.

New York, N. Y.; Bronx Auto Garage and Taxi Service Corporation; $6000; Max Freeman, John Bishop, William F. McMahon.

New York, N. Y.; Potter-Frichman Co.; $20,000; to operate garages and deal in automobiles; R. Potter, E. H. Firtchmann, A. C. Thiel.

Cleveland, O.; Duckworth Garage Co.; $25,000; Clarence H. Duckworth, Trafton M. Dye, E. H. Findley, P. H. Hunt, M. I. Buelow.

Warren, O.; Campbell-Dilley Sales Co.; $50,000; to conduct a garage; Louis C. Brown, Allen J. Campbell, S. R. Russell, E. E. Chambers, A. P. Dougherty.

Albany, Ore.; Highway Garage Co.; $20,000; E. E. Archibald, Albert J. Rouseau, Edward Anderson.

Dallas, Tex.; Strickland Garage and Service Station; $2500; H. Strickland, R. E. Starks, Elijah Cooper.

Providence, R. I.; Dorrance Garage Co.; $10,000; Ralph M. Greenlaw, Lewis A. Waterman, Jr., Alfred H. Lake.

ACCESSORIES, EQUIPMENT AND SUPPLIES.

Birmingham, Ala.; Racine Tire Co.; $250,000; O. H. Bowen, I. L. Fabian, Charles D. Klotzman.

Dover, Del.; Atlas Tire Co.; $10,000; to rebuild used tires and to manufacture, buy and sell automobile tires and tire accessories.

Dover, Del.; Cut Rate Auto Supply Store, Inc.; $10,000; W. H. N. Lofland, Charles H. Johns, Frank Jackson.

Dover, Del.; Kelly Tire Co.; $750,000; John Kelly, Michael J. Brown, Arnett Potter.

Dover, Del.; McGraw Tire and Rubber Export Co.; $100,000; T. L. Croteau, S. E. Dill, A. M. Hoover.

Dover, Del.; National Spring Products Co.; $4,000,000; to manufacture and deal in cushion springs for automobiles.

Dover, Del.; The Speedway Tire and Rubber Co.; $100,000; to manufacture and sell rubber tires; William F. Roche, W. M. Wilson.

New Britain, Conn.; Associate Manufacturing Co.; $100,000; to manufacture automobile equipment and accessories; Charles E. Hadfield, H. C. Kingsley, Walter E. Taft.

St. Louis, Mo.; Noser Auto Lock, Inc.; $25,000; Emil V. Noser, C. B. Carter.

Newark, N. J.; Standard Auto Sales Co.; $25,000; to deal in automobile accessories and supplies.

New York, N. Y.; Preferred Tire Corporation; $100,000; to manufacture tires and tubes for automobiles.

New York, N. Y.; Kramer Specialties Sales Co., Inc.; $25,000; to deal in and with automobile accessories; M. L. Rogers, L. A. Irwin, W. G. Singer.

Carey, O.; Carey Tire and Rubber Co.; $5000; J. E. Doetz, O. J. Doetz, N. E. Streator, B. M. Quirk, E. M. Bruce.

Cincinnati, O.; Good Tire Service Co.; $10,000; A. Bernstein, Keefer Miller, John W. Davis, Robert Fred, Edward F. Peters.

Columbus, O.; National Auto Supply and Tire Co.; $10,000; T. A. Simons, Jr.; T. A. Simons, E. E. Simons.

Muskogee, Okla.; McCreary Tire Jobbers Co.; $10,000; J. L. Armstrong, A. B. Roberts.

Roseburg, Ore.; Automatic Electric Brake Co.; $500,000; to manufacture automatic brake and signaling devices; George S. Marsh, R. Z. Farner, R. H. Ginsted.

Dallas, Tex.; Security Tire and Supply Co.; $25,000; Barry Miller, Rupert Eldridge, W. H. Russell.

Houston, Tex.; Auburn Texas Tire Co.; $12,000; Bruno Prassel, W. P. Layne, J. S. Both.

Waukesha, Wis.; Consumers Auto Accessories Protection Association; $15,000; to deal in automobile accessories; Ira John Ludwig, Robert G. Cramer, Robert L. Halt.

Oshkosh, Wis.; Oshkosh Auto Specialties Co.; $25,000.

DEALERS IN AUTOMOBILE, MOTOR TRUCKS AND TRACTORS.

Mobile, Ala.; Southern Motors Corporation; $20,000; to conduct an automobile business; H. B. Pake, B. H. Pake, H. B. McConnell.

Hartford, Conn.; Colton Johnson Webster Motor Co.; $5000; Richard Johnson, Thomas N. Webster, Clayton M. Colton.

New Haven, Conn.; Cleveland Auto Sales Co.; $20,000.

Dover, Del.; Apollo Magneto Corporation; $8,500,000; to manufacture and dispose of magnetos and other machines used for igniting.

Dover, Del.; Intercity Motor Express Lines, Inc.; $100,000; to operate a line of motor vehicles; A. M. Hooven, S. E. Dill, T. L. Croteau.

Dover, Del.; Louisville-Yellow Taxi Cab Co.; $250,000; to operate all kinds of motor vehicles; M. L. Rogers, W. G. Steigler, L. A. Irwin.

Dover, Del.; Seaford Auto Co.; $5000; George H. Hearn, John Roycannon, Soren E. Thompson, Granville E. Hearn.

Lexington, Ky.; Auto Electric Service Co.; $5000; J. B. Tanner, Jr.; J. H. Tanner, A. M. Matthews, Clyde E. Foushee.

Louisville, Ky.; Miles Hughes Automobile Co.; $26,000; A. C. Hughes, T. J. Miles, W. W. Woolley.

Louisville, Ky.; Reo-Cornelius Spalding Co.; $50,000; to sell motor vehicles; William Spalding, Howard Cornelius, W. G. Lockwood.

Owensboro, Ky.; L. H. Bashan Motor Co.; $8000; L. H. Bashan, A. B. Menser, P. R. Menser.

Lisbon Falls, Me.; Lisbon Falls Auto Co.; $10,000; to deal, hire, let and repair motor vehicles of all kinds; Louis Rious, Antonio Mazzo, Rufus F. Springer.

Portland, Me.; Lewis Rim Co.; $200,000; to deal in motor vehicles and accessories; M. G. Connellan, H. P. Sweetser, G. L. Brooks.

Boston, Mass.; North Eastern Motor Co., Inc.; $150,000; Augustus T. Beatey, C. E. Jones, Paul F. Sapin.

Chicago, Ill.; Bowden Motor Corporation; $200,000; R. B. Shaw, J. C. Shaw, A. E. Catron.

Chicago, Ill.; North Side Oakland Sales Co.; $10,000; George W. Diener, D. S. Freese, A. J. Freese.

Chicago, Ill.; Tri-State Motor Sales Co.; $50,000; Edward G. Davis, Ben H. Smith, Donald M. Fawcett.

Boston, Mass.; People's Bus Co.; $100,000; to deal in automobiles; Frank Seiberlich, Barnett White, Albert A. Cloutier, Benjamin Delkeim.

Boston, Mass.; United States Automobile Association, Inc.; $33,000; Lewis Jacobs, George N. Jacobs, Benjamin B. Jacobs.

Worcester, Mass.; Hammond Motor Car Co.; $45,000; to deal in automobiles; Charles B. Dunbar, John M. Burton, Earl S. Hammond.

Elizabeth, N. J.; Victory Auto Exchange, Inc.; $125,000; to conduct a general automobile business.

Jersey City, N. J.; Auto Products Co.; $100,000; James M. Powers, Peter Brance, John P. Conlon, Richard Moldenko, Morris Kamber.

Newark, N. J.; Universal Auto Supply Co.; $100,000; to make and trade in automobiles, carriages and accessories; Alfred M. Matson, Robert P. Vreeland, Leo J. Kelly.

Trenton, N. J.; Constantine & Ledaca, Inc.; $5000; to deal in automobiles; Harold Constantine, Harry Ledaca, E. L. Ledaca.

Kansas City, Mo.; Auto Products Manufacturing Co., Inc.; $10,000; R. L. Davis, Sam Wagner.

Kansas City, Mo.; The Jahs Motor Sales Co., Inc.; $3000; C. W. Jamison, C. W. Airhart, N. E. Patton.

Buffalo, N. Y.; Elbridge Automotive Corporation; $500,000; J. E. McComber, D. H. McCarlager, F. C. Owen.

Buffalo, N. Y.; Clark-Robertson Vehicle Corporation; $50,000; H. J. Clark, A. R. Robertson, N. E. Robertson.

Buffalo, N. Y.; Special Auto Service, Inc.; $100,000; Harry N. Kraft, Jane Kraft, Charles Hahl.

New York, N. Y.; Allen-Waring Auto Co.; $300,000; Walter C. Allen, A. D. Waring, Harry Bijur.

Newburgh, N. Y.; The Parrott Motor Co., Inc.; $25,000; to sell and trade in automobiles and accessories; M. E. Parrott, J. Van Venschoten, J. B. Marion.

New York, N. Y.; Kelly & Coghlan, Inc.; $10,000; to conduct a general automobile business; Wm. H. Coghlan, Edward J. Coghlan, J. E. Sheehy.

New York, N. Y.; Resta Motors, Inc.; $25,000; Edward L. Smallwood, Dario Resta, Thomas J. Whalen.

Oneida, N. Y.; The Keller-Merrell Motor Co.; $25,000; to conduct a general automobile and truck garage business; Frank Keller, Hugo F. Keller, Willard H. Merrell.

Utica, N. Y.; Utica Truck Corporation; $10,000; F. V. Rowland, W. O. Monaghan, G. G. Hakes.

Syracuse, N. Y.; Stackpole-Northup Garage, Inc.; $10,000; J. G. Bradley, H. F. Barton, G. T. Stackpole.

Westfield, N. Y.; Westfield Auto Sales Co.; $50,000; to conduct a general automobile and garage business.

Charlotte, N. C.; The Triangle Motor Sales Co.; $75,000.

Akron, O.; Grant Motor Sales Co.; $25,000; Joseph B. Sieber, H. L. Snyder, Herman E. Werner.

Ashtabula, O.; Suburban Motor Service Co.; $25,000; Walter E. Brown, A. Leo Sage, A. L. Sage, C. V. Brown.

Cleveland, O.; Andee Securities Co.; $10,000; M. A. McCormack.

Cleveland, O.; Automotive Specialty Co.; $15,000; J. A. Brune, M. Dilley, G. C. Hafley, M. T. Mazanec, A. M. Klein.

Cleveland, O.; Ramsey Auto Sales Co. $25,000; W. D. Sommers, Ralph J. Rumsey, T. J. Moffett, N. B. Maddon, E. I Townsend.

Cleveland, O.; Wellock Motor Co.; $50,000; J. T. Wellock, Charles D. Simmons, C B. Bayly, A. L. Chiostergi, Robert M. Morgan.

Columbus, O.; Tyre Cord and Fabric Co. $100,000; Phil S. Bradford, O. R. Crawfis A. G. Price, E. L. Timmons.

Minerva, O.; Lincoln Auto and Machin Co.; $15,000; Fred Rieser, Willard G. Kryder, Albert J. Kokel.

Newton Falls, O.; Garland Motor Sale Co.; $30,000; L. A. McCormick, J. L. Garland, Sarah Petty, Elizabeth Baldwin. F Kiettler.

Oberlin, O.; Maddock Taxi Co.; $10,000 Fred H. Maddock, Philip E. Nielson, M. J Whitney, J. L. Kinney, M. O. Sperry, H. F Askey.

Youngstown, O.; Mahoning Auto Sale Co.; $15,000; C. R. Stull, Michael Shea, W. McCartney, Patrick A. Lavin.

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Notes of the Trade and Industry

The Hyatt Roller Bearing Co., Chicago, has appointed H. G. Weaver to take charge of the sales promotion department for the Tractor Bearings Division During the past year he has been investigating the power farming machinery industry through farmers and dealers. George H. Woolley, Jr., will be a special representative of the department.

The Vita Manufacturing Co., Cleveland, producer of the Rogers magneto, is erecting at West 117th street, near Madison avenue, a large factory building 132 by 252 feet. This structure is only a unit for a much larger plant which will be built. The first unit will be two stories in height, of modern concrete, fireproof construction, with a front of velvet faced brick. The plant will be erected without partitions, and the initial unit will be of sufficient strength to permit the addition of other floors as needed.

The New Departure Manufacturng Co., Bristol, Conn., will employ approximately 1000 workmen in the new plant it has erected in Meriden, Conn. Later it will bring the working force up to 3000. Other buildings are planned. The ball bearing plant will be doubled and a forging plant will be built.

The Covert Gear Co., Inc., Lockport, N. Y., announces that Alwin A. Gloetzner, who has been vice president, has been elected president and general manager.

The Buda Co., Harvey, Ill., has opened offices at 33 West 42nd street, New York City, with L. H. Earle, eastern representative, in charge.

The McCord Manufacturing Co., Detroit, has designed and is now marketing a copper asbestos gasket for Ford intake and exhaust manifolds that replaces two parts ordinarily required. One side of the two-in-one gasket slides into the manifold while the other side slides into the cylinder port. The two-in-one replaces the inlet and exhaust pipe gasket and the inlet and exhaust pipe gland. It is made of sheet copper, encasing asbestos.

The Puritan Machine Co., Lafayette boulevard and 10th street, Detroit, has acquired from the General Motors Corporation the axle business of the Weston-Mott Co., Flint, Mich., one of the General company is moving this stock to its main Motors subsidiary plants. The Puritan plant at Detroit, from which point it will distribute service repair parts for Weston-Mott axles.

The Globe Rubber Tire Manufacturing Co. recently had a convention of its salesmen in New York. It was announced that the company plans to launch an active campaign in adding another number to its cord family in the 30x30½ size.

The Dreadnaught Sales Co., incorporated under Tennessee laws with $20,000 capitalization, has opened business at 11 South Third street, Memphis. The firm will sell Dreadnaught tires and tubes at wholesale, and will begin with three traveling men. L. C. Humes is president.

Leach-Biltwell Motor Co. Will Market New Car

The Leach Biltwell Motor Co. has been incorporated for $1,000,000 and has absorbed the Leach-Biltwell Co. The concern will manufacture a six-cylinder passenger car to be called the Leach Power Plus Six. The officers are M. A. Leach, president; L. G. Martin, vice president; E. P. Hughes, secretary and treasurer; R. A. Wilson, production manager; R. P. Pennock, superintendent; J. H. Faircloth, purchasing agent; C. N. Graves, eastern factory representative.

M. A. Leach was at one time in the lumber business and later established Pacific coast distributing connections for the Dort Motor Car Co., Flint, Mich. Afterward he formed the Leach Motor Car Co., operating in Los Angeles and San Francisco as motor car distributors. For the past year he has been turning out custom made motor cars.

C. N. Graves, making his headquarters with the Bradfield company, 910 Kresge building, Detroit, has already placed orders for material for 900 cars. The company will buy its units in the eastern market and ship them knocked down for assembly in the Los Angeles plant. The car will be built of standard units. The company will either have a display or representatives at both the New York and Chicago automobile shows. Plans for a new factory for the company will be announced soon.

STEWART-WARNER.

Stewart-Warner is lined up for a tremendous business this year. Its turnover will amount to considerably over $12,000,000 as compared with $9,800,000 in 1918. The automobile horn, vacuum feed system and speedometers are still the big lines, though certain comparatively new products, like the searchlight, are running over 100 per cent. ahead of a year ago.

The big Chicago company will ship this year over 1,000,000 vacuum tanks and 1,200,000 horns. Net earnings, based on nine months, results and orders firmly in hand should total nearly $25 a share, as against $15.94 a share last year. Stewart-Warner has for many months been in an enviable financial position, keeping independent of the banks entirely. It is a unique industry in these days of high inventory that can finance business expansion without borrowing.

ANDERSON HAS $1,000,000 INCREASE IN ITS CAPITAL.

The Anderson Motor Co., Rock Hill, S. C., has increased its capitalization from $2,625,000 to $3,625,000, and is erecting a new steel and concrete building, 340 by 250, equipped with new machinery. Contracts have been awarded amounting to $200,000. It is expected that this new factory building will permit a material increase in the production of Anderson Six motor cars.

Announcements By Tractor Makers

The General Harvester Corporation of America has been incorporated under Michigan laws with $100,000 capitalization, but, it is announced, the capitalization will be increased to $10,000,000, as needed. The corporation will acquire tractor and agricultural machinery plants and offer to the trade a complete line of implements. A large factory will be established in Port Huron. The general offices will be in Detroit and export offices in New York.

The Baker Tractor Corporation, Detroit, has been formed to produce a new three-wheel type of tractor, which will burn kerosene.

The Winnebago Tractor Co., Rochford, Ill., has been incorporated with $150,000 capitalization by George N. Whitford, L. E. Bement, G. S. Blanchard and Frank Schwartz. A contract has already been awarded for factory buildings.

The Hession Tiller and Tractor Co., Buffalo, N. Y., manufacturer of the wheat tractor, has gone into receivership, with Robert E. Powers temporary receiver. The firm is capitalized at $10,000,000, but the amount paid in is said to be only a fraction of that amount.

The Cleveland Tractor Co. will construct two additional buildings at a cost of $400,000. These will give the company 310,000 additional square feet of floor space.

The Beeman Garden Tractor Co., Minneapolis, has dropped the word "garden" from both the company name and the trade style of the tractor. The Beeman tractor now develops two to four horsepower and can be utilized with any implement which was formerly drawn by a horse. The original tractor was designed especially for truck gardens.

TRADE LITERATURE.

W. W. and C. F. Tucker, Hartford, Conn., manufacturer of patented oil hole covers and cups, Hercules shears and rod cutters, has issued a revised catalogue covering its complete line of oil hole covers and cups.

The Simms Magneto Co., East Orange, N. J., has issued a booklet entitled, "Why Magneto Ignition Makes a Good Engine Better." This booklet covers the subject in an interesting and convincing manner, and will prove valuable to all who are interested in automotive products.

S. F. Bowser & Co., Inc., Fort Wayne, Ind., has issued a little folder which illustrates and describes a Bowser battery storage system for lubricating oil. The folder can be arranged to show one, two or three outfits, or a battery of four tanks, so that the prospect may understand that he can buy as many units as he requires. The folder will show him how the units of any of the various capacities line up in uniform manner.

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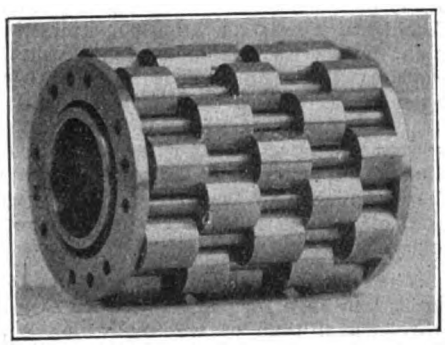
HART ROLLER BEARING A NEW DESIGN.

A new design or type is reflected in the bearings produced by the Hart Roller Bearing Co., Orange, N. J., which is



The New Hart Bearing with Staggered and Meshed Rolls.

claimed by the manufacturer to have distinct value. Instead of the usual rollers extending the length of the bearing, series of short rolls are assembled on shafts, so that two lengths of rolls may be used. The arrangement of the rolls is shown in the accompanying illustration, they being staggered and meshed so that the bearing is the entire length of the shaft and the race.

As will be noted, the series of rolls are placed on alignment shafts that are mounted at the ends to revolve free on retainer rings, which serve as separators and maintain the relation of the rolls and shafts to each other. Claim is made that the design reduces the bearing angle, that is, the angle included between radial lines drawn from the axis of bearing through the centers of the adjacent rollers, so that the bearing stresses are substantially lessened.

That the bearing will afford satisfactory results either in a vertical or horizontal plane, and that the end of any lightly loaded roller is free to rotate independently of the heavily loaded end, so that there will not be undue wear from eccentric loading, are two claims for the design. The movement of lubricant through the bearing is maintained to be extremely free. The bearings are constructed from a special chrome-vanadium steel and heat treated.

NEW RULING ON ACCESSORIES TAX.

Interpretations of the new ruling on the imposition of Federal taxes on accessories and parts have been announced by the National Automobile Chamber of Commerce and the Motor and Accessory Manufacturers' Association.

The new ruling modified the system of taxing accessories and parts, including tires and inner tubes, so that these parts may be sold to manufacturers without the payment of a tax. However, the parts thus sold must be utilized by the purchasing manufacturer in making a complete car or machine, the tax falling then upon the completed machine. On the other hand, the impost becomes due when the goods are sold to a dealer, person or firm who will not use the parts in manufacture. In this way the evil of double taxation is obviated.

UNSERVICEABLE CARS ARE BEING SOLD BY GOVERNMENT.

The first government sale of unserviceable automobiles took place at Camp Holabird, near Baltimore, Md. Nearly 4000 persons attended. Seventy-five cars were sold for a total of $25,000. The first car brought $130. A dealer bought a limousine for $650, the highest price. The average sale price was under $200. Practically all of the cars will have to be junked. A few of the bodies, especially the enclosed models, will provide the best profits.

Control of Fisher Body Acquired by General Motors

It is understood that General Motors has acquired control of the Fisher Body Corporation. The corporate name and management of the latter are to be changed, and business will be vigorously expanded. In all probability some $30,000,000 new money will be raised by Fisher Body under General Motors sponsorship, the proceeds of which will be used for the erection of two new body-making units at Cleveland and at Detroit. This will make Fisher Body a $50,000,000 concern. There is an under-capacity in the automobile body-building industry.

SERVICE BODY FORMALLY ORGANIZED.

The new Automotive Service Managers' Association was formally organized Sept. 3 at a meeting at the headquarters of the National Automobile Chamber of Commerce in New York. The following board of officers was elected to serve until the regular annual election in January:

President, Ralph C. Rognon, Vim Motor Truck Co.; vice president, J. W. Watt, Reo Motor Co. of New York; secretary, J. Howard Pile, Motor World; treasurer, E. V. Dirks, Buick Motor Co.; directors, E. Hunn, Packard Motor Car Co., chairman; J. H. Lange, Three-Point Truck Co.; J. M. Grant, White Co.; F. J. Lowe, Bronx County Auto Co.; H. M. Holt, Willys-Overland, Inc.; Al. Rawson, Reo Motor Co. of Newark.

The new service association has the hearty support of Alfred Reeves, general manager of the National Automobile Chamber of Commerce, and C. M. Brown, representing the Automobile Dealers' Association of New York.

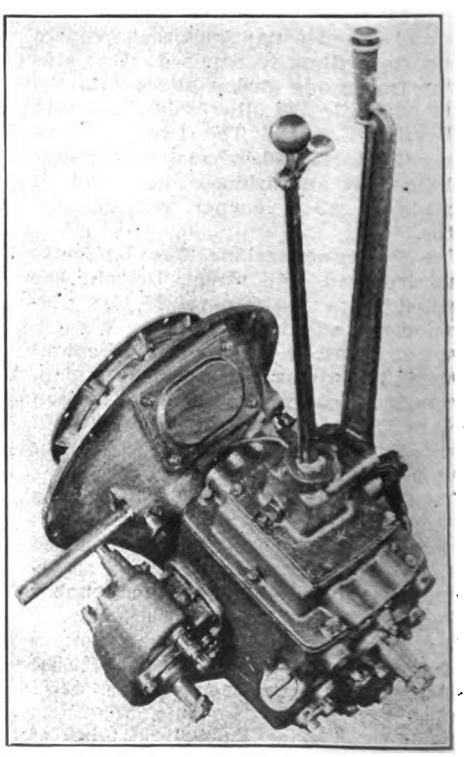
FULLER MODEL GU-5 TRANSMISSION GEARSET.

The Fuller & Sons Manufacturing Co., Kalamazoo, Mich., which is one of the best known concerns in the power vehicle construction unit industry, is specializing the production of transmission gearsets, the greater part of which are designed for truck building, although some of them may be used in passenger cars.

The model GU-5 gearset is combined with a clutch and is designed for unit mounting with four-cylinder engines up to 350 cubic inches piston displacement for trucks, and for larger engines for passenger car service. The clutch is a multiple disc type, the discs being hardened saw steel faced with woven asbestos fabric. The clutches are practically self-compensating, long springs automatically taking up whatever wear may develop with use.

The model G is the same size as the model GU-5, but it is an independent type, designed for mounting amidships in the chassis. Annular ball bearings of extra large size are used throughout all gearsets. The gears are 6-8 pitch. The main shafts are four-spline types, carefully heat treated and ground. The gears and shafts are 3½ per cent. nickel steel and are of large size to have an additional factor of safety. Special care is directed to hardening all parts that are subjected to wear.

The housing of the transmission gearsets is designed so that a power take-off may be fitted at either side, and on the model G units these may be installed with the drive shaft at either the front or the back as may be desired. The take-off has the standard 1⅛ inches S. A. E. taper connection.



Model GU-5 Fuller Combined Clutch and Transmission Gearset with a 2A Power Takeoff.

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The Fisk Nine prove that good athletes make good workmen

FISK TIRES

The Fisk line is an unusual selling proposition—a *complete* line, no gaps, no fill-ins.

The Fisk Non-Skid, the Fisk Red-Top, the Fisk Cord. All good looking, all oversize, each to fill a particular place in the dealer's line.

Stand any one of these up alongside other tires of the same class and size and note the size, the care in every detail, the good looks of the Fisk Tires.

The ideal of the Fisk Rubber Company is to be the best concern in the world to work for and the squarest concern in existence to do business with.

Sold *direct* to dealers and manufacturers

There is a Fisk Branch within 24 hours of you

Time to Re-tire?
(Buy Fisk)

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STROMBERG CARBURETOR.

Stromberg Carburetor of America, it is expected, will receive between $500,000 and $1,000,000 in damages as a result of its suit against the Zenith Carburetor Co. for infringement of patent rights. Decision in favor of Stromberg was rendered some months ago and the court ordered an accounting and the payment of damages. Auditors of both companies have been at work and while Stromberg estimates that the Zenith company profited to the extent of well over $1,000,000 from the manufacturing of carburetors infringing Stromberg patents, the Zenith company claims its profits were not more than $500,000.

The discrepancy in these figures is traceable to the Zenith company's payment of royalties at the rate of $1 a carburetor, or about $625,000, to the original Zenith company in France. The royalty payment has been deducted as an expense by Zenith. Stromberg contends that such a deduction should not be made.

Stromberg is doing the greatest volume of business in its history. It is practically swamped with orders and finds itself unable to fill the immediate demand for its product despite the fact that production is now running at the rate of 30,000 to 35,000 carburetors a month. Work is being rushed on new factory buildings which will double the present capacity and it is estimated that before the end of the year close to 50,000 instruments a month will be turned out.

More than 60 per cent. of the motor trucks and about 45 per cent. of the passenger cars manufactured in the United States use Stromberg carburetors as standard equipment. Last year more than 80,000 Stromberg carburetors were sold to Ford owners alone.

NORTH & JUDD.

The North & Judd Manufacturing Co., New Britain, Conn., manufacturing automobile and other hardware, has declared a regular quarterly dividend of four per cent. and an extra of three per cent., an increase of one per cent., making the annual rate 16 per cent. regular and 12 per cent. extra. The directors have recommended a capital increase from $1,500,000 to $2,000,000, to aid the company's expansion, particularly in the purchase and equipment of the Fitch company's plant in New Haven, Conn., which will give the company tidewater trade facilities.

BUSHING MANUFACTURERS TO CONFER.

The Motor and Accessories Manufacturers' Association has called a conference of bushing manufacturers to be held at the Manufacturers' club, Philadelphia, Sept. 30, for the discussion of the standardization of bushings. All manufacturers of bushings have been invited to send representatives.

Dealers are being offered a bonus of $100 and more by buyers who seek early deliveries.

Record is Smashed in Spectacular Race at Sheepshead

Two brothers, Gaston and Louis Chevrolet, warm rivals in the automobile racing game, fought a great duel on the Sheepshead Bay Speedway Sept. 20 in a 150-mile race in which there were the unlucky number of 13 starters. First it was Louis, then it was Gaston who led the field, but just before the finish of the 110th mile, when the two brothers were racing neck and neck, with the field behind them lapped, Louis' car, a Frontenac special, the same as his brother's, burst into flames and he was lucky to escape with his life. It was only quick wit and consummate skill at the wheel that enabled Louis and his mechanician, Kenneth Goodson, to escape without a roasting. As it turned out both of them were well scorched about the arms and legs, particularly the latter.

It was a day of thrills for the 40,000 spectators who watched the cannonading cars go careening around the track. They not only saw the record for 150 miles sent into the discard by the winner, but what all automobile racing followers are keen to see, they witnessed a couple of hair raising escapes from what seemed almost certain death. In the third heat of the 10-mile race Ralph Mulford came within a hair's breadth of going west when he broke a tie rod in trying to straighten out in a desperate spurt around the last bank, skidded down into the infield and then bucked up straight across the track in front of Ralph De Palma, who had to do some mighty quick thinking to escape him. Mulford looked like a sure winner when the accident happened.

This mishap did not daunt Mulford from going into the long distance event, but the best that he could do was to finish seventh. The time of the winner was 1h. 22m. 34 1-5s. The old mark was 1h. 26m. 14 91-100s. made by Ralph Mulford at Chicago, June 16, 1917, in a Hudson special. The rate of speed maintained by the winner was close to 110 miles per hour. From the start it was a wild scramble with the man who couldn't make his car step along at 100 miles an hour, a mere selling plater, in the mad chase for the purse of $2500 which was hung at the end of the swirl around the two miles of pine boards.

From the start it was a family affair. Ralph De Palma, record holder par excellence, met with a mishap in the first heat of the 10-mile sprint when he broke a connecting rod on the third lap and was forced to retire. He dug up a White special in time for the third heat, but he never had a chance. The summary:

One Hundred and Fifty Mile Race—

	Driver	Car	H.	M.	S.
1,	Gaston Chevrolet,	Frontenac	1	22	34 1-5
2,	Joe Boyer,	Duesenberg	1	24	43 3-5
3,	Ira Vail,	Philbrin-Duesenberg	1	24	46
4,	Art Klein,	Peugeot	1	25	24
5,	Toland Nicholson,	Hudson	1	30	28 1-5
6,	Denney Hickey,	Stickel	1	31	35 1-5
7,	Ralph Mulford,	Duesenberg	1	33	06
7,	William Vetere,	Dusenberg	Called off		

10-mile special (three heats). First heat—Won by Louis Chevrolet; second, Joe Boyer; third, Gaston Chevrolet. Time, 5m. 30 4-5s.

Second heat—Won by Ralph Mulford; second, Louis Chevrolet; third, Gaston Chevrolet. Time, 5m. 24 1-5s.

Third heat—Won by Louis Chevrolet; second, Gaston Chevrolet; third, Joe Boyer. Time, 5m. 30 2-5s.

CALENDAR

Oct. 6-11—Detroit, Arena Gardens, closed car show; Detroit Dealers' Association.

Oct. 9-10—Jackson, Miss., second annual convention of Louisiana-Mississippi Association.

Oct. 15—New York, Grand Central Palace, opening of International Farm Tractor and Implement Exchange.

Oct. 15-17—Chicago, Congress Hotel, 26th annual convention of the National Implement and Vehicle Association.

Nov. 3-8—Chicago, Medinah Temple, exhibit of Automotive Equipment Association.

Nov. 7-8—Detroit, Hotel Statler, meeting of National Association of Motor Truck Sales Managers.

Nov. 16-23—New York, Hotel Commodore, Automobile Salon.

Dec. 3-5—Cleveland, annual convention of Automobile Trade Association.

Jan. 3-10—New York, Eighth Coast Artillery Armory, exhibition of commercial cars and accessories.

Jan. 3-10—New York, Grand Central Palace, passenger car show; National Automobile Chamber of Commerce.

GMC AND DELCO LIGHT MERGE.

The Domestic Engineering Co., Dayton, O., manufacturer of the "Delco-Light" and farm lighting systems, has been merged with the General Motors Corporation and hereafter will be operated as a branch of the latter. The business will be conducted under the present management. It is proposed greatly to extend the plant and the operations of the "Delco-Light," which during the last few years has been the great leader in farm and domestic lighting.

The Domestic Engineering Co. was incorporated in 1916 a with capitalization of $300,000 common, $500,000 preferred stock. In January, 1918, the capitalization was increased to $1,200,000 common and $2,300,000 preferred, which provided funds for additional plant capacity and working capital. The company has agencies established throughout the United States and in many parts of South America and Europe.

FITZGERALD AWARDED GMC ORDER FOR 500,000 HORNS.

General Motors has placed with the Fitzgerald Manufacturing Co., Torrington, Conn., an order for 500,000 auto horns. The Fitzgerald firm recently completed a two-story addition and is now planning a three-story addition.

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SPECIAL SALE—AUTO TIRES

GUARANTEED 4000 MILES

If a tire fails to give service of 4000 miles we will replace it with another tire for ½ price marked below:

Size	Plain	Non-Skid	Tube
28x3	$6.45	$7.45	$2.30
30x3	7.45	8.35	2.15
30x3½	8.95	9.95	2.40
31x3½	9.45	10.45	2.45
32x3½	9.95	10.90	2.50
34x3½	10.45	11.30	2.80
31x4	13.45	14.60	3.20
32x4	13.95	14.95	3.30
33x4	14.45	15.45	3.35

Size	Plain	Non-Skid	Tube
34x4	$14.95	$15.95	$3.45
35x4	15.45	16.95	3.55
36x4	15.95	17.50	3.60
34x4½	18.45	20.45	4.30
35x4½	18.95	20.95	4.40
36x4½	19.45	21.45	4.45
37x4½	19.95	21.95	4.50
35x5	20.95	23.45	5.15
37x5	21.95	24.75	5.30

Deduct 2 Per Cent. When Check or Cash Accompanies Order.
10% Deposit Required on All C. O. D. Orders.
We Carry a Full Line of New and Reconstructed Tires.

ATLAS TIRE COMPANY,

Tires and Tubes Shipped Express Prepaid

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822 BROAD STREET, PHILADELPHIA, PA.

DOTTED LINES REPRESENT REGULAR FORD SPRINGS

SHADED LINES REPRESENT—SPRINGS WE FURNISH.

BECKMAN
DOUBLE ACTION
SPRING SUSPENSION
PATENTED.

OWNERS: As easy to install as a shock absorber. Anyone can do the work. Price, $18 a set, with guarantee of satisfaction or refund of money.

JOBBERS AND DEALERS: This equipment is highest quality. The market is practically unlimited. Sales are year round. Write for trade quotations.

For FORD CARS

IMPROVES CAR STEERING
CONTROLS SPRING ACTION
FULLY ABSORBS ROAD SHOCKS
PREVENTS SQUEAKS AND RATTLE
PROTECTS BODY FROM DAMAGE
AFFORDS FULLEST RIDING COMFORT
INCREASES CAR SERVICE LIFE
DECREASES OPERATING COST
DOUBLES TIRE MILEAGE

BECKMAN METAL PRODUCT CO

409 SUPERIOR AVE. NORTH WEST — BECKMAN BLDG CLEVELAND, O.

BUNTING BEARING BRONZE — B.B.B. CO. No. 1

Same quality as our finished bronze bushings and bearings used by manufacturers the country over.
Your repair stock is not complete without it.

All leading jobbers Ask for catalog N

The Bunting Brass & Bronze Co.

727 SPENCER STREET
TOLEDO, OHIO.

CORED BARS

STOCK SIZES

PIECE NO.	Outside Diameter	Inside Diameter	Length	Approx Weight
A	1	½	12	2
B	1¼	½	12	3½
C	1½	¾	12	5
D	1¾	¾	12	7
E	2	1	12	8½
F	2¼	1¼	12	10
G	2½	1½	12	11½
H	2¾	1¾	12	12¾
I	3	2	12	13¾
J	3¼	2¼	12	15½
K	3½	2½	12	17
L	4	3	12	21
M	4¼	3¼	12	20

WELDERS!

There's economy in using the best fluxes you can find for particular welding jobs. Insure better and stronger welds, more easily and more rapidly made, by using

ANTI-BORAX COMPOUNDS

For Aceteylene. Gas and Electric Welding

Anti-Borax WELDING FLUX

Best on the market for all grades of iron and steel. Weld at lower heat. Leave no scale. They cleanse the molten metal, assist fusion and improve the quality and appearance of your work. Guaranteed to give perfect satisfaction or your money refunded.

Write for sample and price list.

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TRADE OUTLET

PURITAN PARTS ARE NEW

IT PAYS TO BUY THE BEST.
You Are Time and Money Ahead in the End.

TRY IT NEXT TIME.

RIMS AND WHEELS.

We have an enormous stock of all makes and sizes of demountable rims and wheels—have them right in stock and can make immediate shipment. Write for prices.

RADIATORS.

Brand new Honey Comb Radiators for all makes of cars; guaranteed to be right. No matter what car you may need a radiator for, write us for prices.

FOR FORDS.

Speedster Bodies, beautiful, racy lines	$60.00
Sporty Racing Type Bodies with Top and Shield	120.00
Honey Comb Radiators, 1910 to 1916 models	20.00
Honey Comb Radiators, 1917 to 1919 models	20.50
Crown Fender, good heavy type, set	14.50
Speedster Fenders, set of four	10.00
One-Man Mohair Tops, touring, complete	35.00
One-Man Mohair Tops, roadsters, complete	25.00

ELECTRIC LIGHTING SYSTEM.

Includes Generators, Battery, two side Lamps, Tail Lamp, Wiring, Switches, etc. Price for complete system	$17.50
30x3½ Reliners	2.10
30x3 Reliners	1.95
Roller Bearing for Front Wheels, set	7.50
6-Volt Menominee Generators, with attachments	23.50

PURITAN SPECIALS.

Rear Gasoline Tanks, 28 in. long, 12 in. wide, with Gauge, for vacuum feed	$8.00
Timken Front Axle, left hand, complete with Hubs and Bearings	30.00
Front Bumpers for Chevrolet, 490 Channel Type	5.00
Kingston Carburetor, 1-inch top intake	5.00
Schebler Model R, 1-inch top intake	12.50
Brown Spotlights	3.75
Steering Gears, left or right hand	15.00
18-inch Steering Wheels with Corrugated Rim	2.75
Hartford Shock Absorbers for many cars, set of four	30.00

ONE-MAN KHAKI TOPS.

Complete with curtains and Dust Boot. Can fit any Maxwell models, either Roadster or Touring. Price, each, while they last..$25.00

ALL PARTS FOR ALL CARS.

PURITAN MACHINE CO.

909 PURITAN BLDG., DETROIT, MICHIGAN.

Eastern Branch, 245 West 55th Street, New York, N. Y.

Send it to Detroit

MAGNETOS.

Bosch DU4 Variable spark	$30.00
Bosch DU-4 set spark	25.00
Bosch D4 and Dr4	25.00
Bosch D6 and Dr6	30.00
Splitdorf 4 cyl. Dixie, high tension	25.00
Splitdorf 4 cyl., Models A, T, X and D	10.00
National 4 cyl. low tension	8.00
Briggs 4 cyl. low tension	8.00
Remy 4 cyl., type R L	15.00
Simms SU4 high tension	22.00

GENERATORS.

Deaco 6 volt	$12.00
Auto Lite 6 volt	15.00

COILS.

Splitdorf T S type	$10.00
Splitdorf box type	6.00
Bosch type A	10.00
Remy box coils	6.00
Remy type LC and LE	8.00
Briggs box coils	6.00

DETROIT MAGNETO REPAIRS ARE BETTER.

WE REPAIR any make magneto, coil, lighting generator or starter and give 24 hours service. Member Detroit Automobile Trade Association.

Detroit Magneto Exchange

192 Grand River Ave. Detroit, Mich.

LOZIER OWNERS—Why buy counterfit repair parts. We have all **Original Parts.** Made from original Patterns. Order from headquarters.

LOZIER MOTOR CO.
Fort and 6th Sts., Detroit, Mich.
Service Stations—E. A. Cornely, Inc., 1445 Bush St., San Francisco, Cal. Lozier Motor Co. of New York, Inc., 47th St. and 11th Ave., New York City.

Auto Mailing Lists

Send for our free complete Price List covering Auto Dealers, Owners, Ford Dealers, Truck Dealers and Owners, Garages, Auto Mfrs. and etc., any state.

A. F. WILLIAMS, Mgr. of List Dept.
168 W. Adams St., Chicago. Franklin 1182.

MOTOR BARGAINS.

Continental Motors, Model 9-N. New—In Original Crates. Specially priced at $300 each for quick sale. Write

C. C. NEWBURN,
621 Superior St., Milwaukee, Wis.

Every Ford Owner Should Read "TRANSFORMING THE FORD." Tells how to secure smooth, positive brake action that no car can excel. A little "transforming" and your car will glide to a quiet, quick stop without the annoying, irritating clatter that you now experience. It will go into low or reverse without jumping or jerking and you can pick up speed with all the smoothness and ease of a high-priced car. All accomplished without additional expense and the result is a clear saving of 75 per cent. in one direction alone. "TRANSFORMING THE FORD" tells how it's done. Send for your copy this very minute. IT IS FREE. **Cormack & Co., 500 Fifth Ave., New York City.**

GARDNER thermostat CARBURETOR

SIMPLICITY, DURABILITY, EFFICIENCY, ECONOMY

WHY?

THE THERMOSTAT TELLS

Highest Mileage, Easiest Starting, Most Power, Smoothest Running, Quickest Get Away, Simplest Construction

FORD MODEL $10.00. RETAIL

Gardner Carburetor & Brass Works, Detroit, Mich.

"MOTOROL"

Trade Mark

Saves 25% Gascline. Eliminates Carbon. Promotes perfect combustion. Reduces operating cost. Absolutely noncorrosive. Dealers and agents wanted.

AUTO PRODUCTS CO.
226 W. 138th Street, New York.

AUTO PARTS SAVE 50-90% FOR 400 CARS

POPE, PACKARDS, PIERCE, BUICK, STEVENS-DURYEA, KNOX, OVERLAND, ETC.

Motors,	$25.00 up	Presto Tanks,	$4.50 up
Magnetos,	4.00 up	New Spotlights,	2.00 up
Carburetors,	3.00 up	Generators,	10.00 up
Rear Axles,	15.00 up	Gears,	1.00 up
Front Axles,	5.00 up	Bearings,	1.00 up
Cylinders,	5.00 up	Radiators,	10.00 up

$12 Diamond Bumpers.....$5.50

Jobbers in Bankrupt Auto Supplies.

BRIGHTMAN AUTO EXCHANGE

321 Windsor Ave., Hartford, Conn.

AUTO PARTS.

50% to 90% Off List.
24 Hour Service. Unlimited Stock.

Pope-Hartford, Columbia, Reo, Overland and 200 other makes.

Motors,	$20.00 up	E. Presto Tanks,	$4.00
Magnetos,	$3.50 up	B. Presto Tanks,	$4.75
Cylinders,	$3.00 up	Bearings,	50c up
Springs,	$1.00 up	Rims,	$1.00 up

1000 Other PARTS Bargains.

If you want any part not listed here, **Write Us—We Have It.**

Conn. Auto Parts Co., Inc.

1070 Main St., Hartford, Conn.

TIRES AND TUBES

Demonstrating and Factory Repaired.

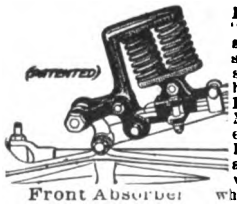
Economy, Quality, Price. All Standard Makes.

No Junk. Satisfaction Guaranteed.

Size	Tires	Tubes	Size	Tires	Tubes
30x3	$5.00	$1.35	36x4	$9.00	$1.75
30x3½	6.00	1.45	34x4½	9.25	1.75
32x3½	6.50	1.50	35x4½	9.50	1.80
31x4	7.25	1.65	36x4½	9.75	1.85
32x4	8.00	1.60	35x5	10.50	2.00
33x4	8.75	1.70	37x5	11.00	2.20
34x4	8.75	1.70			

Write for Prices on Odd Sized Tires. TERMS: $1.00 deposit with each tire ordered, balance C. O. D. subject to inspection. Specify style of rim to avoid delay. Although used tires are not guaranteed for any definite number of miles, we guarantee our tires to give the best service in proportion to the prices paid, or reasonable adjustments are made.

LIBERTY TIRE CO., 2119 So. Michigan Ave., Dept. I, Chicago, Ill.



FOR FORD CARS. "Champion" Shock Absorbers. The perfect spring suspension. Absorbs all jar and rebound. Easy to attach. Fully guaranteed. Makes Fords ride as easy as any $5000 car. Ford dealers, agents and owners, this ad is worth $10 to you. Ask why. Write today.

Champion Shock Absorber Sales Co., Inc., Indianapolis, Ind., Mfs.

We Are Exclusive
SELLING AGENTS
for the N. F. G.
CARLISLE CORD TIRE.
Dealers write for our special proposition.

CAMBRIA TIRE EXCHANGE.
204 Columbus Ave., Boston, Mass.

Don't discard your Old Tires, use self-cured Blow-Out Patches. They weld permanently. Extra long and strong. Easily applied. Double mileage assured. The outcome of years of research. Send for particulars. **BEN'S BIG TIRE SHOP, Dept. M, 378-382 Queen's Blvd., Winfield, Long Island.**

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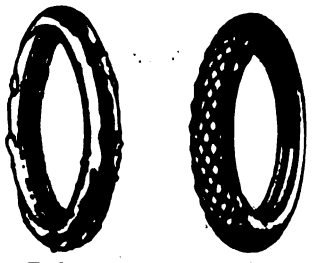
TRADE OUTLET

BOSTON RETREAD TIRE CO.



Before After

OUR METHOD OF RETREADING IS DIFFERENT FROM OTHERS.

We use all Goodyear first quality stock and retread bands and can absolutely guarantee from

3000 to 3500 Miles.

We will replace a new tire for every one that our work does not give satisfaction.

Tires called for and delivered. We pay express charges one way on all out-of-town orders.

Price List Mailed Upon Request.

BOSTON RETREAD TIRE CO.
70 Clarendon St., Boston, Mass.

TIRES

JOB LOTS

Obsolete, Surplus Stocks and Factory Seconds

WRITE—CALL

BROADWAY TIRE JOBBERS

250 West 54th Street **New York**

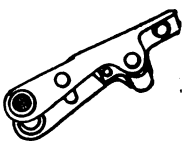
Atwater-Kent Sales Co., of New England

883 BOYLSTON ST., BOSTON, MASS.

Official
SALES AND SERVICE
For New England.

Complete stock of parts always on hand.

Write for Price List.



Superior Parts and Brushes

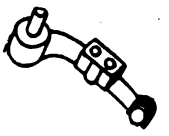
FOR ALL

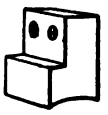
Ignition and Starting Lighting Systems

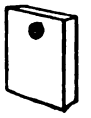
Used for Years by the Best Repair Shops Everywhere

"They Last Longer but Cost Less"

Write for Catalogue







Specialty Manufacturing Co.

637 Massachusetts Ave., Arlington, Mass.

H. Gordon, Ltd., 8a City Road' London, are open to take up the SOLE AGENCY of leading American Firms for

Light Motor Cars and Accessories, Motor-Cycles and Accessories, Leather Belting.

References: Messrs. Bowring & Co., Battery Place, New York City.

Bargains **Bargains**

BOSCH and EISEMANN Magnetos

We specialize in rebuilt magnetos and guarantee them to be as good as new for all practical purposes.

Our stock of magnetos, coils, generators, starters and distributor systems is complete. We are headquarters for parts as well.

We give quick service and guarantee every item sold. We serve and save money for thousands of customers in all parts of America.

Write today for our monthly bargain catalogue. We can supply what you want and when you need it. We specialize in repair work.

We quote below a few of many exceptional Bosch Magneto bargains.

Independent Magneto Type	Description	Rebuilt	Independent Magneto Type	Description	Rebuilt
ZR 6	6 cyl.	$50.00	ZR 6	6 cyl.	$85.00
ZR 4	4 cyl.	45.00	ZR 4	4 cyl.	80.00
D 3	3 cyl.	25.00	D 6	6 cyl.	75.00
D 4½	2 cyl.	25.00	D 4	4 cyl.	70.00
DR 6	6 cyl.	22.50	D 3	3 cyl.	65.00
DR 4	4 cyl.	20.00	D 2	2 cyl.	65.00
DR 3	3 cyl.	20.00	DR 6	6 cyl.	70.00
DR 4½	2 cyl.	20.00	DR 4	4 cyl.	60.00
DR 8	8 cyl.	50.00	DR 3	3 cyl.	55.00

MEINERT MAGNETO SPECIALTY COMPANY.
1216 Prospect Avenue, Cleveland, Ohio.

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Rough Usage Won't Hurt the Cord on a

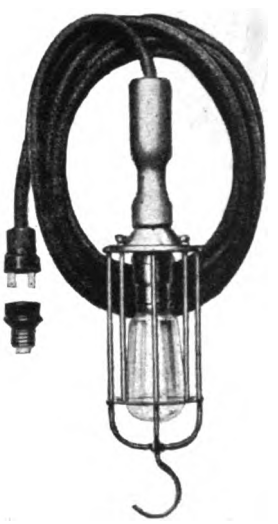
DURACORD EXTENSION LAMP

THE cord is Duracord, the same cord that is used on portable tools in shipyards, factories, etc. where the wear is much greater than you would ever give an extension lamp. Its strength is in the covering which is *woven* of heavy cotton yarn (not braided)—no metal to cut through the insulation or scratch polished surfaces as on a steel armored cable.

And you can jerk it around without fear of pulling the cord out of the handle. It's gripped by a patented holdfast fitting that hangs on like a bulldog.

Each lamp complete, all wired up with 20 feet of cord ready for use, packed in an individual box. Prices (excluding bulb)

Light weight $5
Heavy duty (as illustrated) $6
Vapor proof $8



TUBULAR WOVEN FABRIC COMPANY, Pawtucket, Rhode Island

For Ford and Metz Cars

Anderson Automatic Air Adjuster

It will add to mileage and greatly increase the power.
With a low throttle the engine will run strong and smoothly.
It will make a high grade efficient carburetor out of an old one.
In a few weeks it will save more in gas than what it costs.

List Price $6.50

DEALERS: This is a quick, sure seller, and the discounts are liberal. Write for facts.

ANDERSON & CO.
Waltham, *Manufacturers* Mass.

Arrow shows attachment on a Ford carburetor.

The Automobile Journal

A magazine that is read by more than 20,000 car owners every issue.

It Will Interest You—

Send for sample copy. Times Bldg., Pawt., R. I.

BE-BE-CO. Motor Specialties

Made to a quality that affords superior results.

Leather Top Dressing	Tire Paint
Mohair Top Dressing	Rim Paint
Cushion Dressing	Patching Cement
Top Lining Dye	Gasket Cement
Seat and Slip Cover Cleaner	Carbon Remover
Body Polish	Tar Remover
"Red Fox" Motor Car Soap	Nickel Polish
O-So Easy Hand Soap	Brass Polish
	Vulcanizing Cement

Sold in varying sized container or bulk with unconditional guarantee of replacement if in any way defective.

Catalogue and discount sheets at request.

BOSTON BLACKING CO.

EAST CAMBRIDGE Third Street MASS.

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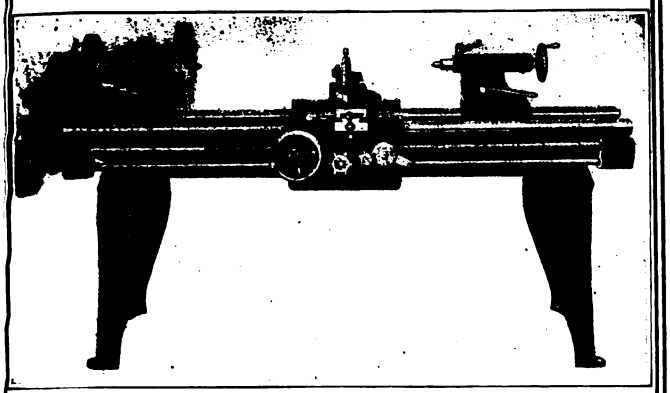


UNION LATHES

MANUFACTURED BY

UNION LATHE WORKS, York, Pa., U. S. A.

This lathe is especially designed for garage and machine shop work. It is well constructed and can be obtained at a moderate price.

Obtainable in various sizes with equipment of large and small face plate, follow rest, tool post, center, double friction counter shaft (see cut) rod and screw feed and all necessary change gears, wrenches, etc.

Write for complete descriptive literature and prices.

THE UNION LATHE WORKS

York, Pa., U. S. A.

Ford Type $12.50 Maxwell Briscoe and Dort $13.00 (Including War Tax)

SCOE

Formerly "Dave Buick" Carburetor

Puts "Pep" In Your Ford. Saves Its Cost In 60 Days.

Try This Carburetor Before You Sell It

THOUSANDS of dealers all over the country are building up a remarkable business with the Scoe Carburetor. The fact that the Scoe Carburetor does give greater gasoline mileage, more speed, quicker pick-up, perfect slow running, easy starting, and cleaner cylinders and spark plugs, makes it a ready seller.

We know that there is just one way to convince you of these facts, and that is by seeing them for yourself—in your own business.

Dealers' 30 Day Trial Plan

We want every automobile dealer and service station to know the Scoe—for to know it, is to sell it. There is a liberal discount to the trade.

Sign the trial order coupon and we will ship you a carburetor for thirty days' trial. Half the net you pay, balance in thirty days if satisfied. If not, return the carburetor and we will refund your payment without a question. Here is your opportunity to see the remarkable selling features of the Scoe at our expense.

BRISCOE DEVICES COMPANY

Successors to JACKSON CARBURETOR COMPANY

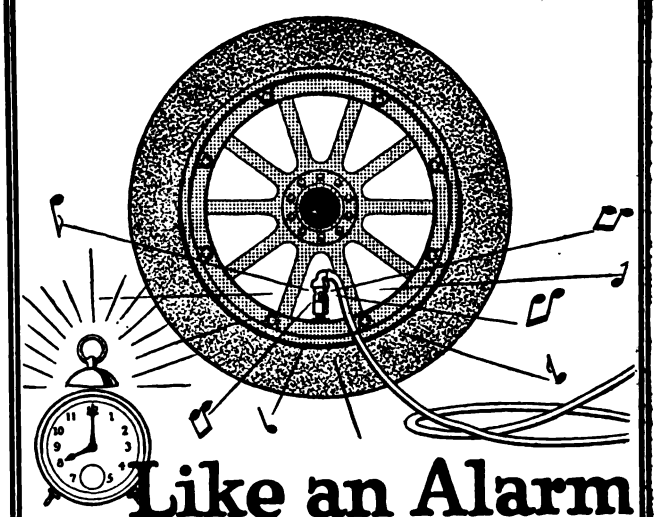
PONTIAC, MICHIGAN.

Name.....

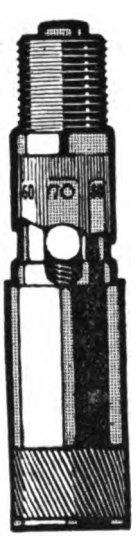
Address.....

Send trial carburetor for——— car. I will pay $4.25 C. O. D.—balance of dealers price in 30 days if satisfactory. If not satisfactory, I will return and you will refund my $4.25.

(3)



Like an Alarm Clock



Here it is, Screw it on

YOU can pin your faith to the Whistler. With it on your tires, there's never a chance of over-inflating which causes blowouts and give-outs.

Simply set it for the right amount of air. Turn on the supply. After a bit a cheery little whistle announces "enough."

That's saving time for you. And it's sure saving, too. The Whistler lengthens the life of a tire by from 60% to 75% and it saves gasoline, because the tires are evenly inflated.

How does that strike you? It's a proposition that car owners everywhere are getting enthusiastic over. We are creating and forwarding this desire by advertising. We offer you attractive window and counter signs to link up with our campaign and to help get the most of a big business that is certain to come to all of our dealers.

If you have not stocked Whistlers yet, ask your jobber or write us.

The Automatic Safety Tire Valve Corp.

1765 Broadway, New York City

Whistler

TRADE MARK

"IT WHISTLES WHEN ITS HAD ENOUGH"

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Ever Last Resoles

Ready to Apply to Tread Worn Tires

Cross Section of Ever Last Retread After Applied to an Old Tire

Any tire repair man can put an Ever Last resole on an old tire without any extra equipment. No expense whatever except an average cost of 35 cents for self-vulcanizing cement.

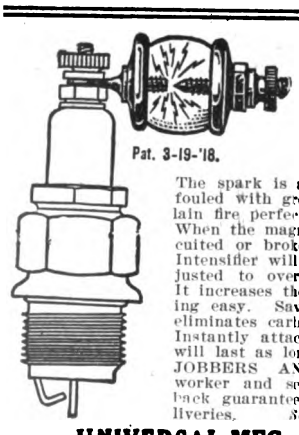
Ever Last Resoles are fully cured, all ready to put on tread worn tires. They are made from the very best rubber, fabric and breaker strip. These resoles will add 5000 to 7000 miles more service to an old tire at half the price of a new tire.

You can make big money selling these Resoles in your territory, as every car owner is a real live prospect for a full set. They make a wonderfully attractive tire and are practically puncture proof. You can sell hundreds of these Resoles. The profit is big. Write or wire today for the agency in your county.

Also write us for particulars on a special lot of slightly blemished resoles. There is real money in this if you act at once.

Ever Last Tread Co., Inc.

126-128 East New York Street
Indianapolis, Ind.



Pat. 3-19-'18.

It Finds Ignition Troubles

Attached to Any Plug
Stops All Spark Plug Trouble

Universal and Marvel Spark Plug Intensifiers

The spark is always visible. It will make a plug fouled with grease or carbon or with broken porcelain fire perfectly.

When the magneto is not working, a wire short circuited or broken, or the battery out of order, the Intensifier will prove it at a glance. It can be adjusted to overcome almost any ignition weakness. It increases the voltage and spark and makes starting easy. Saves in oil and gas. Adds to power, eliminates carbon and preserves plugs.

Instantly attached to any screw terminal plug and will last as long as the car.

JOBBERS AND DEALERS—This is a wonder worker and sells at a glance. Sold on a money back guarantee. Liberal discounts and prompt deliveries. *Send for full information.*

UNIVERSAL MFG. and SALES COMPANY
554 West Harrison St. Chicago, Illinois

Labor-Savers for Ford Service Stations

Machines and tools which will save time and increase profits wherever Fords are repaired:

Bearing Burning-in Machines
Engine and Axle Stands
Bearing Boring Machines and Re-Babbitting Jigs
Cylinder Reboring Machines for Fords and Fordsons
Power Grinders
Bench Motor Clamps
Rear Axle Pinion Gear Presses
Pinion Gear Pullers
Valve Port Renewing Tools
Speed and L Wrenches
Tow Bars
Combination Electric Drills and Valve Grinders
Visible Measuring Gasoline Pumps,
and many other special tools and machines
Engine Testers
Emergency Wheel Clamps
Rear Axle Sleeve Pullers
Transmission Reaming Machines

Write for Catalogue 8, just issued.

The FAIRBANKS Company

Administrative Offices—New York.
Branch Houses in Principal Cities.

The FAIRBANKS Company O.K.

Wanted: Distributors

Manufacturer of well known and nationally advertised automobile shop equipment will consider applications from jobbers and distributing agencies for exclusive territorial rights. This is one of the easiest selling and most profitable selling lines open today, and the opportunity is offered only because of a change in selling policy. In answering please state lines you are now handling on a similar basis, number of salesmen and territory covered. None but high grade connections will be considered, and inquiries will be treated as confidential. Address

John H. Thomas, Sales Manager

416 Anisfield Building, Cleveland, Ohio.

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RUBBER OR ASBESTOS PACKING COPPER
VICTOR
GASKETS
TRADE MARK REG. U.S. PAT. OFF.

Victor Gaskets Set a Standard in Quality & Service that Counts

Dealers, Garage and Repair Men

For repair and replacement work, to be sure of a dependable, durable job that will save your customer money and annoyance, use Victor Gaskets. Made from pure Lake Superior Copper and highest quality asbestos. Absolute insurance against leaks and blowouts. Used in almost every make of automotive vehicle. We can ship gaskets for new and obsolete model engines at a moment's notice, because our big, modern plant carries complete stocks. Order Victor Gaskets through your jobber.

VICTOR MFG. AND GASKET COMPANY

World's Largest Gasket Manufacturers **TROY AND TWENTY-FIRST STREETS, CHICAGO, ILL.**

Allied Industries, Inc., 279 Minna Street, San Francisco, California, Coast Representative

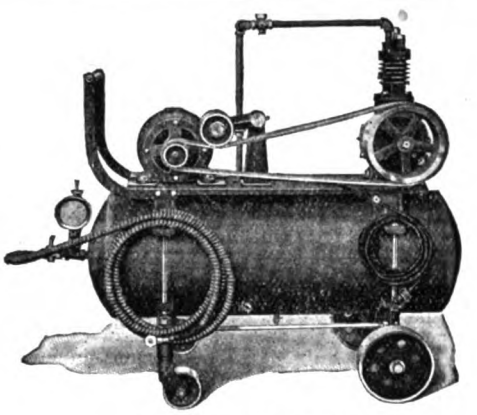
GARDNER AIR PUMPS

Result of 50 years manufacturing experience.

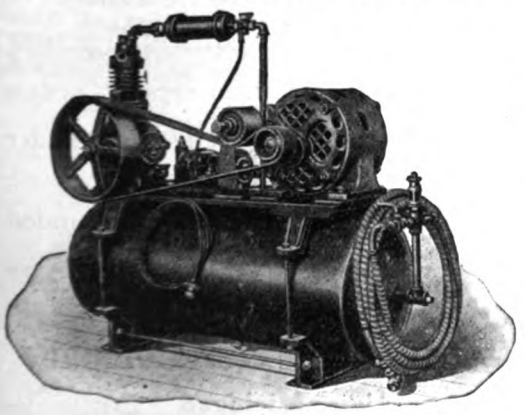
An inefficient air pump makes your air service expensive.
It hurts the quality of your service.
Makes a customer dissatisfied and hurts your business generally.

Install a GARDNER

It will pay for itself in a short time.
It is simple, rugged and efficient.
The fact that many filler stations supplying hundreds of car owners daily use the Gardner air pump is proof that experience had demonstrated it is economical.



GARDNER AIR WAGON



GARDNER AUTOMATIC UNIT

Made in Single and Two Stage Types

Variety of sizes ***Prompt shipment***

There is a Gardner Air Pump to meet the demands of every garage no matter how large or small.

Ask your jobber for prices.

THE GARDNER GOVERNOR COMPANY

138 Williamson Street, Quincy, Ill.

Garage Department

(When Writing to Advertisers, Please Mention the Accessory and Garage Journal.)

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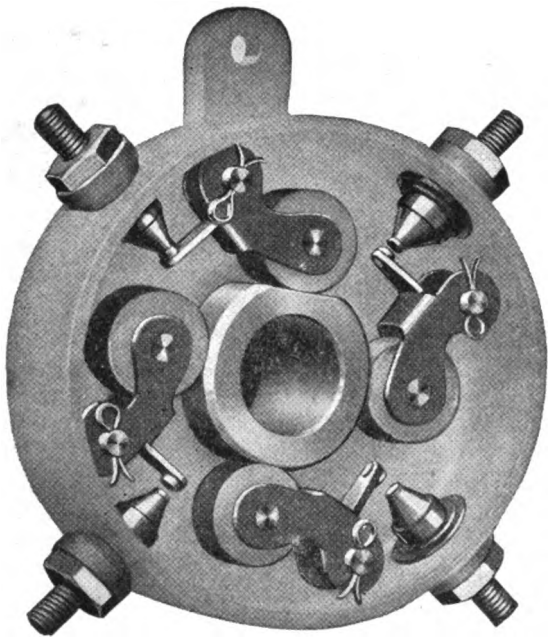


DUNTLEY
MAGNETO BREAK
TIMER

FOR ALL FORD CARS

Guaranteed to Deliver 50,000 Miles of Efficient Service

The Duntley Magneto Break Timer Eliminates Ignition Troubles and Insures Maximum Motor Efficiency and Economy.

Perfect ignition can be attained only through positive contact and a clean break. In the Duntley, the electrical current is closed by Tungsten points in positive contact, not through a greasy roller jumping and skipping across a metal segment.

The only parts in motion sufficient to cause wear are the rollers riding on the operating cam and they are made of a special fine grain, hard pressed fiber that is oil and water proof and practically everlasting.

FOR FORDSON TRACTORS

The following letter from a satisfied user shows how the Duntley delivers 100% on the Fordson.

"The timer you sent . . . . . is all you claim for it. It certainly gives the tractor twice the power it had before and also is a saver of fuel." Name on request.

SOLD ON AN ABSOLUTE MONEY BACK GUARANTEE

DEALERS: To any reputable dealer who writes, mentioning the name of his jobber, we will send a Duntley for a 10 day trial.

J. W. DUNTLEY

1004-B Michigan Ave. **CHICAGO, U. S.**

Security Auto Lock

Affords every protection to Ford car owners that a perfectly designed and extremely well made lock can give. While neat and attractive it is built very strong. In operation it is positive and the car can be left with a feeling of confidence that no one but the owner can use it.

It is the original loose wheel lock for Fords.

It is approved by underwriters.

It will reduce insurance premiums 15%.

When locked the car cannot be towed.

List Price, $6.00

It makes the Ford thief-proof

Anyone can easily install the Security in ten minutes. No drilling, filing, sawing or chiseling necessary. It is made of solid brass. Nickel plated finish.

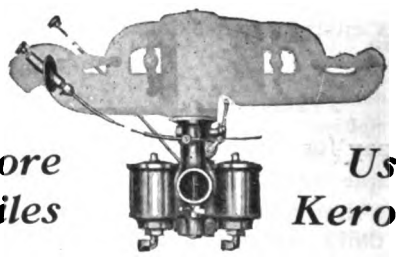
TO DISTRIBUTORS

When this lock is shown no other will satisfy Ford car owners. It sells at sight. Our trade discounts are liberal and our proposition will interest any one that can sell high grade car protection at a moderate price. ***Write for details today.***

Security Auto Lock Co.

414 N. PAULINA ST., **CHICAGO, ILL.**

WESTERN
DUAL FUEL CARBURETOR



More Miles *Uses Kerosene*

DEALERS:—Thousands in use. 80% of our orders are repeat orders: You make big profits selling this wonderful carburetor.

Guaranteed to satisfy or money refunded.

Write for descriptive circular and prices.

Western Carburetor Company

Alma, Michigan

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GOGGLES FOR WELDERS.

Fitted with "Essentialite" Lenses.

THE FIBRE WELD.

Frame: Vulcanized fibre, non-conductor of heat and electricity, non-inflammable and infusible not affected by moisture, leather center, ventilated side pieces, adjustable elastic head band. We have demonstrated conclusively that with these lenses we vanquish the so-called "fatigue-weariness" and headaches caused by Ultra Violet and Infra Red rays. Circulars and prices at request. Price each, prepaid, **$3 pr.**

Manufactured by

CHICAGO EYE-SHIELD COMPANY

2300 Warren Ave., Chicago, Ill.

SCAIFE COPPER-BRAZED AIR TANKS

are positively guaranteed to hold air indefinitely without loss of pressure.

(117 years old. Founded 1802)

WM. B. SCAIFE & SONS CO.

First Nat. Bank Bldg., Pittsburgh, Pa.
26 Cortlandt St., New York, N. Y.
38 So. Dearborn St., Chicago, Ill.

SCAIFE GASOLINE STORAGE OUTFITS

ARE IDEAL FOR PRIVATE GARAGES.

Send for catalogue.

CURTIS AIR FREE FROM OIL

MOTORISTS Have CONFIDENCE IN THIS SIGN

LET THEM FIND IT AT *YOUR* DOOR.

Curtis Air means more mileage, because Curtis is the only air compressor that can't flood cylinder with more oil than it can use. Oil is the enemy of rubber. It rots tires, causing blow-outs.

A Curtis Compressor Is Dependable

requires practically no attention, costs very little, quickly pays for itself, always delivers the kind of cool, clean air that makes tires last longer.

5 sizes and 125 combinations. Write for full particulars and let us tell you why the Curtis will prove to be your best investment. Ask your jobber for prices—but be sure and mention Curtis—the name is your protection against substitution

CURTIS PNEUMATIC MACH. CO. 1621A Kienlen Ave. St. Louis, Mo.
Branch Office: 531A Hudson Terminal, New York

Shackle Bolts — **Steering Knuckle Bolts**
Tie Rod Bolts — **Piston Pins**
and Bushings — **Axles and Cones**

THE ORRELL MFG. CO.

167 Hampden Street Boston, Mass.

Screw machine products for Dodge, Overland and Hudson cars. We are very pleased to take excellent care of the smaller dealer and repair man to whom we allow very generous discounts.

SPECIAL FOR THIS MONTH

Highest grade fibre pinions, No. 1, No. 2, No. 3—5 cents each, any quantity.

Stewart type speedometer shafts, complete—$1.25 each, any quantity.

GENEROMETER

The new and practical generator testing instrument. It will locate shorts and grounds in generator armatures where most of the trouble is of a Lighting System. You will need this instrument if you want to be 100% efficient in your electrical repair work. Further particulars upon request.

PAUL G. NIEHOFF & CO., INC.

232 E. Ohio Street, Chicago, Ill.

Niehoff Laminated Magnetizer

This is the most scientific and practical Magnetizer ever constructed. It will magnetize any size magnet from a Ford to all the various other magnets used on the different cars today. Due to the fact that it generates an enormous amount of magnetism, with a pulling power of about 75 pounds, you can more quickly remagnetize a magnet, and, therefore save much current. All magnetizers are subject to considerable wear. The faces will wear down according to their use. The top pieces of our Magnetizer are especially hardened and also detachable so that when worn down they may be replaced at a very small expense. We have two types; one for 6 volt storage battery and another for 110 volt D. C. current. Write for further information.

PAUL G. NIEHOFF & CO., INC.

232 E. Ohio Street, Chicago, Ill.

METZ Master Six

The car of the Year — **A New England Product**

Honest through and through

$1695 F. O. B. factory FULLY EQUIPPED

We are now extending our agency list
Information at request

METZ SALES CORPORATION
BOSTON, MASS.

NEW DEPARTURE BALL BEARINGS

Strength
Stamina
Service

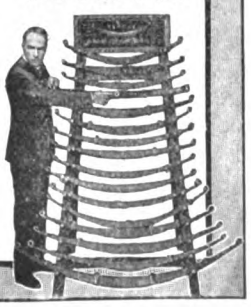
The New Departure Manufacturing Co., Bristol, Conn.
Conrad Patent Licensee

When Springs Break, put on

VULCAN *The Replacement Spring*

This display rack FREE with first order.

Best known for
Best Quality—
Best Service—
Best Profits—



Jenkins Vulcan Spring Co.
Factory
RICHMOND, IND.

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GET A WATERHOUSE WELDING OUTFIT AND WATCH YOUR BUSINESS GROW

Boost your profits—Swing the big profitable welding business to your shop. Thousands of repairers are doing it and most of them use a Waterhouse outfit.

Time is money and a Waterhouse Welding Outfit saves the time as well as labor. It affords utility great enough to meet any shop requirement, yet no shop is too small to own one.

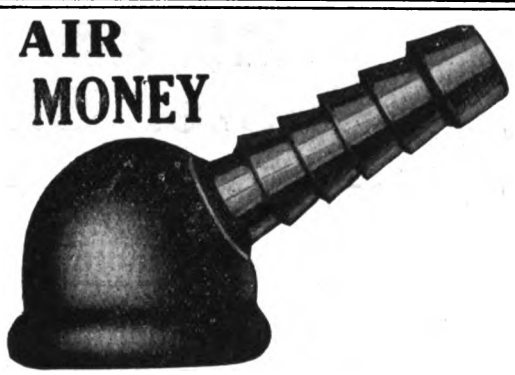
The great difference in welding outfits is all in favor of the Waterhouse. That means quality, utility, long service life, simplicity, dependability, low first cost and the best and most complete welding apparatus ever offered to the trade.

Write for descriptive catalogue, or better still, tell us your requirements. Do it today. We can supply the exact outfit for your needs.

All Waterhouse outfits are guaranteed.

WATERHOUSE WELDING COMPANY, 3 PELHAM STREET, BOSTON, - MASS.

FREE AIR COSTS MONEY



when the customers for whose convenience you provide an air station forget to turn off the flow after they have filled their tires.

Guard against this waste by attaching a

Schrader Universal Inflating Valve

to your air hose.

Thanks to this appliance your bottled air locks itself into the tank the minute it is taken off the tire-valve. You turn on the air by pressing the nozzle of the inflating valve against the tire-valve and you turn it off by removing the device from the tire-valve.

Made to fit any diameter of hose from ¼ in. to ⅝ in.

PRICE $1.50 in U. S. A.

Manufactured by **A. SCHRADER'S SON, Inc.**
800 Atlantic Avenue, Brooklyn, N. Y.

Schrader products were awarded a Grand Prize and two Gold Medals at the Panama Pacific International Exposition. "There's a Reason."

THE PEERLESS HAND HOIST

Single Cable Quadruple Worm Gear Drive.

For Any Make or Type of Truck.

A wonder in efficiency and speed. It will fit any chassis and body. Weighs but 200 pounds. Simple, fool proof, wholly dependable and will last for years in the hardest service.

Any one that can drive a truck can hoist the heaviest load to 30 or 50 degrees in the longest body in less than two minutes. The smaller the body and load the quicker the action.

But two gears are used, quadruple worm and gear (both machine cut) and housed to protect from dirt and dust. The single cable makes an even pull. Compact and can be installed without drilling holes in chassis frame. The body hitch is also furnished.

We specialize in building all-steel bodies for any need.

Write for complete information.

THE AUGLAIZE MOTOR CAR CO.

NEW BREMEN **OHIO**

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Which Garage Man Gets The Money?

If you can repair and adjust Electrical Equipment, you will get the cream of the garage business. With the increasing demand for service of this sort, you must equip to handle the business, or lose it to your more enterprising competitor.

Weston

Model 280

GARAGE TESTING INSTRUMENT

is your one great and urgent necessity to enable you to locate electrical troubles quickly and apply the proper treatment to remedy them. Its possession will place you a long way ahead of your competitor not so equipped.

This instrument is extremely accurate, durable and serviceable. It is the most practical electrical equipment you can install.

The Weston Company is pre-eminent throughout the world in the production of highest grade Electrical Precision Instruments.

Prompt Shipments from Stock—Order Now!

WESTON ELECTRICAL INSTRUMENT CO., 103 Weston Ave., Newark, N. J.

Branch Offices in the Larger Cities.

FAWSCO

FAWSCO IMPROVED COMBINATION **OIL COCK** and Gasoline Gauge WRENCH AND CLEANER

This tool is the one most needed by all owners of Ford Cars, as it will not only accurately measure the Gasoline in your tank, but provides the only sure means of learning whether you have oil in the crank case or not.

Made of coppered Bessemer steel rod, nickel plated and black enameled and is guaranteed to give complete satisfaction.

Packed 12 in a heavy corrugated carton, one of them mounted on a display easel, the balance in separate envelopes.

Your Jobber can supply

Manufactured by

27 WARREN ST. **J. H. FAW, Inc.** NEW YORK CITY

SATISFACTION ■ INTEGRITY ■ GROWTH

Shock Absorbers
Any Type of Ford Car or Light Delivery Truck.
"Make Every Road a Boulevard"

VAN BRIGGLE

CARBURETORS *And* **SHOCK ABSORBERS**

Carburetors
Airplane Principle
for Dodge Maxwell and Ford
Guaranteed for Satisfaction

VAN BRIGGLE MOTOR DEVICE COMPANY

INDIANAPOLIS, U. S. A.

TRADE AMBU MARK

BATTERY SHOP CONVENIENCES

BATTERY TURN TABLES Makes work on heavy batteries easy and a pleasure. Saves time and energy—soon pays for the installation. Every shop should have four or five. Simple, sturdy, everlasting. Each $4.

BATTERY CARRIERS Specially designed carrier handles—fit any battery instantly — makes it easy to remove battery from car. One man can carry two batteries — each $1.75. Pair $3.25.

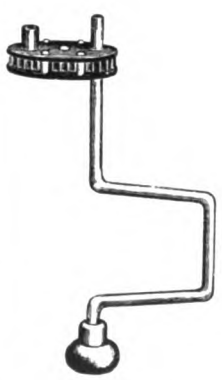
LEAD MOLDS With material still high it pays to save scrap lead. These molds put it into convenient form for use—price each $1.75. Pair $3.25.

Get these from your Jobber—or direct if he cannot supply you.

AMERICAN BUREAU OF ENGINEERING

109 E. 16th St., Chicago

Makers of the Famous AMBU Electric Trouble Shooter.



UNIVERSAL Offset Speed WRENCH

Pat. Pend.

Removes the FORD FOURTH CONNECTING ROD NUT in three minutes. Made strong—all steel, 3-inch offset. Send pre paid for $5. Ask your jobber. If he can't supply you, write us.

Sawyer Sales Company

581 Terminal Building

LINCOLN, NEBRASKA

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New York Automobile Replacement IGNITION COILS

TYPE D

New York Automobile Replacement Ignition Coils have actually put hundreds of the smaller Garages and Service Stations in business—and are today the most treasured line of the largest Service Stations throughout the U. S. The explanation is simple. Most drivers have learned that the best car and engine fitted with the highest grade carburetor and workmanship cannot deliver its full power, smoothness or service unless the Ignition Coil delivers more than "just a spark."

Weak, particularly broken down coils spoil owners' pleasure and temper, also your reputation, and the car's utility. A special New York Coil engineered to suit the exact requirements of each car manufactured—that will fire the poorest gas—that positively will not "miss" at highest engine speeds and rival magneto ignition is available.

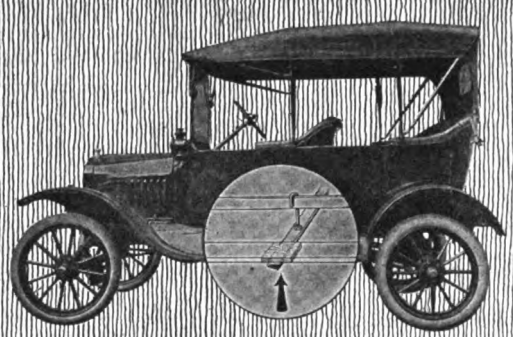
They are installed with no trouble in ten minutes, as they positively fit each car. Fifteen years of successful coil building experienced by an organization of Ignition Specialists, is the reason a car owner always agrees when told he needs a New York Coil.

TYPE A

More real profit, less come backs and easier made sales than any article you ever handled.

NEW YORK COIL COMPANY

338-340 PEARL STREET **NEW YORK, N. Y.**



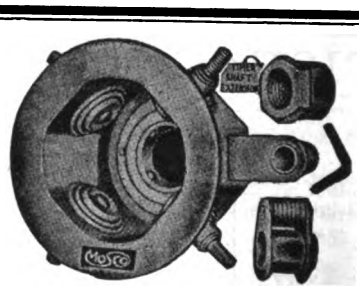
Dow Auto Body Brace

For Ford Cars

A real seller with the jobber and dealer.
Worth its weight in gold to the Ford owner.
Quantity sales with large profits.
Write for quotations and our Agency.

Dow Wire and Iron Works, Incorporated
Louisville Kentucky

DOW LOUISVILLE



PRICE $3.00

Please Order Through Your Jobber

IMPROVED BEMUS BALL CONTACT TIMER

EASIER STARTING. Grease cannot prevent contact. Saves YOUR COIL POINTS.

SMOOTHER RUNNING. Contact is positive. LONGER LIFE. No fibre to wear humpy.

The BEMUS is an IDEAL TIMER for the FORD high speed, short stroke engine, because form of contact is the only one which is correct both electrically and mechanically.

MOUNTING is direct on the time shaft by means of an extension piece which is threaded onto shaft, and runs in ball bearings placed in recess of timer shell. This means that each of the balls is equi-distant from the brush. RESULT—absolute precision of timing.

CHEAPEST IN THE LONG RUN. For 27 cents you can replace all wearing parts and make timer as good as new.

MOTOR SPECIALTIES CO.

Manufacturers

Waltham, Mass.

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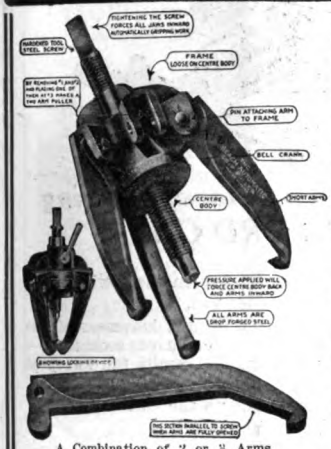
GREB AUTOMATIC GRIP PULLER
BEACH PATENT



A Combination of 2 or 3 Arms.

Gear Pulling Made Easy

The GREB AUTOMATIC GRIP AND GEAR PULLER gets a job done quick and without danger or damage. This means larger profits and quicker work.

Scientifically designed, well made, quick acting, strong, simple and trouble-proof. Adjusts itself instantly to work—locks in any desired position.

We also make the GREB RIM TOOL and GREB AUTO LOCK.

TWO SETS OF ARMS
Senior Size—Capacity 1" to 10" and 1" to 18"
Junior Size— " 1" to 4" and 1" to 7"

10 DAYS TRIAL

If your jobber does not have them, we will send you one. Try it ten days. If not satisfactory return it to us and we will refund your money.

THE GREB CO.
202 State Street, Boston, Mass.

JEFFERSON AUTOMOBILE IGNITION COIL

Small Stock For Fitting All Cars

Because of flexible caps, terminals and brackets these coils are adapted to all ignition systems. You are required to carry only a very small stock. Consequently, your investment is unusually small and at the same time you can fit all makes of cars.

JEFFERSON

Coils are famous for their long life, dependability and uniformly high standard. Order your stock at once.

Send for Coil List

showing list of all cars that are Coil-Equipped and the types of Jefferson Coils and Brackets to be used as Replacements.

Jefferson Electric Mfg. Co.
429 S. Green Street
Chicago, Ill.

VICTORY

Complete Automatic Compressor Unit

ACE OF ACES

GLOBE TYPE B—Original Two-Stage Garage Compressor. Saves power, time and money.

WONDERFUL new system of AUTOMATIC LUBRICATION insures Oil-Free Air, provides abundant and continuous lubrication and wastes NOT AN OUNCE of lubricant.

Automatic Pressure Unloader protects belts, fuses and motors.

15 Sizes and Styles of LAST WORD Equipments from which to select.

Desk C.

Globe Manufacturing Co., Battle Creek, Mich., U.S.A.

Triangle Tire Patch Brings Repeat Orders

You only have to sell a customer one package of Triangle Tire Patch. The next time he comes in and 'hollers' for it.

That makes it a good patch for you to sell. Another reason why you should handle Triangle—there's more money in it. You buy direct from the factory, paying no toll to jobber or salesman.

The Triangle Tire Patch is a guaranteed product. The $1 package fixes 100 punctures and every dealer is authorized to refund the dollar if one patch comes off.

Let us tell you about the margin of profit. Clip and send the coupon now.

TRIANGLE RUBBER CO.
Oklahoma City, Okla.

Clip this coupon for profits

TRIANGLE RUBBER CO., Dept. E.
Oklahoma City, Okla.

Send your direct-to-dealer proposition on Triangle Tire Patch to

.....
.....
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The McCulloch Timer Grinder

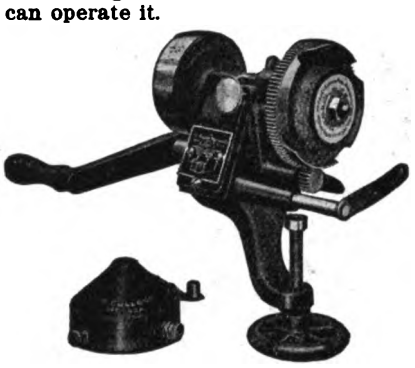
For Grinding the Contacts of Ford Timers

Essential and highly productive equipment in any garage, repair or machine shop.

Guaranteed to afford perfect results and lasting satisfaction.

In less than three minutes the oldest, most abused and worn timer can be ground with a surface like glass. Anyone can operate it.

List Price Complete $21.00 F. O. B. Boston



The McCulloch Timer Grinder has a special chuck which requires no skill in centering. The grinding stone revolves inside the timer at a high speed while the chuck and timer revolves very slowly around the stone.

When not in use the timer grinder can be instantly removed, and a large wheel fitted and used for grinding tools, twist drills, etc. It can be attached to any bench.

Just figure the saving in time, material and labor Then estimate the profits this equipment can earn for you.

McCulloch Wipe Contact

For Ford Cars. For Fordson and Ford Trucks.

List Price Sixty Cents.

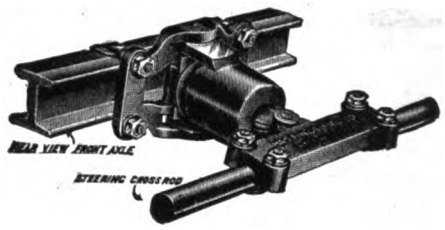
This contact absolutely does away with the abnormal wear on the roller of the timer. It is guaranteed for the service life of any timer used on Ford products. In operation instead of rolling around the timer ring, it slides. It wears the timer ring and wipe contact equally, and keeps the points of contact clean. This assures long life, minimum wear and perfect ignition. It is made of high carbon steel that is not affected by the sliding motion and eliminates all chance of misfire.

If your jobber and dealer cannot supply you promptly, order direct. Jobbers and dealers discounts at request.

A. P. McCULLOCH MACHINE COMPANY

216 High Street, Boston, Mass.

The Hastings Stabilizer



For Safe and Steady Steering of FORD Cars

MAKES all the difference in the world in the "feel" of the car under you.

Takes up all the lost motion and looseness of the steering mechanism. Makes long drives seem short—no aching arms and fatigue. Permits full sweep of the wheels.

Adds no appreciable weight to the car.

Out of sight and out of the way.

Easily attached to front axle and steering rod by bolted clamps. Any garage man can attach in a few moments.

Fully guaranteed.

Send for descriptive folder and discounts to Ford and Accessory Dealers.

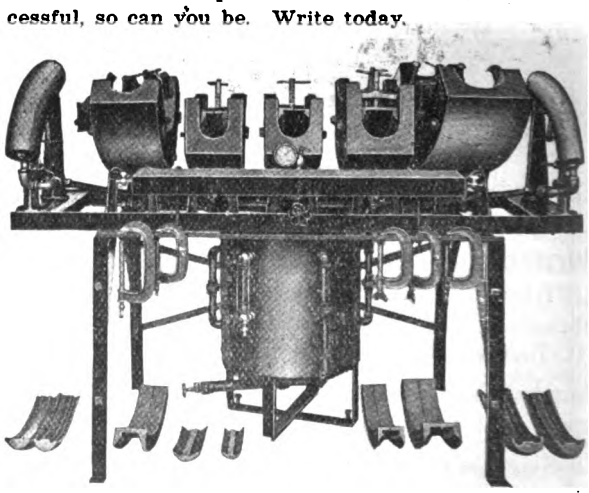
HASTINGS

MANUFACTURING CO.

Hastings, Mich.

ENORMOUS INCOME FROM INSIGNIFICANT INVESTMENT

Vanderpool Vulcanizer (5 Cavity) has capacity of $100 worth of work a day. We are the pioneers in the manufacture of the Dry Cure Vulcanizer—the only vulcanizer that guarantees absolutely PERFECT work. Open a Tire Repairing Shop. Business pours in. No experience necessary. We give you free instruction. Write for FREE TIRE REPAIRING MANUAL and full particulars. If others can be successful, so can you be. Write today.



In answering Address, Dept. R-15

WM. VANDERPOOL CO., Springfield, Ohio

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YOU CAN DO THIS WORK

DON'T send away a Ford or Fordson block when it comes in for main bearing replacements.

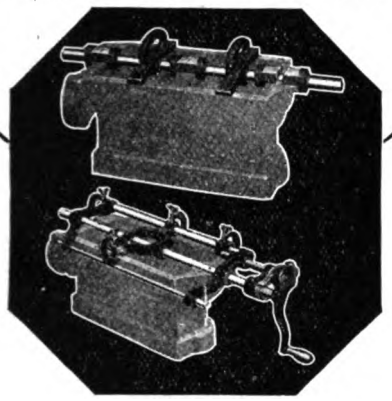
Have a Universal Main Bearing Replacement Equipment ready to do the job quickly and accurately in your own shop.

The job is easy to do—can be done quickly. The finished work is absolutely accurate and the profits are big, both in money to you and satisfaction to the customer.

See current issues of Auto Trade Directory and Chilton's Directory for list of jobbers carrying stock. Write for catalog.

The Universal Tool Company, Incorporated
435 Woodward Ave, Detroit, U. S. A.

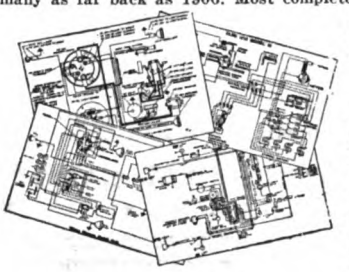
Manufacturers of Universal Cylinder Reboring Tools and Main Bearing Replacement Equipment for Fords and Fordsons



850 WIRING DIAGRAMS

In New Edition of Auto Electrician's Guide

Contains wiring diagrams for every car on the market, including the new 1919 Starting and Lighting Systems for Ford cars, also diagrams for Baker R & L and Detroit Electric and pipe connections for Stanley Steamers. Covers all kinds of systems from 1912 to 1919 and many as far back as 1906. Most complete diagram book on the market.



Highly Endorsed by Auto Manufacturers, Garages and Service Stations

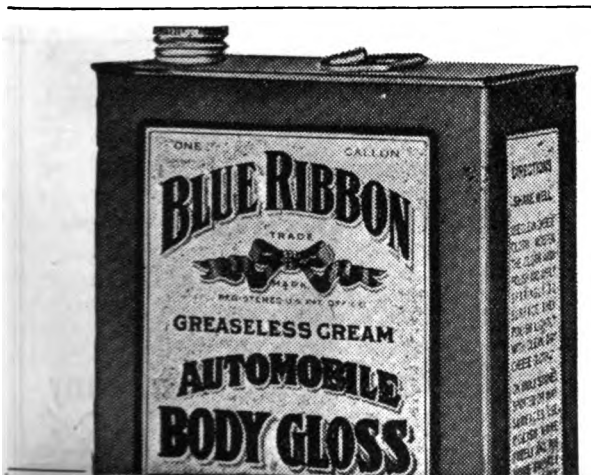
No problem too puzzling if you have the Auto Electrician's Guide. ANY "OLD STICKER" QUICKLY SOLVED with the help of this book. Saves hours of time on both old and new jobs. Impossible for even experts to know all cars, but no car will "stick" you when you have this book.

A practical, easily understood "guide" that will simplify all auto-electric problems and make it possible for you to quickly overcome hundreds of starting, lighting and ignition troubles which otherwise would take hours to solve. Extensively used all over the country. Hundreds of auto experts and repair men depend on it to solve hardest problems. Dozens of letters received telling of its exceptional value.

A Loose Leaf Book

—easy to handle and easy to add new diagrams as issued. Convenient to slip into the coat or car pocket and invaluable as a constant companion to repairmen. Scores of trouble cases quickly and easily corrected with the help of this guide. Send today. Price $7.50 Postpaid. Remit by Postoffice Money Order or Bank Draft. Money refunded if not satisfactory.

MICHIGAN STATE AUTO SCHOOL
3269 Auto Bldg. 687-91 Woodward Ave., Detroit, Michigan



KEEP THE BODY OF YOUR CAR *SHINING* LIKE A MIRROR

No Grease to Catch Dust
Does Not Coat the Finish
Best Furniture Polish Made
Use With Spray if Desired

International Metal Polish Co.
INDIANAPOLIS, INDIANA

What Garagemen Think About "TRIPLEXD"

Extract No. 9

Louis F. Lifesey, Agent, Gulf Refining Co., Eatontown, New Jersey

Gasoline-Proof

(Another Testimonial)

Conclusive Proof that Triplexd is leakproof. **More than 2 years service unloading 15,000 gallons of refined oils daily.**

"THE hose I refer to above is known as Triplexd and from my personal observation it is the only one that seems to stand the chemical action of these oils."

Watch from Month to Month for *What Garagemen Think.*

TRIPLEXD
GASOLINE HOSE

METAL HOSE & TUBING CO.
INCORPORATED
227 Tillary St.
BROOKLYN, N. Y.

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GARAGE AND HOME BATTERY CHARGING OUTFIT

CAMBRIDGE RECTIFIER

A long-enduring positive equipment for charging storage batteries from alternating current.

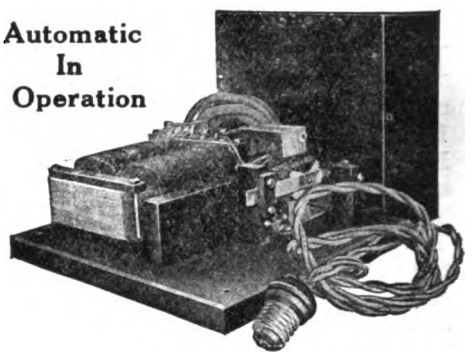
It will charge the average battery in from 10 to 12 hours at a current cost of about 15 cents.

Is dependable and simple to operate. Merely screw the charging plug into a lamp socket and connect with the battery.

No parts wear and no care or repair is necessary. No magnets to become demagnetized.

Four types, that will charge one six-volt battery at approximately seven amperes at 110 or 220 volts, A. C., 60 cycle, or will charge one 12-volt battery or two six-volt batteries in series, at 110 or 220 volts, A. C. 60 cycles.

Automatic In Operation



List Prices, $22 and $24.

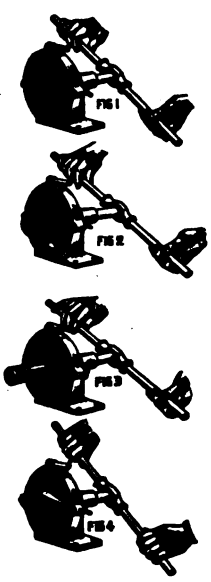
Write today for catalogue and sales quotations.

CLAPP-EASTHAM COMPANY

CAMBRIDGE, 127 Main Street MASSACHUSETTS.

FORD REPAIR MEN

Cut Your Labor Costs to Just One-Third What They Now Cost You by Ordinary Methods and Do the Work Better Than the Best Job You Ever Sent Out.



This great saving of time means a big additional profit, but is now a loss. There is BIG MONEY in Ford repairing if you have efficient tools that save time and eliminate guesswork and experts. The two outfits listed here will save their cost on a very few jobs and enable you to render the quickest possible service to your trade.

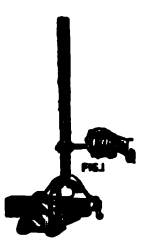
TRANSMISSION REAMING MACHINE reams every bushing in a Ford Transmission to a perfect fit and alignment, so the gears mesh perfectly on their pitch diameter and run without noise or excessive wear. Impossible with any other tool equipment ever offered. 30 Minutes to Completely Overhaul and Re-Bush a Transmission, making it as good as new. Can you beat it.

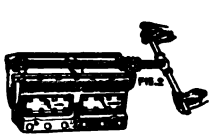
NET PRICE

$68.

as Shown Complete

Main Bearing and Connecting Rod Aligning Reamer





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"A DAY'S JOB DONE IN HALF AN HOUR."

Pilots guide the reamer. No chance to make mistake. Far superior to any other known method. Motors put up this way can be started by hand. I have only a limited supply of this material on hand. Send your order promptly to avoid disappointment. One per cent discount if you mention this magazine. Send for catalogue of other special tools, reamers, etc.

Price $28.

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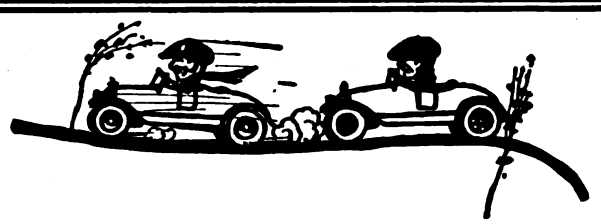

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Shove another car of the same make, model and weight, but lubricated with ordinary grease, over the same decline, and let it coast—if it will.

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DIXON'S GRAPHITE Transmission and Differential LUBRICANT

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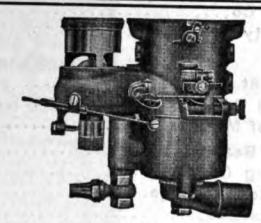

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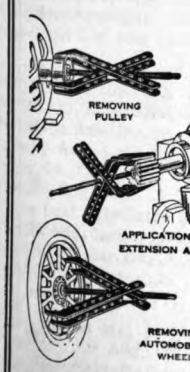

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ALL CHEVROLET AND BRISCOE CARS

NEED A SET OF

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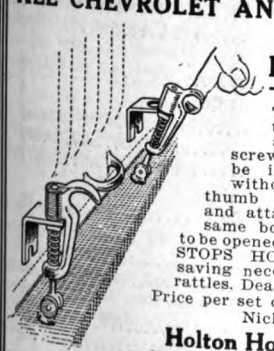

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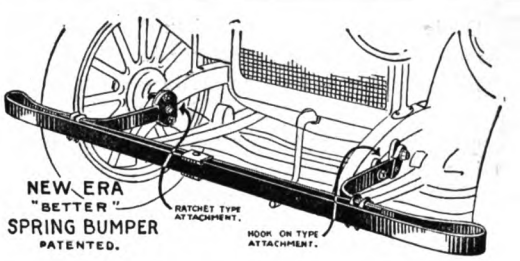

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KEEP THE CAR ON THE GO!

THE ACCESSORY AND GARAGE JOURNAL
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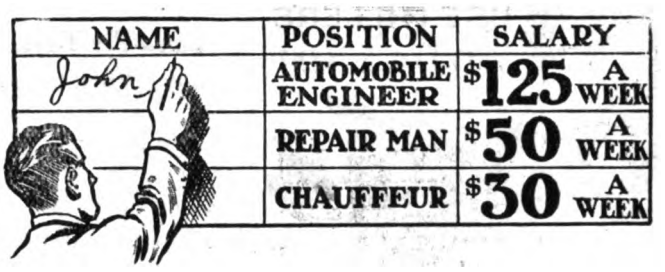

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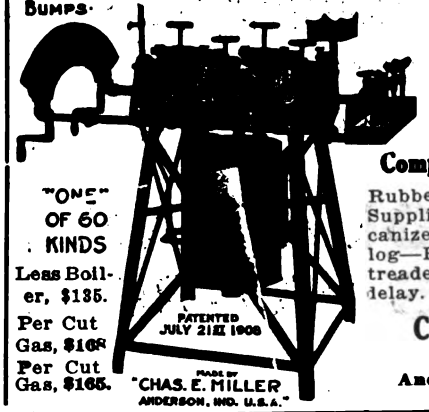

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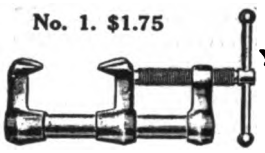

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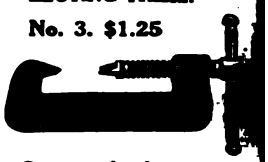

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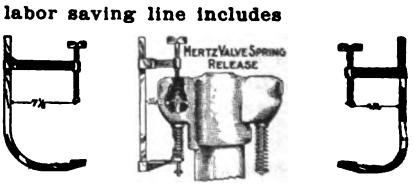

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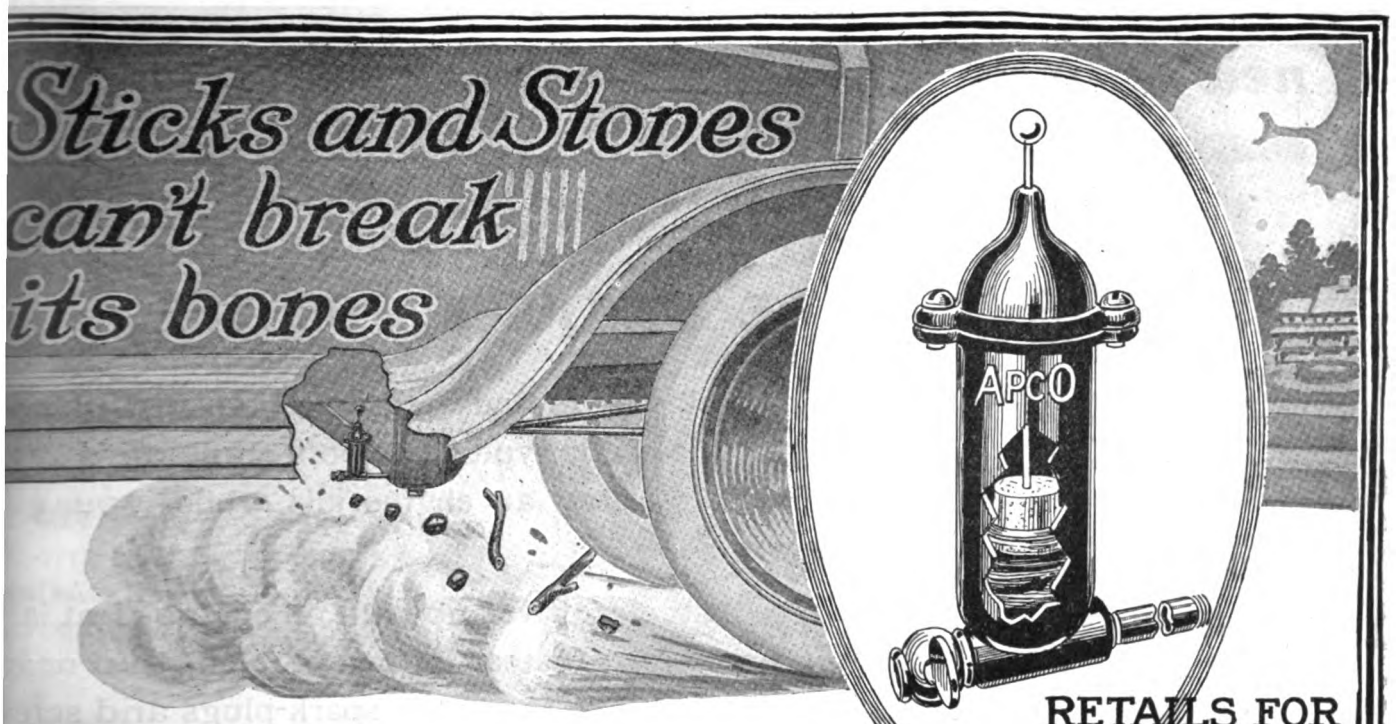

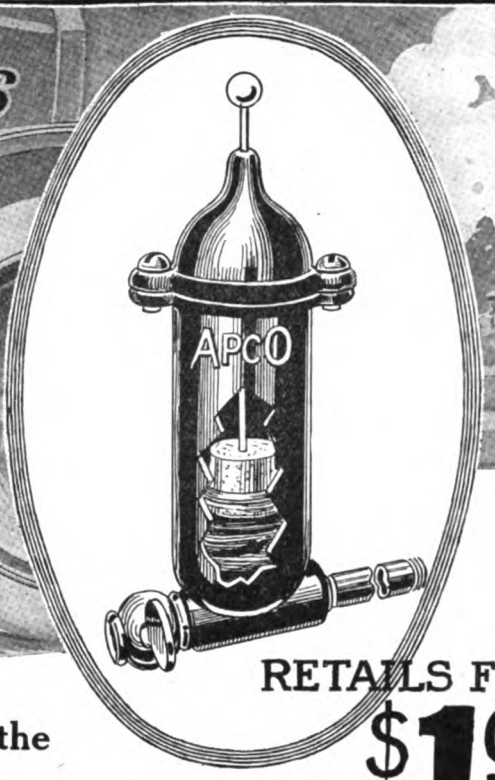

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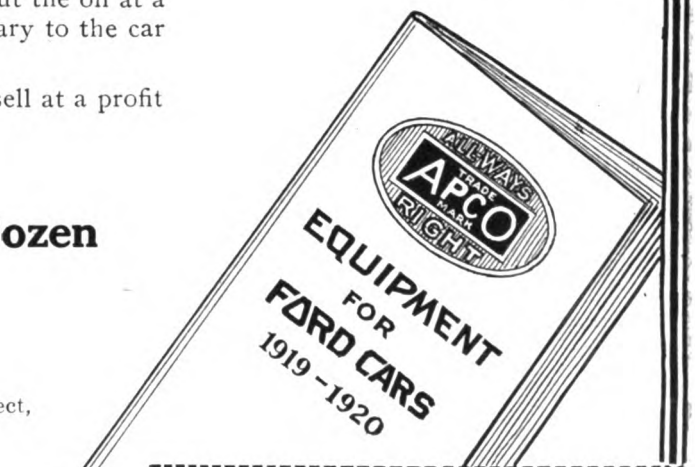

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Suppose a customer drives up with an engine that is r working properly. Instead of a tryout on the near hill, open the hood, take out the spark-plugs and screw

Hempy-Cooper Motor Tester

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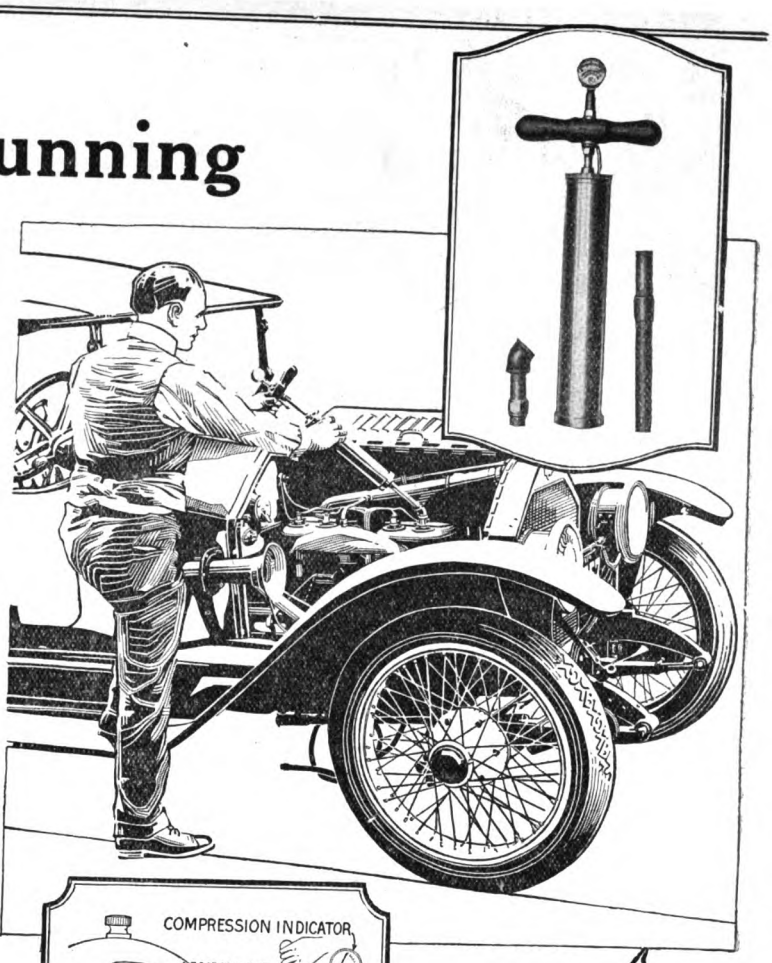
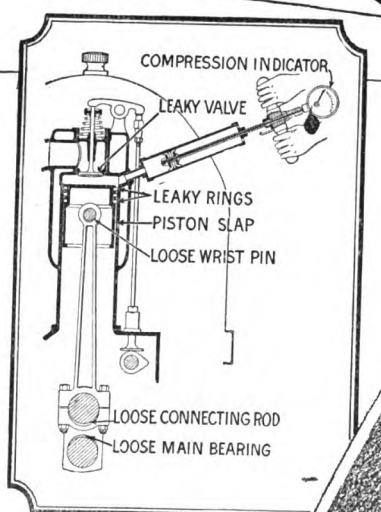
while not running

trons exactly what is wrong, how much it will cost to fix it, and how long the job will take. The very simplicity of the Hempy-Cooper Tester is evidence of its reliability. There are no valves to get out of order, no springs to break, no small parts to lose. Just screw it in place and you are ready to test.





DEALERS

A good thing to show to the mechanically-inclined motorist. Fully protected by patents.

THE FAIRBANKS COMPANY

Administrative Offices, New York

Branch Houses

Albany	Detroit	Rochester
Baltimore	Hartford	Providence
Birmingham	Newark	Pittsburg
Boston	New Orleans	Scranton
Bridgeport	New York	St. Louis
Buffalo	Paterson	Syracuse
Chicago	Philadelphia	Utica
		Washington

Havana, Cuba; London, England; Birmingham, England; Glasgow, Scotland; Paris, France.

Sole Distributors for
The Service Station Equipment Company
The Hempy-Cooper Manufacturing Company
The Peterson Engineering & Manufacturing Company
The Steere-Kitson Company
and other manufacturers of garage equipment.

The Hempy-Cooper Tester and how it works. Price $18.00 including fittings for ½ in. standard ⅞ in. S. A. E. and Metric spark-plug holes. Fully protected by patents.

Company O.K.

TRUCKS & WHEELBARROWS - ENGINES & PUMPS - AUTOMOBILE & SERVICE STATION EQUIPMENT

(When Writing to Advertisers, Please Mention the Accessory and Garage Journal.)

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Filtered Air

A REAL service to motorists—a service that will bring them to your door—again and again—that will keep them your customers—that will build the utmost good-will for your business. That's what "FILTERED AIR" will mean. It will increase your business surprisingly. A "FILTERED AIR" sign above your door will keep you in constant touch with all classes of motorists, creating an obligation on their part to become your customers.

The No. 7 AU-TO AIR COMPRESSOR furnishes an abundance of perfectly filtered air. A special liquid takes out absolutely all dust and oil—the two worst enemies of tires. The air comes from the tank as pure and clean as from a mountain top.

This is a complete outfit in itself: motor, piping, valves, gauge, automatic unloader, automatic switch and tank—assembled and ready to run. The motor is only ½ horse power. This outfit requires no watching, no tinkering—the tank is kept full of filtered air, ready for motorists—day and night. This outfit furnishes a regular working pressure sufficient to handle the largest pneumatic truck tires.

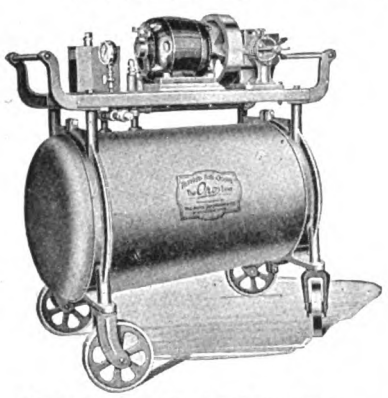
Only 3 Moving Parts!

In addition to the valves there are only 3 moving parts to the compressor mechanism. Such astonishing simplicity must mean durability and continuous satisfactory service. Of course, our regular guarantee of perfect service goes with this machine.

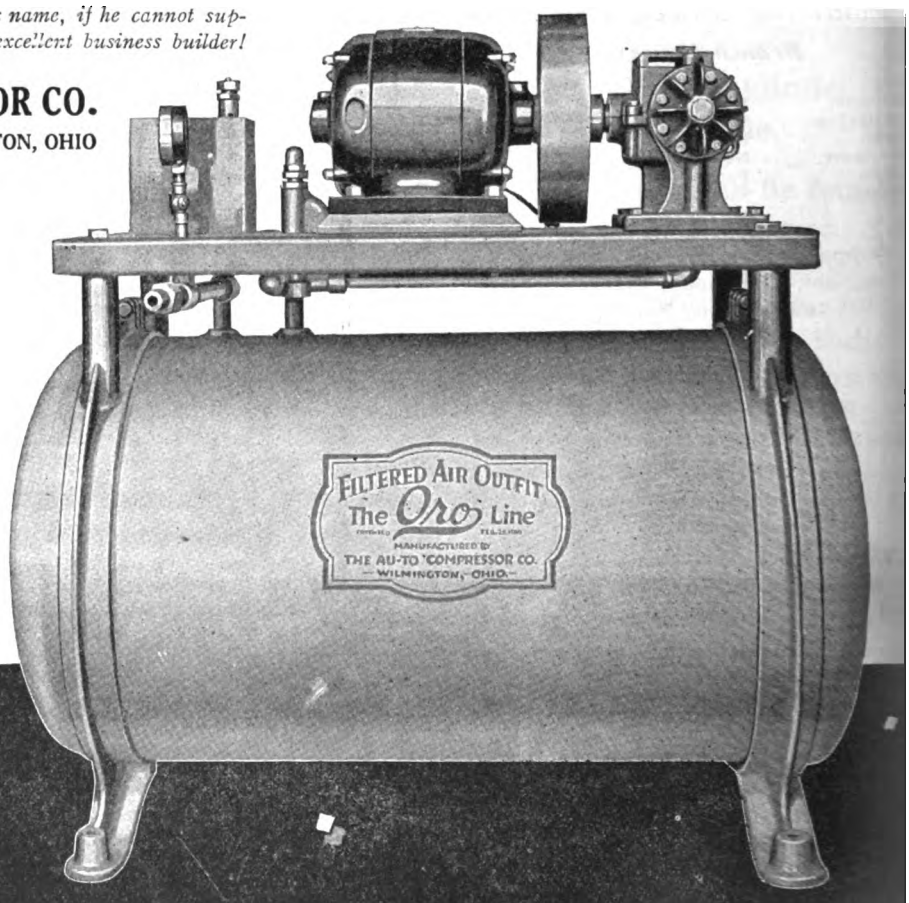
Ask your jobber, or write us, sending his name, if he cannot supply you. Now is the time to get this excellent business builder!

THE AU-TO COMPRESSOR CO.

303 S. Mulberry Street WILMINGTON, OHIO



Model No. 8 Au-To Air Compressor —same as No. 7, excepting that it has large wheel casters, which make it easy to move from place to place in the shop or garage.



a sign like this

ORO FILTERED AIR FREE

brings business.

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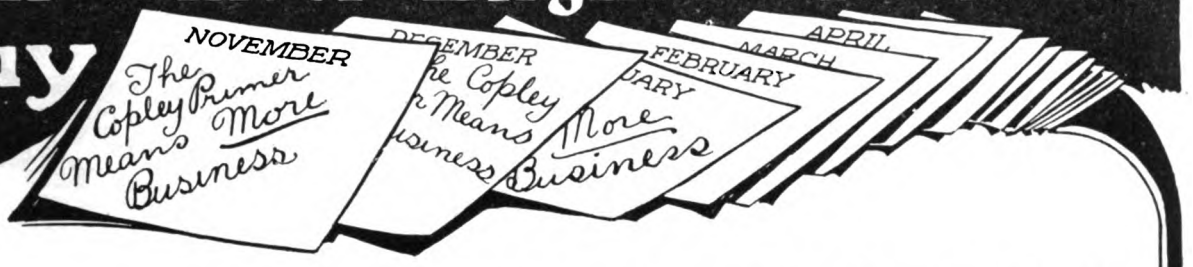
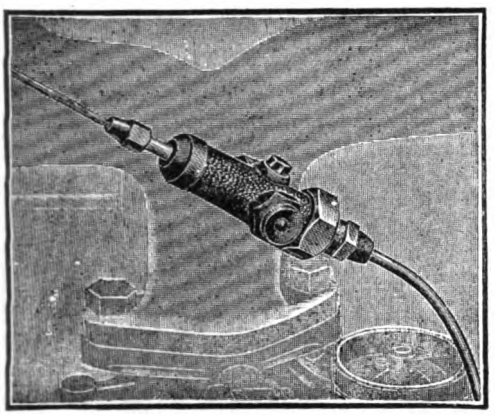
NOW MR. DEALER—

Your Customers Can Smile Their Winter Engine Troubles Away





COPLEY PRIMERS

Sell the year round—they are necessary and not seasonable car equipment.

They insure instant engine starting, no matter what the temperature or the quality of fuel, and they minimize the use of battery current for starting motors.

Every time a starter is used without the cylinders primed the battery is nearer exhaustion. Ten seconds draft on a battery requires 15 minutes' charging to restore.

The primer saves the battery, it economizes fuel and WILL ALWAYS START the engine.

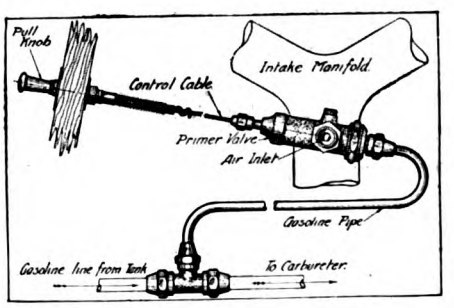
It adds to motoring pleasure, economizes fuel and battery expense.

COPLEY PRIMERS

Are extremely efficient. They are permanently attached to the engine and are operated from the instrument board. They inject finely atomized fuel into the cylinders so long as it is necessary, augmenting what is supplied through the carburetor.

The primer is attached to the intake manifold and connected with the gasoline supply. It is opened by a pull knob and it is closed automatically. It is the only primer having the carburetor action that atomizes gasoline with an air mixture.

Can be installed in less than an hour.



LIST PRICE $6.00

The Copley Primer Has True Carburetor Action.

Jobbers and Dealers—Copley Primers sell themselves. It is equipment that cold weather and low grade gasoline makes necessary. Make it your winter leader. Trade discounts will more than satisfy you. Order your stock today.

It is sold with a guarantee of refund of price if not satisfactory.

Bay State Pump Co.

100 Purchase St., Boston, Mass.

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Performance vs. ?

In selecting a Compressor, what interests you most? Prices? No! Promises? No! Technical details? No! In the end, it is the cost of giving air service. You must have confidence in the concern that sells the outfit, confidence in the manufacture, and confidence in the future performance of the outfit.

Brunner Air Compressors have come to the front in the minds of the progressive garage men of the country. Brunner equipment has won and is holding national leadership as the undisputed standard.

No sales argument, no frenzy of advertising, no freak fixtures could win and hold that dominance. Brunner equipment has construction care that spells Performance. And, Performance merits leadership.

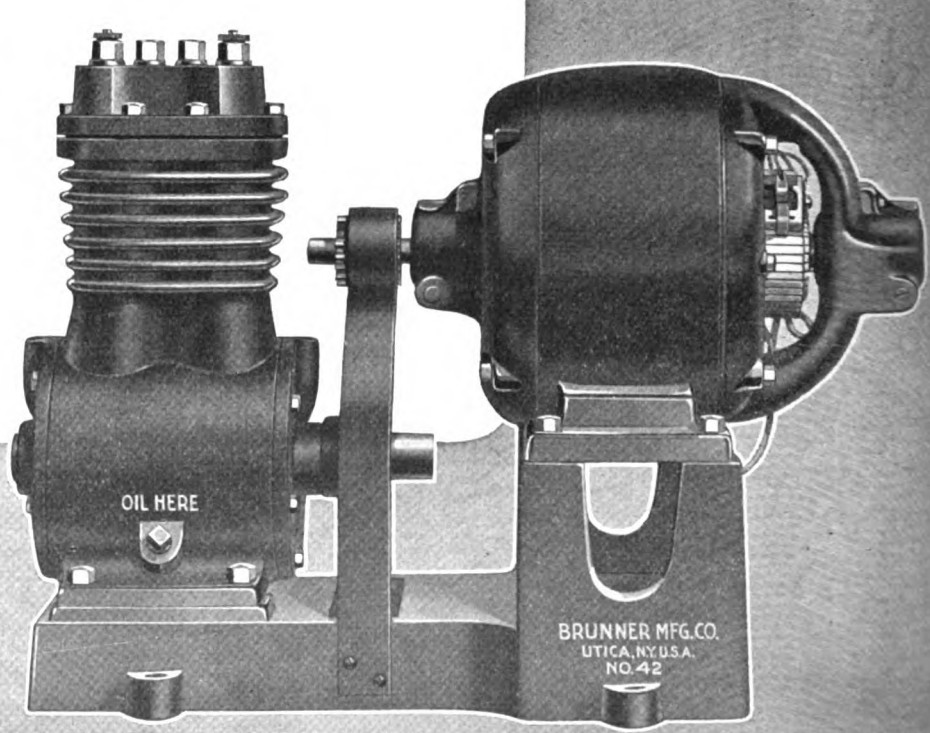
Brunner engineers use the laws of pneumatics ---they know the intricacies, complex problems and possibilities---after years of study and putting these laws into practice their resultant products give consistent economical Performance.

Write for illustrated folder, displaying all types and sizes.

BRUNNER

BRUNNER MFG. CO.

Works
UTICA, NEW YORK
Sales Offices
UTICA, N. Y.
CINCINNATI, O.



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98%

of all the

American Aviators Used

BURD *High Compression* PISTON RINGS

The World's Standard of Efficiency

But long before America entered the World War, thousands of British and French Aviators used Burd-equipped planes.

The rigid Hispano-Suiza Engine tests conclusively demonstrated that Burd High Compression Piston Rings are unequaled—positively unrivaled by any other piston ring.

Ask Your Jobber's Salesman—or Write Now

for full information, dealers' prices, discounts, sales helps, etc.

BURD HIGH COMPRESSION RING CO.
Rockford, Illinois

GEO. H. EVANS.

(When Writing to Advertisers, Please Mention the Accessory and Garage Journal.)

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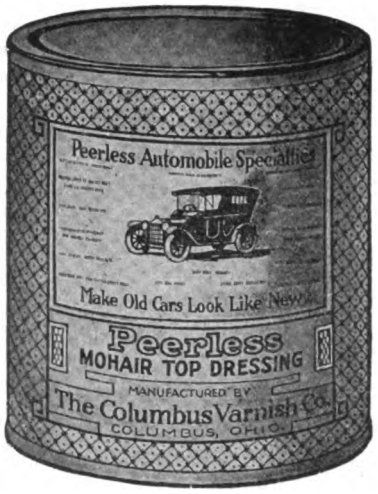

PEERLESS AUTOMOBILE SPECIALTIES

MAKE OLD CARS LOOK LIKE NEW

The attractive package is a big selling point. Can has friction top so that the lid can be pried off and sealed again if desired. This style of can permits the goods to be used direct from original package, preventing any waste by emptying into another container.

PEERLESS MOHAIR TOP DRESSING.
A dressing that not only waterproofs, but dyes a mohair top with one application, making top look like new.

PEERLESS LEATHER TOP DRESSING.
An oil preparation which renews and softens the leather, rubber, pantasote and their imitations. Dries with a bright finish and wears indefinitely.

PEERLESS JET BLACK FENDER JAPAN.
A finishing for fenders, which will cover solid with one coat, making a jet black gloss enamel finish similar to a baked job.

PEERLESS CARBON REMOVER.
Will remove carbon from cylinders of automobile motors and keep them always active and full of life. Will eliminate the carbon knock and make driving a pleasure.

PEERLESS MIRRORROID.
Not a polish, but similar to a regular varnish, which will give a surface of a car where used a finish like a newly varnished job.

PEERLESS BATTERY BOX BLACK.
An acid-resisting enamel which will protect wood or metal parts of battery boxes, cases and racks which come in constant contact with acid from batteries from decay.

PEERLESS EXTRA FINE BLACK JAPAN.
A fine product for all around use on wood, metal and old enameled parts of an automobile. Will cover solid on any surface which is free from grease or dirt.

PEERLESS GASKET SHELLAC.
A high grade product cut in pure alcohol for gaskets, corks, carburetor floats and such parts of an automobile. Heavy bodied so that it makes a perfect seal on worn gaskets as well as new ones.

PEERLESS CYLINDER ENAMEL.
When cylinders and all metal parts of an automobile underneath the hood of an automobile are coated with this enamel they can always be kept clean and there is no danger from rusting. Made in Black and Gray.

PEERLESS TOUCH-UP BLACK.
A quick drying product for all around use in touching up all metal and wooden parts of an automobile, where finish is worn.

PEERLESS CUSHION DRESSING.
A dressing that can be relied upon to be perfectly safe to use as it does not wash or rub off and renews the appearance of old leather seats and cushions.

PEERLESS RIM PAINT.
Rims coated with this paint will not rust, thus preventing tires from sticking, which injures the casings. May be used on rubber mats as well as casings.

PEERLESS FORD TOP DRESSING.
Will restore original finish to leather material used on Ford cars. Where mohair is used on Ford cars use Peerless Mohair Top Dressing.

PEERLESS LAMP ENAMEL.
A gloss enamel which will stick on nickel, brass, iron or old enameled parts and is not affected by heat of gas lamps. Made in Gloss and Dull.

PEERLESS LIQUID WAX.
A hard drying Polish which is easy to apply with a light even coat, as it comes in liquid form. It is waterproof and will stand washings without dulling the finish.

PEERLESS TIRE PAINT.
A waterproof coating for tires to protect rubber from exposure to air, thereby saving rubber from deterioration and keeps tires looking like new. Made in Black, White and Gray.

PEERLESS AUTO BODY POLISH.
It is practically an oil varnish food, containing the necessary products that are needed by varnished surfaces that have become dull through service. Easily applied and ready for use at once.

PEERLESS LINING DYE.
A dye that will make all water-stained, grease spotted and faded linings of an automobile top a dark black uniform black color. Will not wash or rub off, neither will it stiffen or harden the cloth.

Prices on these PEERLESS AUTOMOBILE SPECIALTIES are as follows:
1 gal., $6.00. ½ gal., $3.15. Quart, $1.65. Pint, Pint, 90c. ½ pint, 50c.

PEERLESS COLOR FINISHINGS.
A line of eight colors so that an owner can select any combination of colors for wheels, chassis and body of his car. High grade colors made with a finishing varnish so that it is not necessary to finish over these colors. Made in following colors: RED, BLACK, WHITE, BLUE, GREEN, YELLOW, STRAW COLOR and GRAY.
1 gal., $7.00. ½ gal., $3.65. Quart, $1.90. Pint, $1.00. ½ pint, 55c.

PEERLESS AUTOMOBILE SPECIALTIES produce durable and lasting results that please every owner, giving dealers repeat orders and a good profit on each can sold.

Used by over 8,000 automobile painters because of their high qualities.

Dealers order these Peerless Automobile Specialties through your jobber, also get catalogs, window displays, inserts and other advertising matter. If his stock has not arrived, write us direct and we will see that you are supplied.

Made Only by

THE COLUMBUS VARNISH COMPANY

COLUMBUS, OHIO, U. S. A.

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MR. FORD OWNER

THERE'S Your Trouble- "Leaky" Wires

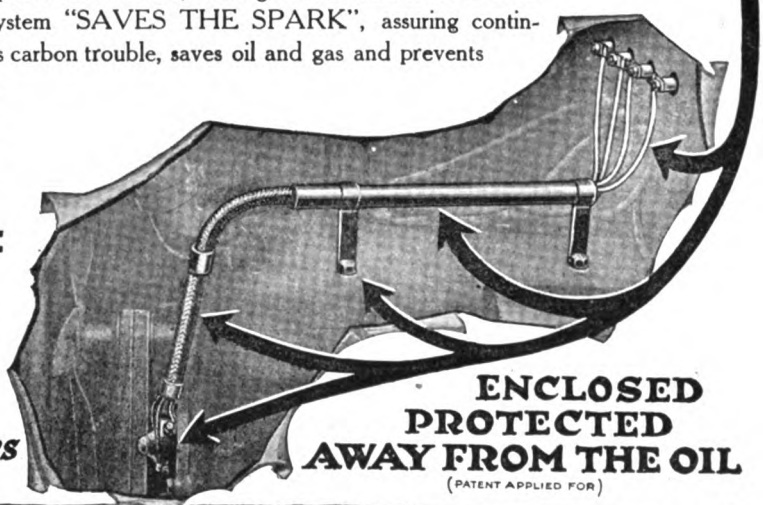
HERE'S Your Cure

Brown's Timer Wiring System for FORD CARS

is a direct overhead connection between the coil box and the commutator and positively saves the usual 40% spark waste, delivering to the motor the FULL INTENSE HOT SPARK. Regular Ford Wiring becomes oil and water soaked, the insulation frays, the wires become exposed and broken, causing "leaks" and short circuits. Brown's Timer Wiring System "SAVES THE SPARK", assuring continuous combustion, eliminates carbon trouble, saves oil and gas and prevents rippling of the commutator.

$2.50 COMPLETE
Including War Tax

And you put it on in less than twenty minutes



ENCLOSED PROTECTED AWAY FROM THE OIL
(PATENT APPLIED FOR)

CRAMER AND CRAMER
Manufacturers & Distributors
406 ANDREWS BLDG. CINCINNATI, O.

Write for the name of your nearest jobber or dealer. If he cannot supply you send us $2.50 and we will mail you one parcel post prepaid.

***Dealers and Jobbers*—The Trade Discounts are Liberal.**

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One Piece
Instead of Three

HERE'S the new ONE Piece Ford Transmission lining that you can put on in LESS THAN THIRTY MINUTES.

The L & L One Piece Slip On

lining is made in one piece instead of three, and slips on in less than 1/3 the time required by all the old style three piece linings, without riveting or putting in new felt gaskets.

Those hours you save mean money—clear PROFIT FOR YOU. And this extra profit is yours every time you put on an L & L ONE Piece lining.

Dealers who handle the L & L will find that in a very short time it will be their biggest seller. The demand for a dependable Ford transmission lining that can be quickly and easily attached is enormous. Ford owners who do their own repairs will be most enthusiastic about the L & L. Once they use it, they will accept no other. Every Ford owner in your locality needs new transmission linings at regular intervals. L & L linings never fail to bring repeat orders.

NOW is the time to stock the new idea lining. Ford owners will start asking for them SOON. Be ready for the rush!

L & L AUTOMOBILE ACCESSORIES CORP.
Dept. 51—135 Church Street
HARTFORD, CONN.

$3

L & L ONE Piece linings are made of the very finest braking material ever manufactured. There is no wire in them to short circuit the magneto. They take ALL the chatter out of the transmission and insure a dependable foot brake at all times. Sell for the same as any other good lining, but are better and quicker to put in.

L & L AUTOMOBILE ACCESSORIES CORP.,
Dept. 51—135 Church Street, Hartford, Conn.
Send us one dozen L & L One Piece Transmission linings for Fords through our jobber.

Dealer's Name.....

Address.....

Jobber's Name.....

L & L ONE PIECE

SLIP ON TRANSMISSION LINING for FORDS

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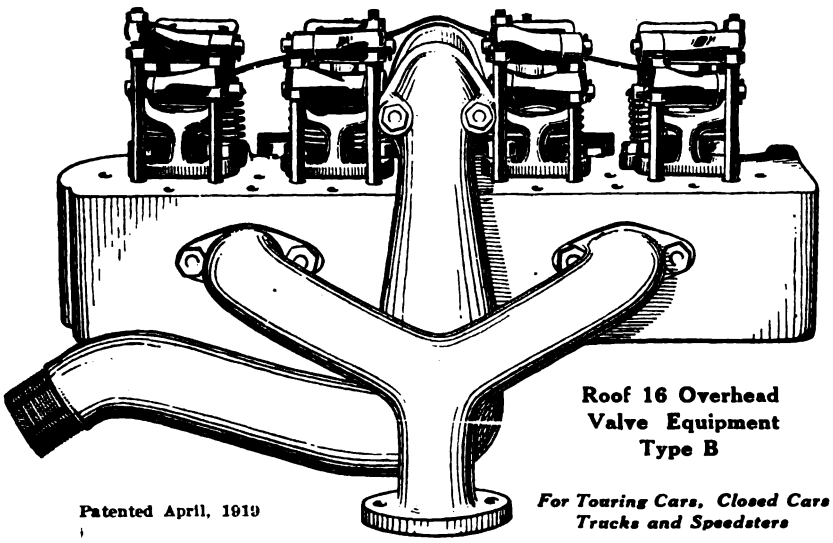
POWER and SPEED

Roof 16 Overhead Valve Equipment

FOR FORD MOTORS



Roof 16 Overhead Valve Equipment Type B

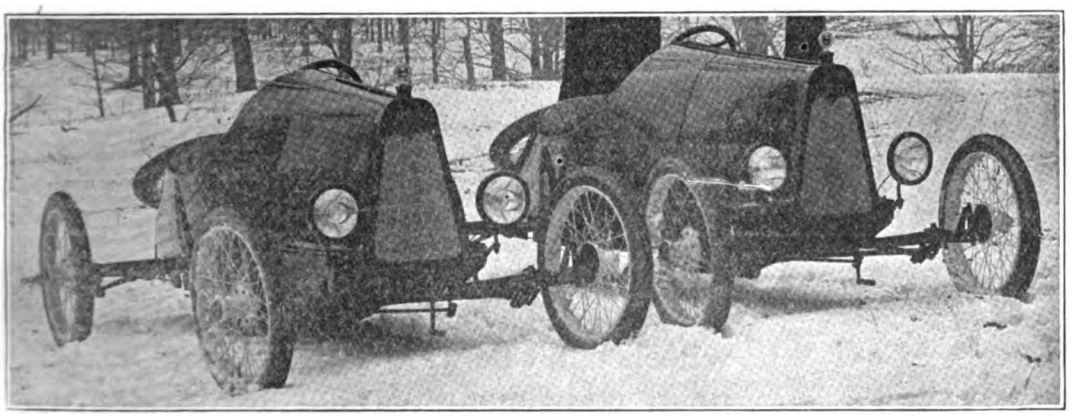
For Touring Cars, Closed Cars Trucks and Speedsters

Patented April, 1919

The Most Remarkable Power Device, Even in This Inventive Age

Hill climbing for touring cars—pulling power through sand and mud—doubles the hauling capacity of converted Ford truck-speed for mile and half-mile tracks to rival the fastest cars built. Ford racing cars with our Cylinder Head Equipment and special racing parts have attained speeds from 80 to 100 miles per hour. Hill climbing and pulling power for touring cars, closed cars and trucks. Price, complete, $115.00 f. o. b. factory. Nothing extra to buy. Cylinder head equipment all ready for installation. It takes the place of the regular Ford Cylinder Head. Any mechanic can easily and quickly install it.

Comparison Brake Horse Power Tests at the United States Bureau of Standards gave Standard Ford motor with regulation carburetor 18.7 Horse Power. The same motor with 16 Valve Head and regulation carburetor 22.4 Horse Power. The same motor with 16 Valve Head and Special carburetor 29.7 Horse Power. Recent tests at Bureau of Standards with Type B gave 32 Horse Power. We are Manufacturers and Distributors of speed and other specialties for Ford cars; 3 to 1 gears, high speed camshafts, aluminite, light grey iron pistons, lynite pistons, aluminite connecting rods, racing spark plugs, racing carburetors, roller bearings, counterbalances, wire wheels, multiple speed transmission, high tension magnetos, special oiling system, special worm and gear, steering gear, racing tires, racing bodies, hood and radiator, parts for underslinging chassis. Tell us what you want. We can supply it. Racing quality. Lowest prices. Send for our Complete Literature on how to build fast cars and double the value of your converted Ford Truck and descriptive circular on Speed and other Specialties for Fords.



Our Famous De Luxe Racing Cars Price $1500

Ford Racing Car Speed Kings

From the hundreds of fast Ford car drivers we mention the names of a few of those who have won laurels through the use of our equipment and some with speed records approaching that of the highest priced racing cars in the world, ranging from 70 to 97 miles per hour, and who on mile and half-mile tracks have closely approached the world's record with their speed cars:

Loren Darst.....Eureka, Ill.
Haines Bros.....Ft. Benton, Mont.
Ben Lawell.....Columbus, Ohio
W. L. Frazier....Washington, D. C.
Herbert Black....Webster City, Iowa
John Proctor.....Washington, D. C.
Rolly Blair.....Shelby, Neb.
Joseph C. Hayes..San Francisco, Cal.
Paul M. Boozer.....Windber, Penn.
Hugo Goedthe.....Milwaukee, Wis.
W. C. Phalgrafh....Cheyenne, Wyo.
Milner Motor Car Co....Monroe, La.
C. F. Goltry.....Roann, Ind.
Fred Dawson.....Springfield, Ill.
W. C. Norris Motor Car Co.....
.....Oklahoma City, Okla.
Alvin A. Pfeiffer.....Clatonia, Neb.
J. Ross Castendyck.....La Salle, Ill.
Fred Hank.....Cheyenne, Wyo.
L. E. Kerbs.....Otis, Kan.
Phil M. Kepley....New Albany, Ind.
A. Malby.....Daytona, Fla.

Don Husted.....Marshall, Okla.
L. S. Stewart.....Cincinnati, Ohio
Irving Donohoe....Washington, D. C.
Taylor Bros.....Lafayette, Ind.
Robert Cusick.....Cleburne, Texas
Bozanni Bros.....Los Angeles, Cal.
J. Marshall Yeats....Champaign, Ill.
Kirby Horton.....Cleburne, Texas.
N. H. Steele.....Racine, Wis.
John G. Banzhaf..Greenwich, Conn.
Richard O. Fay.....Xenia, Ohio.
R. C. Wheeler....Chattanooga, Tenn.
W. J. Meagher.....Medford, Ore.
Gilbert Sartain.....Tahlequah, Okla.
Bert Wellington.....Casper, Wyo.
N. C. Burdett.....Stuart, Ia.
Perry La Merte....Kalamazoo, Mich.
Albert Willshaw.....
.....Ft. Wadsworth, N. Y.
Willard Brothers..Ponca City, Okla.
Roy A. Tolen.....Carlow, Mo.
W. H. Hooker..Bay Side, L. I., N. Y.

Cliff Duhme.....Cincinnati, Ohio
Brinker & Sheffer..Gibsonburg, Ohio
Roscoe J. Whitney.Leominster, Mass.
Frank Richardson....Segourney, Ia.
Roy A. Scofield....Council Bluffs, Ia.
Rister Garage....New Harmony, Ind.
Dennis Auto Co.....Ottawa, Kan.
Tunica Motor Co.....Tunica, Miss.
Treacy G. Mohney...Harrisburg, Pa.
Speedster Shop.....Los Angeles, Cal.
William Erwin.....Corcoran, Cal.
Packard Engineering Co.....
.....Cleveland, Ohio
Charles N. Davis....Piedmont, Mont.
Antone Bertoglio.....
.....Twin Bridges, Mont.
D. E. Snider.....Middletown, Ohio
Roy M. Barzem.....
.....Thief River Falls, Minn.
Bay View Auto Co.....Cheriton, Va.
A. Jackson.....Bloomington, Ill.

WRITE FOR OUR AGENCY TERMS TODAY

THE LAUREL MOTORS CORPORATION

ANDERSON, IND.

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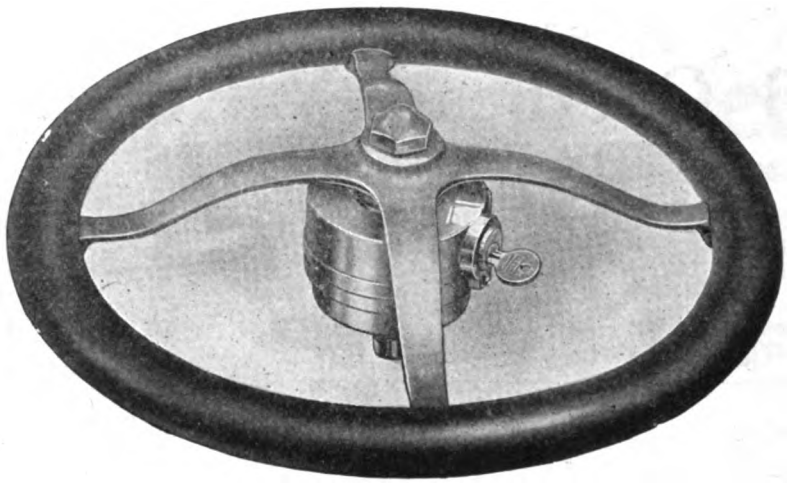
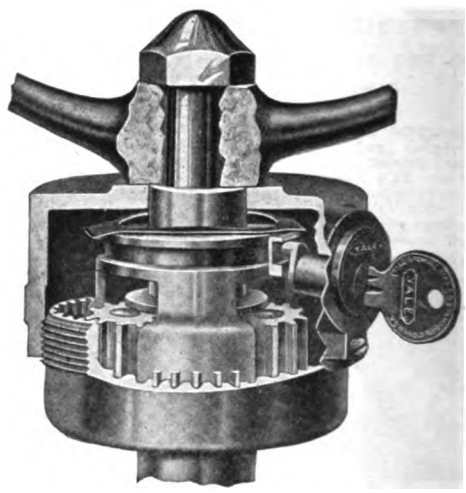


Its the Loss of the Ford That Counts—

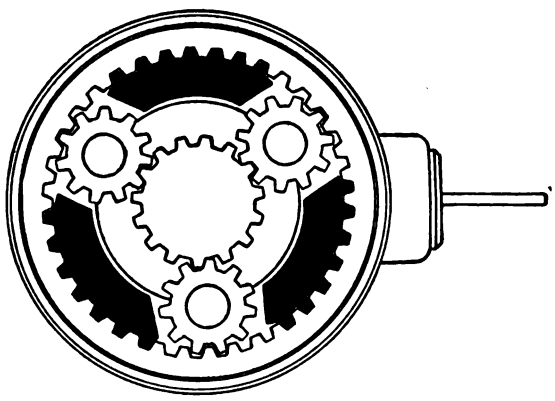
Not the Price of Protection



No Ford owner can be assured of the continuous use of his car unless it is equipped with a lock that foils the thief—professional as well as joy-rider.

It's easy to safeguard a Ford with a

MASTERS STEAL PROOF LOCK



It clamps the gears so that the front wheels can't be used for steering. It is neat, convenient, cannot be broken, or picked. Easily installed without tools. It can't lock accidentally. You know what the market is—every Ford owner is a probable customer. He can afford the low price of **$6.50**.

Write at once for terms to jobbers and dealers, if you have not already done so.

MASTERS MANUFACTURING COMPANY

AUTOMOTIVE ACCESSORIES

68 Woolsey Square, Jamaica Plain, Boston, Mass.

(When Writing to Advertisers, Please Mention the Accessory and Garage Journal.)

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Tarr-Gon
REGISTERED

The *Perfect* Tar and Asphalt Remover for Automobiles

The Product With a Hundred Uses

CLEANS

RADIATORS

LIGHTS REFLECTORS

TIRES

LEATHER CUSHIONS

BODIES

WIND SHIELDS

Every automobile owner in the country is a prospective purchaser of Tarr-Gon.

Once the remarkable properties of this product are experienced, no car owner is ever without it. Every car owner who uses it becomes enthusiastic.

Tarr-Gon quickly removes tar, asphalt, grease and stains from any part of a car, including the tires. Tarr-Gon cleans, brightens and preserves leather cushions, straps and tops, linoleum, rubber and metal, running boards, etc. It softens the leather and does not leave it sticky.

Tarr-Gon cleans windshields, headlights and reflectors—and tar or grease from the hands.

It is just as useful in the home. Tarr-Gon removes tar and grease from carpets, rugs, upholstery, shoes, clothing, metals, etc.

It will not injure the surface of any material. It is a miracle worker. The enemy of every annoying "tar or grease spot" it touches. We have hundreds of testimonial letters praising Tarr-Gon.

TASGON is another well-known Polygon product. It is a magic *fluid* for dissolving and removing rust without injury to parts. A few drops will remove the most tightly rusted nut, bolt, joint or connection. Tasgon removes rust from any rusted part. It prevents carbon. It primes motors. It stops squeaks. It has many valuable uses.

TARR-GON and **TASGON** are quick, continuous sellers. They will bring profit and goodwill to your store. They mean repeat orders. They are guaranteed to do all we say they will. Try them yourself and you will sell them. Write us for our attractive proposition. Write today.

POLYGON PRODUCTS COMPANY
141 MILK STREET BOSTON, MASS.
(Made by Samuel Cabot, Inc.)

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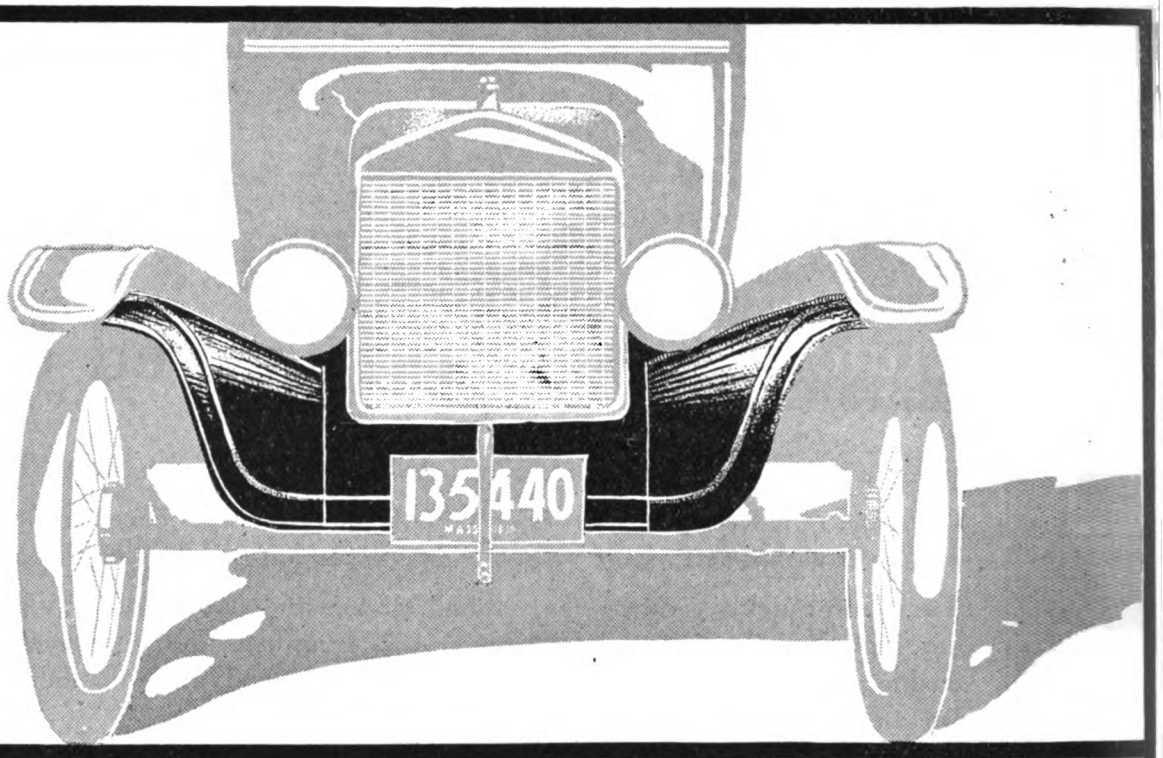

MOSCO FORD MOSCO

FRONT APRON

PREVENTS Clogging Radiator
REDUCES Overheating Risk
KEEPS Lamps Clean
ELIMINATES Mud Guard Vibration
GIVES More Air Radiation

HEAVY STEEL, TWO COATS BAKED BLACK ENAMEL
FURNISHED COMPLETE TO ATTACH

SEE IT ON THE CAR

Motor Specialties Company
Manufacturers Waltham, Mass.

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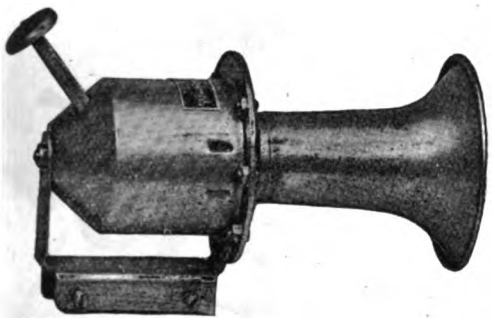
THE HORN WITH 6 EXCLUSIVE FEATURES

Adjustable to any desired tone



When your customer buys a STANDARD Auto Horn he has the choice of the exact tone he desires—long, short, or medium.

All that is necessary is a turn of the adjustment screw until the desired tone is reached. This screw is accessibly located back of and outside the housing—not inside the bell.

And just as important—the tone can be kept constant. Those of other horns necessarily become weak or unreliable with much use, because this tone adjustment feature is exclusive with the STANDARD. It always insures an instant, imperative warning the second the hand touches the plunger—a feature alone that has sold thousands of STANDARDS for dealers who believe in offering their customers only the best.

Finished in handsome baked black enamel and nickel trimmed.

Guaranteed to outwear any car to which it is attached.

For use on Ford cars a special clamp bracket is furnished without extra charge, by which the STANDARD can be attached in half a minute without punching holes or marring the body of the car.

Five Other Exclusive Features

1. Special Sound-Projecting Bell.
2. Can be operated with one finger.
3. All wear is taken up by adjusting screw.
4. Adjustable to six different positions on car.
5. Guaranteed to outlive the car.

LIST PRICE $4

THE STANDARD AUTO HORN CO.
INCORPORATED
212 Broadway Everett, Mass.

DEALERS Increased production enables us to add a few more dealers to our list. If you are interested in selling a quality horn, moderate in price, but with liberal profit to the dealer, write us.

STANDARD AUTO HORN

(When Writing to Advertisers, Please Mention the Accessory and Garage Journal.)

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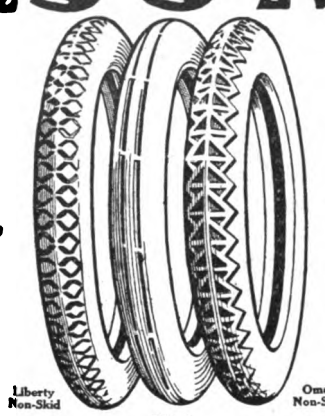
PRESSMAN

Omar Tires



EVERYWHERE

Longest Service When Measured by the Price You Pay

OMAR and LIBERTY tires are made and sold to a definite policy—highest quality obtainable and a guarantee of service.

It means absolute satisfaction to users. OMAR and LIBERTY tire dealers will advise you that these tires will deliver full service mileage and the purchaser will receive full value.

There is no condition, no uncertainty. The tires must afford 100 per cent. service.

Measured by first cost and by mileage guarantee OMAR and LIBERTY tires are unequaled; the saving in any event is such they are the most economical tires to use.

Back of this guarantee is the manufacturer. Unless the tires satisfy he is the loser. Only by maintenance of the highest quality can his prestige and the business of his distributor endure.

Compare these tires and the prices with all others. Contrast the guarantees. Consider the service of each. Then you will equip with either OMAR or LIBERTY tires.

Then you'll understand fully what you get for what you pay and what a positive guarantee means to you.

DEALERS: OMAR and LIBERTY production is rapidly increasing. We can offer a limited number of splendid dealer contracts. The trade discounts are liberal. You can meet any competition and make more than good profits.

Correspondence invited. Full information at request.

PRESSMAN TIRE & RUBBER COMPANY
PHILADELPHIA PENNSYLVANIA

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FOR EMERGENCY WORK

When Time is Money

ATSCO

PORTABLE · AIR · TANKS

For Garage and Road Repairs

Is the one sure short cut to service, insuring efficiency when quick work is necessary and saving time and labor when these run into money.

Roadside pumping is costly waste. The time saved will quickly pay for equipment that will always have splendid service value.

Are You For Shop Efficiency and Service

If so you want what will earn revenue without expensive upkeep. Fill your tank with air from the compressor system. Use it in the shop or for road work. It's always ready and it never fails.

Atsco Tanks are steel, copper brazed, equipped with standard tire filling valve and protection valve cap for filling from compressor system connections, with side handle for carrying.

They are good for 500 pounds test pressure and are intended for a working pressure of 250 pounds. These tanks will serve for years.

We specialize production of garage pressure tanks, and have in stock or build to specifications tanks of any size or pressure requirements. Our tanks are used by most of the producers of compressor and air storage systems.

These tanks are genuine copper brazed construction and the seams and joints are far stronger than the stock metal. They will not crystallize or crack and are guaranteed air tight.

We make pumps and pressure tanks for all purposes.

List Price $24.50, f. o. b. Pittsburgh, Pa.

Produced only by the

AIR TIGHT STEEL TANK COMPANY

OFFICE AND WORKS

PITTSBURGH, PENNSYLVANIA

TANK MAKERS FOR NEARLY THIRTY YEARS

(When Writing to Advertisers, Please Mention the Accessory and Garage Journal.)

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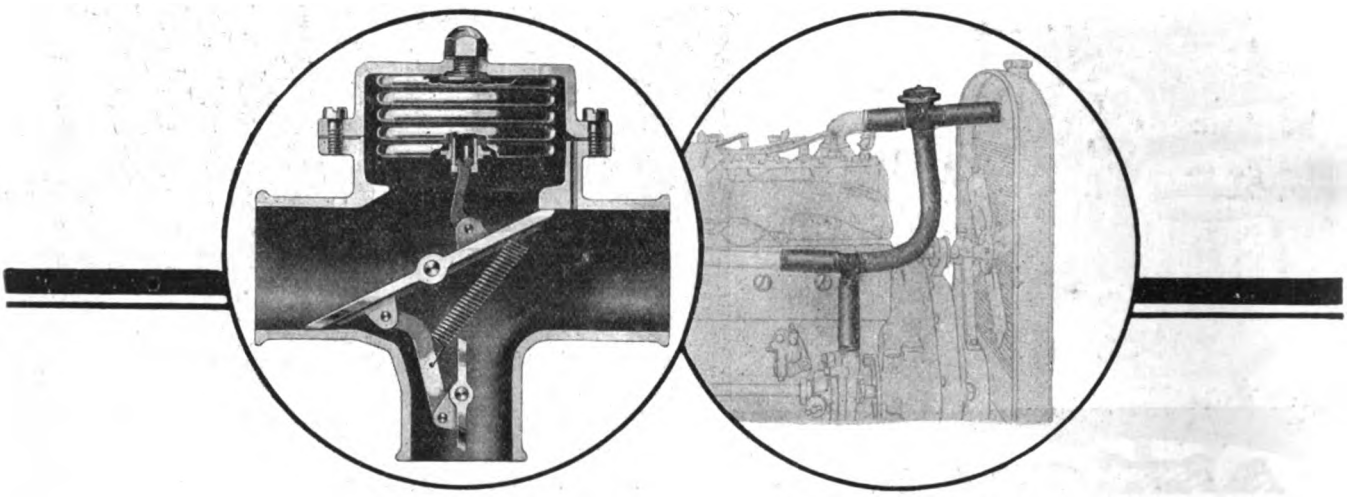
Rayfield Motor Thermostat for Cold Weather Driving



The Rayfield Motor Thermostat, by regulating the circulation of water through the cylinder block makes your motor "warm up" quickly in the coldest weather.

Because the motor does warm up quickly, the pistons and rings promptly expand to their proper fit, eliminating loss of compression (power) and consequent escape of raw gasoline past pistons into crank case where it will thin out the oil.

The Rayfield Motor Thermostat keeps your motor warm while car is standing, insuring a prompt start and conserving your storage battery.

It prevents scored cylinders, formation of carbon, fouling of plugs, and gives you a snappy, peppy full-powered motor in all weathers.

A motor necessity. Price installed, $12.50.

If you are unable to obtain a Rayfield Motor Thermostat at your local dealer's, write us and we will tell you where you can get one.

BENEKE & KROPF MANUFACTURING CO.

21st and Rockwell Streets, Chicago, Illinois

DEALERS: Don't wait. Stock this quick selling accessory now for late Fall and Winter business

RAYFIELD MOTOR THERMOSTAT

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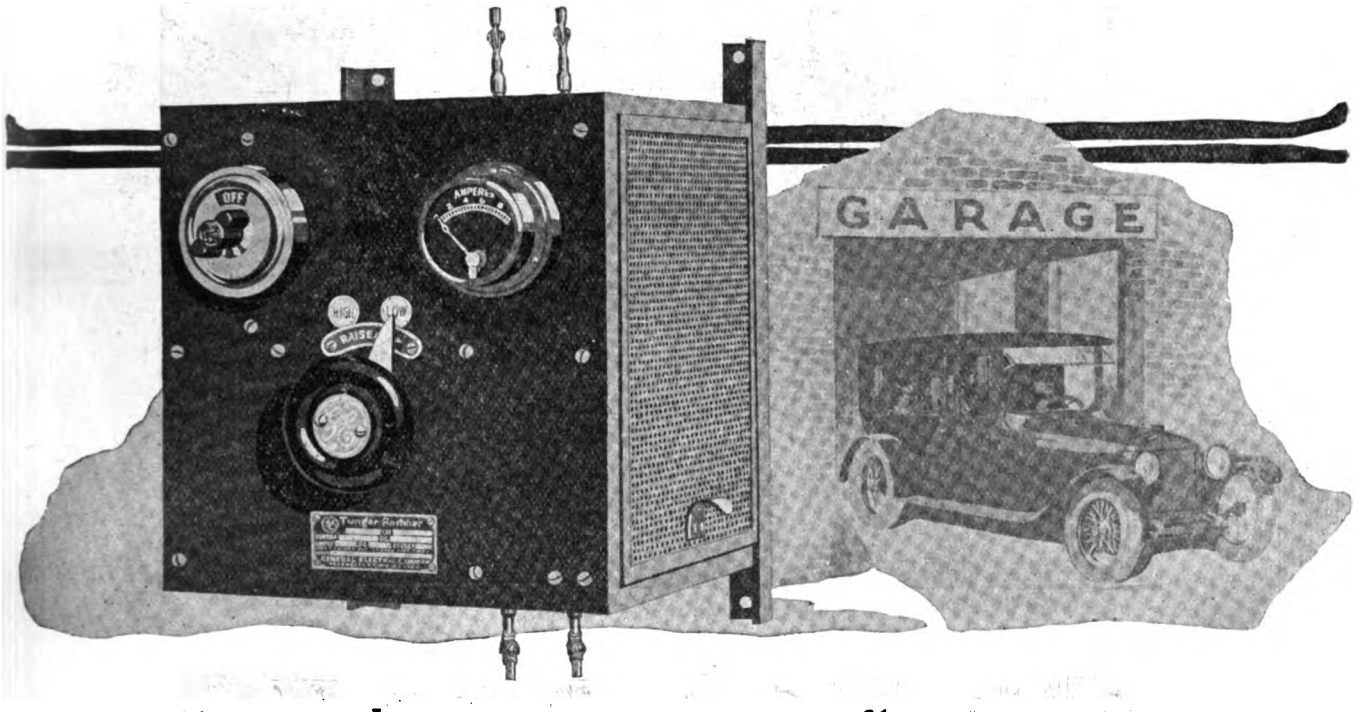
Batteries Need Special Care in Winter

Are You Prepared to Render This Service?



The ***complete*** garage must give 100% service. Battery charging, particularly in winter, is an important part of 100% service. Every garage, therefore, needs charging equipment—the right equipment will pay good profits.

The Tungar Rectifier exactly fills this need for it is a ***low cost,*** highly efficient battery charger. It is, in fact, the lowest priced ***reliable*** outfit of similar capacity and costs least to operate. It will charge from three to 30 cells of lead plate batteries at 6 or 7 amperes or less from ***alternating current.***

Two particularly good features of the Tungar are that it connects to any alternating current lighting circuit and that it may be run without attendance as it is self-starting and protected against over loads or reversal of current.

Tungar has put the Profit into Battery Charging.

It will pay you to send for bulletin T-63951

85a-84

General Electric Company

General Office Schenectady, N.Y.

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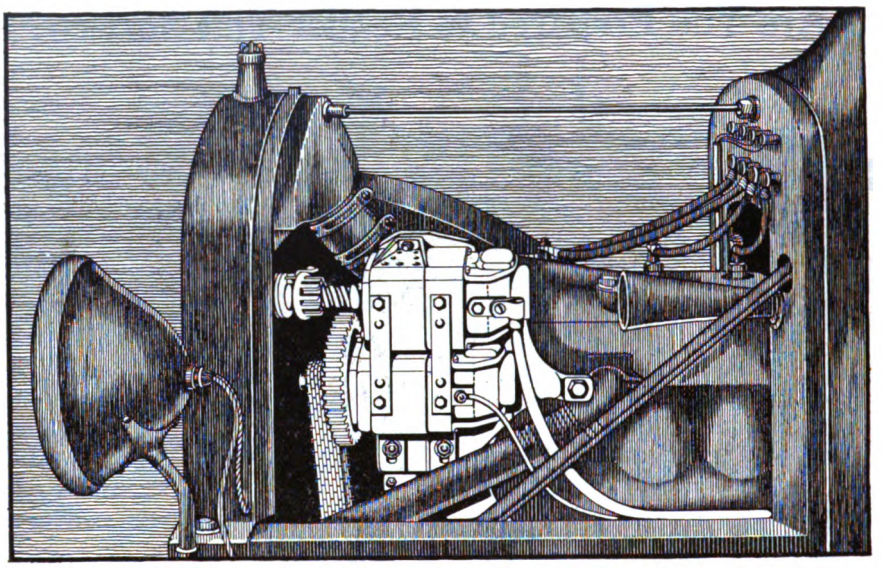

GRAY & DAVIS

STARTER
for Every FORD

Add convenience and safety. You and your Ford deserve it. Always a quick start in any weather. Bright steady light standing or running. Specially designed and built to add Gray & Davis reliability to Ford service.

Booklet A 62 tells the story.

GRAY & DAVIS, INC. Boston, Mass.

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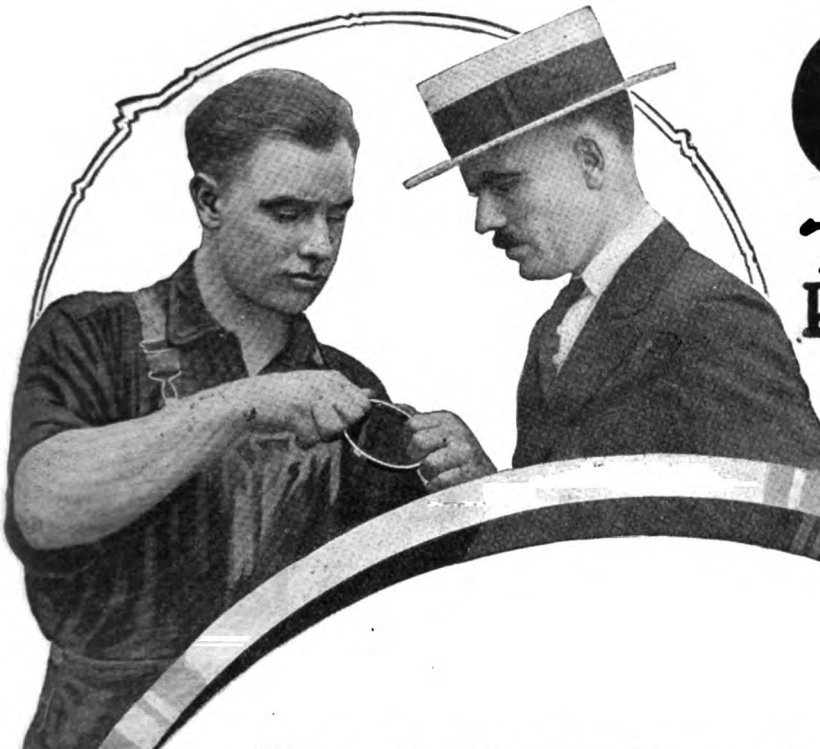

GILL

The Perfect One Piece Piston Ring

"Here is the ring I am going to put on your pistons. The Gill Piston Ring, the best made, and here is the reason why it is the best. Look at the joint."

The dealer or garage man does not have to ask the motorist to look at a Gill Ring twice for him to realize that he is getting the best on the market. You don't have to argue about the Gill Ring, one look at the double step interlocking joint is enough. You can see why it allows an expansion of from 1/8" to 3/16" before any loss of compression occurs. This allows the ring to adjust itself to worn, oversize or out of round cylinders within reasonable limits. If you don't carry the Gill Piston Ring now is a good time to get aboard the band wagon.

Send for the new Gill Piston Ring Size Directory, complete, convenient and full of just the information you need. It is free to the trade.

Dealers—Ask your jobbers about them
Jobbers—Write to us for information

The Gill Manufacturing Company
351 West 59th Street, Chicago, Illinois

Sole Foreign Agents:
AUTOMOTIVE PRODUCTS CORPORATION
Woolworth Building, New York, N. Y.

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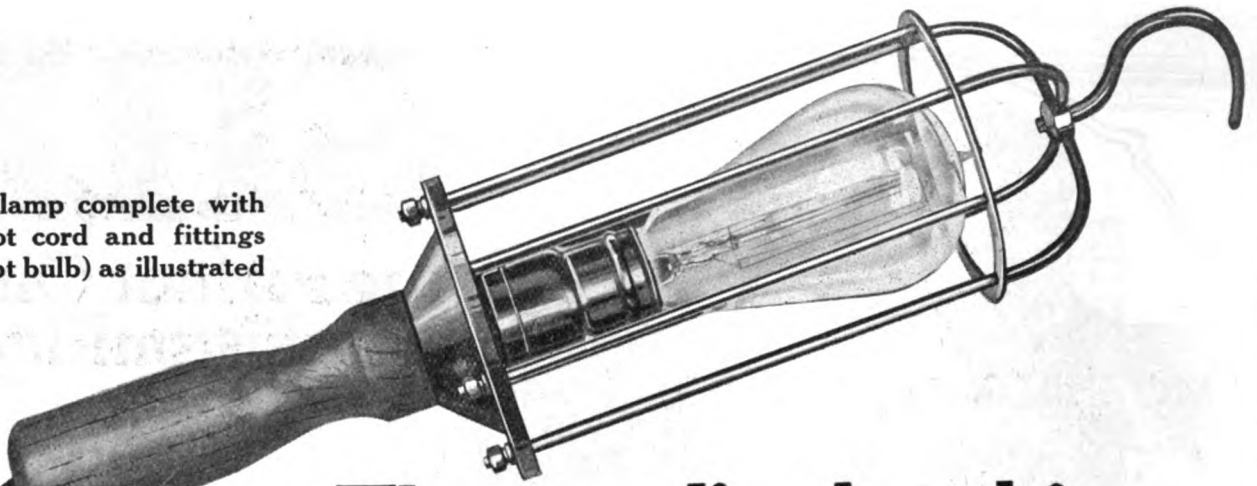


Each lamp complete with 20-foot cord and fittings (except bulb) as illustrated

The cord's the thing on an extension lamp

IT is the part which carries the electric current, which when worn through immediately becomes a fire hazard and a source of accident. It should therefore be the strongest part of an extension lamp. This is the case with the

DURACORD EXTENSION LAMP

This lamp is all wired up ready for use with genuine Duracord, the cord that was made expressly for hard service. It will outwear ordinary cords four to six times.

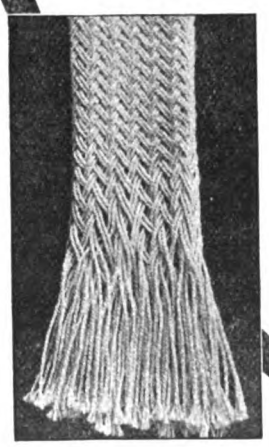
Duracord has none of the dangers of steel-armored cable, such as the metal cutting through to the wires, nor will it scratch polished surfaces.

It is gripped in the handle by a patented "holdfast" fitting that prevents it pulling out even under excessive strain.

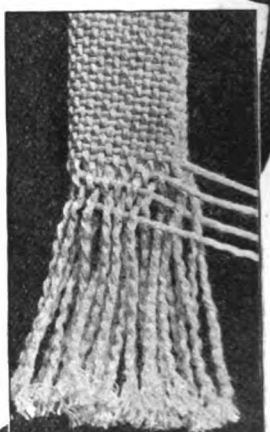
Each lamp complete, packed in an individual box. Prices:

Light weight	$5
Heavy duty (as illustrated)	6
Vapor proof	8

TUBULAR WOVEN FABRIC CO.
Pawtucket, R. I.



Here is the ordinary braided cable covering. Note the open and porous construction, easily cut, stretched or unraveled. Compare it with Duracord.



*This is Duracord. Thick, heavy strands, **woven like a** piece of fire hose, not braided. Picture shows outside covering only with impregnating compound removed.*

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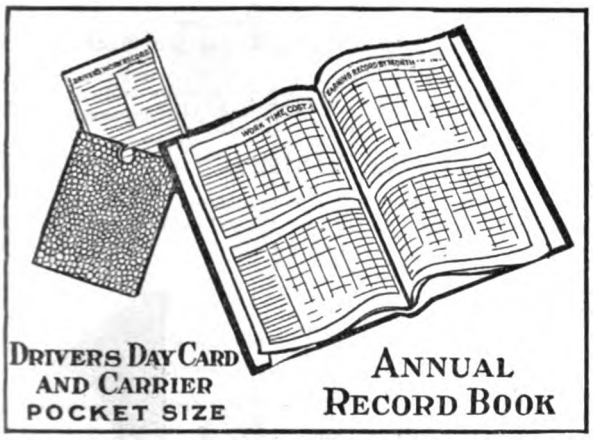
Know what it costs to Run your Truck
Learn what your Truck Earns
Know your Truck Profit and Loss

UNIVERSAL MOTOR TRUCK ACCOUNTING SYSTEM



The system includes an annual record book, 350 drivers' day cards, a day card carrier and full instructions.

Any owner can start this system at any time with an old or new truck of any make or type.

Any boy or girl clerk can maintain all records for one or a hundred trucks.

Each system is good for one year, nothing more is needed or necessary.

The records show at a glance any and all items entering into the earnings and cost of operation.

It is extremely simple. 100% complete and full working instructions are supplied with each system.

It is almost self-operating.

Price $10 — Delivered

Address Record Department

MOTOR TRUCK

Pawtucket, Rhode Island.

THE ACCESSORY AND GARAGE JOURNAL
Index to Contents

Published Monthly by the
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Times Building, Pawtucket, R. I.

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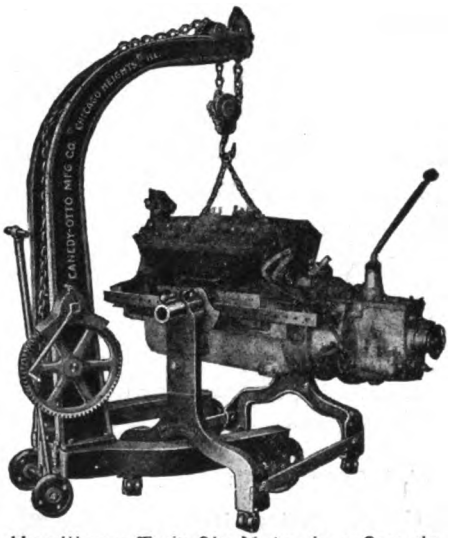
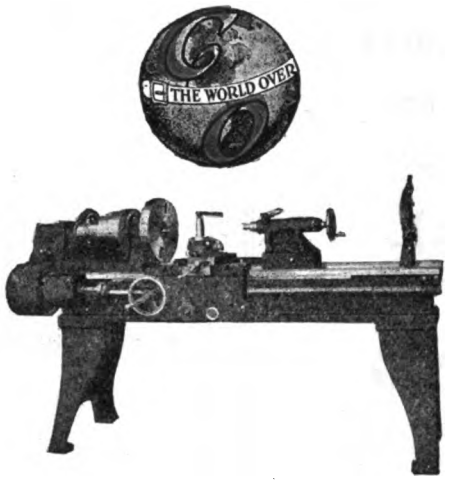
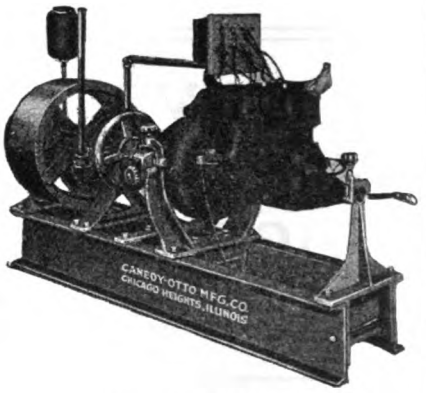
CANEDY-OTTO MFG. CO.



Handling a Twin-Six Motor in a Canedy-Otto Motor Stand with a Canedy-Otto Portable Floor Crane.



Canedy-Otto Screw Cutting Engine Lathe.



Bearing Burning-in Machines.

One of the best investments you can make. Write us today.

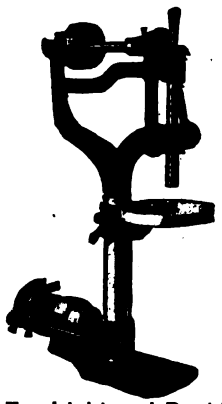
Maximum production efficiency demands absolutely dependable equipment.

For the Garage Repair Shop and Service Station

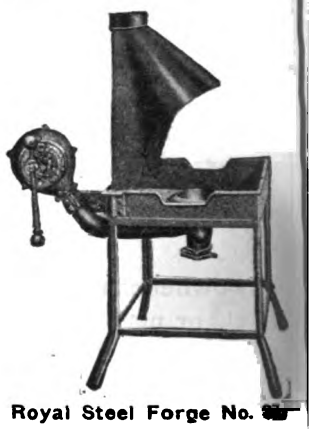
The selection of right tools answers to a large extent the problem of increased production. It is not good judgment to experiment with unknown or untried lines—confidence should be placed where confidence belongs. CANEDY-OTTO equipment represents favorably known and thoroughly tested value for durability, lasting quality, beauty of finish, and accomplishment of purpose.

Manufacturers of

Radial Drills, Sensitive Drills, Engine Lathes, Punches, Shears, Shrinkers, Counted Shafts, Upright Drills, Post and Wall Drills, Grinders, Buffers, Forges, Blowers, Tuyere Irons, Blast Gates, Bearing Burning-in Machines, Straightening Presses, Connecting Rod Straightening Jigs, Motor Test Stands, Arbor Presses, Portable Floor Crane, Piston Clamps, Rear Axle Test Stands, Tractor Tools and Special Machinery for Ford and Fordson.



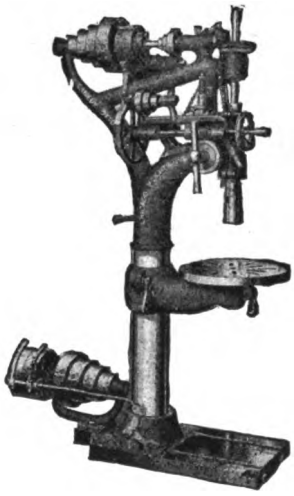
For Light and Rapid Drilling.



Royal Steel Forge No. 3

Eventually, of course; but why not now? Let us know your needs. It may pay us both to get together. Won't you start it with a letter today?

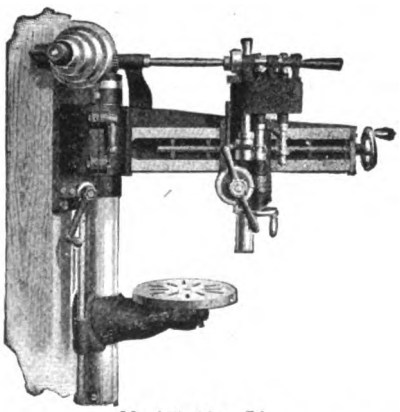
Just investigate—that's all.



No. 36 Canedy-Otto Power Drill.

Your inquiry or trial order is solicited. You will make no mistake by ordering now.

FOR SALE BY ALL Wholesale Accessory Jobbers, Heavy Hardware and Machinery Dealers.



Model No. 51. No. 51 has Power Feed and Automatic Stop.

Our Attractive catalogue should occupy a prominent place in your files. Yours for the asking.

Grinding and Polishing Machine.

General Offices and Factory

Chicago Heights, Ill.

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CUT DOWN YOUR GASOLINE BILL 30%

GASTINE

"GASTINE" is GUARANTEED to give you 30% more mileage, preventing formation of carbon and assuring easier hill climbing ability, faster ignition and greater power.

A Gas Saver—Carbon Destroyer—Power Producer

Keeps spark plugs clean. Absolutely harmless. Sold in concentrated form—easily dissolved in gasoline. 100 tablets in a box. Used successfully throughout the civilized world.

"GASTINE" is endorsed by the National Ford Owners Club, Inc., N. Y., U. S. A., Certificate No. 878. Tested and endorsed by Kenneth Weeks, F. D., and Leading Institutions Universally

SOLD WITH A MONEY BACK GUARANTEE

MORE "PEP" IN YOUR MOTOR

TRADE MARK REG. U.S. PAT. OFF.

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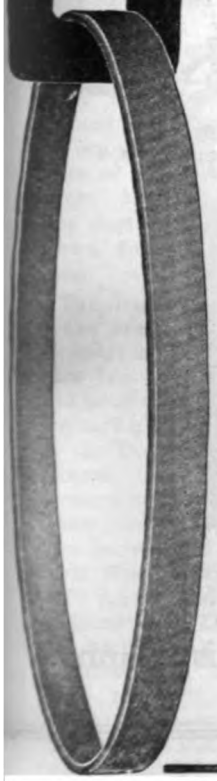
MONROE TIRE & SUPPLY CO., 240 E. 54th St., New York City.
WARE BROS., Spokane, Wash.
BRYANT & WARE, 246 Norwell St., Dorchester, Mass. Field Manager.

Dealers write for prices. Some territory still open. If consumers or dealers cannot be supplied from their jobber or dealer, they can order direct from this office. Always give name of their jobber or dealer.

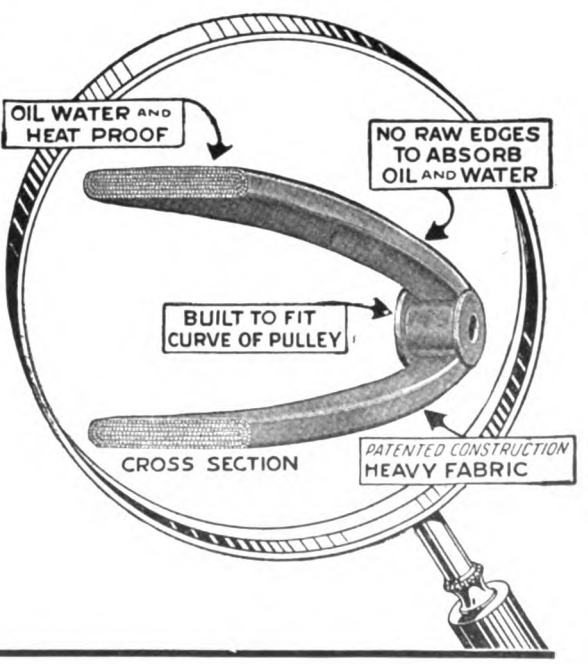
Guaranteed 10,000 Miles

At last—a fan belt of known and guaranteed performance. DEALERS—This is the safe belt to stock.



FLEX-O-TYTE FAN BELT

Combines Flexibility With Tightness.



Made for all cars. Built of special Rubber Coated Fabric, vulcanized into a one-piece belt—wrapped cure process.

Dealers—Order Sample

The name of your supply house and 10c to cover postage and packing brings sample belt promptly. Our 32 page catalog FREE on request.

A. J. STEPHENS RUBBER CO.
1409 Chestnut St. Kansas City, Mo.

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CYLINDER RE-BORING—

Quickly—Easily—Profitably Handled

If you are not getting your share of this business you are overlooking the biggest chance you ever had.

Marvel Cylinder Re-Boring Machine No. 5

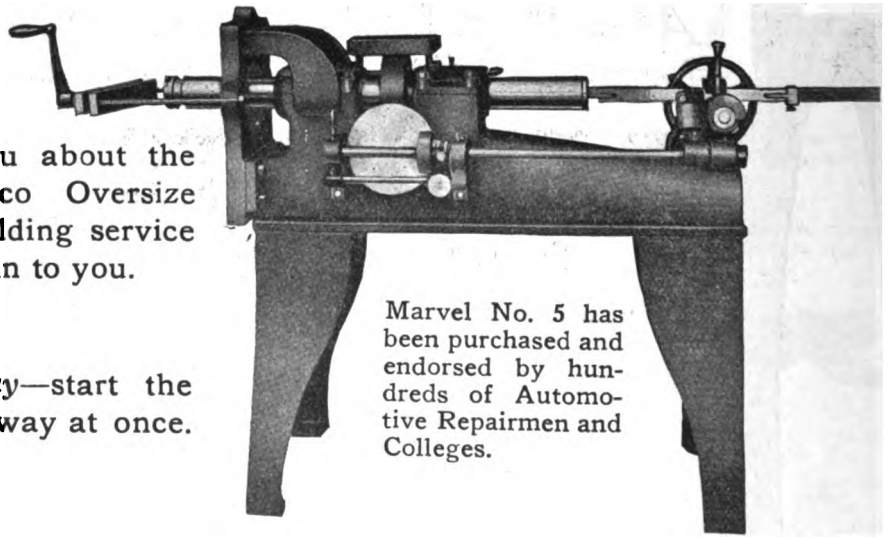
enables you to re-bore cylinders on any Gas engine from a Motor Cycle to a Tractor.

It is the most practical, convenient, substantial and accurate machine ever invented.

It has proven best by every test. It has speed and capacity. It is power driven and with its automatic feed release permits of a man doing other work while re-boring. It may be used for boring pulleys, gears, drive wheels and put to a hundred other uses.

Our co-operative Business Building Advertising helps you get the business—our Marcon Piston service helps you hold it.

You cannot go wrong with the Marvel—write at once for our proposition—we will gladly tell you about the Marvel No. 5—our Marco Oversize Pistons—our Business Building service and explain what they mean to you.



Marvel No. 5 has been purchased and endorsed by hundreds of Automotive Repairmen and Colleges.

MARCO PISTON SERVICE

Write today—start the profits your way at once.

Marvel Machinery Company

516 Loan & Trust Bldg., Minneapolis, Minn.

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The ACCESSORY and GARAGE JOURNAL

VOL. IX. PAWTUCKET, R. I., OCTOBER, 1919 No. 6

Great Interest in Jobbers' Show at Chicago

Representatives from All Over Country to Attend— Many New Devices Shown for First Time.

AS A preface to what is expected to prove the most successful year in the history of the automotive industry, the big exhibition and convention of the Automotive Equipment Association will be held in Medinah Temple, corner of Cass and Ohio streets, Chicago, the first week of November. More interest has been manifested than in any previous affair of this sort, and there is every reason to expect that the show and convention will be epoch-making from every angle.

Several hundred jobbers have promised to attend, and there will be a great influx of automobile men from all parts of the country. Weeks ago every inch of the space available for exhibition purposes was snapped up, and manufacturers are planning displays of unusual interest. Many brand new devices will be shown for the first time.

The first two days of the week, namely, Monday and Tuesday, Nov. 3 and 4, will be given over to the various meetings of the Board of Directors, Board of Governors and the committee meetings. The convention will open Wednesday at 9:30 a. m. and the sessions, on Thursday and Friday, will open at the same hour and close at 12:30. It is expected that the last session will be held Friday afternoon, but if an additional session is necessary it will be held Saturday morning at 9:30. The convention will take place in the auditorium.

In connection with, and on the first floor of the temple, on the same dates, namely, from Monday morning until noon time Saturday, the exhibition will be conducted. At this splendid show will be displayed the various types of accessories and the newest designs, models and inventions of automobile equipment.

The manufacturers will be prepared to supply their customers and the trade with lists, cuts and other information that will enable the jobbers to proceed immediately and arrange to have their catalogues out by Jan. 1, the great advantage of this being obvious to every jobber and dealer.

At the opening and closing of each session there will be an organ recital on the mammoth chime organ by Professor Kurzenknabe, the organist at the temple. At the adjournment of the convention at noon a substantial buffet luncheon will be served at the north end of the exhibit floor. The retailer or dealer will be admitted from 9:30 in the morning until noon.

New England jobbers have arranged to go to Chicago in two special cars, which will be attached to the Wolverine express, leaving Boston Saturday, Nov. 1, at 2 p. m., and which will arrive in Chicago at 3 p. m. Sunday. There will be about 55 from New England. This train will pick up many more jobbers at various points en route to Chicago. The New England party will be in charge of Thomas F. Wilson of the Apco Manufacturing Co., Provilence, R. I. Mr. Wilson also had charge of the party to the Hot Springs convention, and he made such a success of the affair that the New England jobbers insisted upon him taking charge of this one. The train carrying the jobbers will be known as the "Wilson Special."

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Paul G. Niehoff & Co., Chicago, will exhibit its line of electrical testing instruments, one of which has never been on the market before and which is an elaborate and complete testing outfit. It will be known as the Niehoff Test Kart. This outfit will test electrical equipment of every description on the car without taking anything apart. The company will also display a full line of ignition repair parts and brushes.

The Black & Decker Manufacturing Co.'s exhibit will include a complete line of Black & Decker lectrofiater electric drills and electric valve grinders. Actual electric air compressors, electric drills and electric valve grinders, cut out to show their construction and operation, will be demonstrated.

Warning Signals.

The E. A. Laboratories, Inc., Brooklyn, N. Y., will be at booth 85, with a display of its warning signals. The company makes a complete line of E. A. and Handphone, Newtone signals for passenger cars, motor trucks, motorcycles, etc. The Challoner Co., Oshkosh, Wis., will have its entire line of standard truck wheels, including the Smith steel wheel and the Dayton steel wheel in solid and pneumatic tires, also standard wooden wheels, including Ford wheels equipped with pneumatic and solid tires. Special devices for cushion wheels will be shown in connection with the Sewell wheels.

The Macbeth-Evans Glass Co., Pittsburgh, will show several of its lighthouse lenses and possibly some of the 30-inch mirrors which the company furnished the government for use on searchlights on war ships. The L. H. Gilmer Co., Philadelphia, will have its entire line of the Gilmer automotive equipment, fan belts, rebound straps, radiator and hood laces, anti-squeak frame and body linings, etc. The exhibit of the Pyrene Manufacturing Co., New York, will include Pyrene fire extinguishers, the Pyrene safety cleaner, Gardene fire extinguishers and Pyrene five-gallon pump tanks.

Curtis Pneumatic.

The Curtis Pneumatic Machinery Co., St. Louis, will exhibit its line of garage air compressors. The company will show all five sizes of simple machines to give an idea of the range of sizes, and in the complete outfits will show at least one size in each style of mounting. Two new styles of outfits will be included. The display will include a cut-out or sectionalized compressor, showing all working and moving parts.

Officials of the company who will attend will include Walter C. Hecker, vice president; L. C. Blake, advertising manager; Joseph Macksey, John D. Lodwick, J. F. D. Howell and William G. Kuehnel, sales engineers.

The Zinke Co., Chicago, will display a complete line of automobile lamps, including several advanced designs in head lamps. The Walker Manufacturing Co., Racine, Wis., will display Walker Badger automobile and truck jacks. Walker screw type jacks, Walker garage jacks, Walker Steelbilt shock absorbers and auxiliary radius rods for Ford cars. Its garage jacks will be shown for the first

Shock Absorbers.

The H & D Co., Inc., Goodland, Ind., will have on hand the first set of shock absorbers of the H & D type, made in a blacksmith shop in Goodland. The various steps of development in the H & D shock absorbers, both single and twin arm style, reaching culmination in the new one-piece steel shock absorbers and the shock absorbers for Ford one-ton trucks, will be shown.

Many New Devices Have Their First Showing

Among the new devices that will be shown at the A. E. A. show for the first time are the following:

New Sparkite contact for the K-W coil, the K-W Ignition Co., Cleveland.

New "Eazy" bolt clipper, the Metal Stamping Co., Long Island City, N. Y.

New zinc nickel finish for bumpers, which is claimed to be rust proof and immersed in rubberized transparent lacquer, the New Era Spring & Specialty Co., Grand Rapids, Mich.

Special tool for quick and neat cutting of holes in cowl boards of the late Ford models for the installation of speedometers, the Van Sicklen Speedometer Co., Elgin, Ill.

The "Reelite," a new portable lamp for use around garages and machine shops, the Anderson Electric Specialty Co., Chicago.

New single action tire pump and two new grease guns, the Sunderland Manufacturing Co., Chicago.

Two new bumpers, the Badger Manufacturing Corporation, Milwaukee.

New Eco Universal Motor Handling Machine, the Western Manufacturing Co., Oskaloosa, Ia.

Champion "Minute" spark plug cleaner, the Champion Spark Plug Co., Toledo.

The "Beamolite," a new windshield spotlight and the New Front Apron for Ford cars, the Motor Specialties Co., Waltham, Mass.

"MP" cables, Pedrick piston rings and "MP" spark plugs, the Motor Parts Co., Philadelphia.

New V type Shaler Roadlighter, the C. A. Shaler Co., Waupun, Wis.

New Goodrich coil lock, the Goodrich-Lenhart Manufacturing Co., Hamburg, Pa.

New line of truck jacks, the National Standard Co., Niles, Mich.

The Davies-Young Soap Co., Dayton, O., will exhibit its automobile soap. Its display will include the Buckeye Cleanser auto soap, put up in seven different sized packages, and the "Whiz" hand soap. The K-D Lamp Co., Cincinnati, will display its entire line of automobile lamps. The General Asbestos & Rubber Co., Charleston, S. C., wil have an interesting display of the Garco asbestos automobile specialties, with specimens of its materials in the various stages of manufacture.

The Shurnuff Manufacturing Co., St. Louis, Mo., has arranged for an attractive display of the Shurnuff specialties. The Edgar C. Guthard Co., Chicago, will exhibit Billmont master wrenches, Billmont socket holders and Billmont sockets. The Marvell Accessories Manufacturing Co., Cleveland, will display a new number, in the way of a traffic signal, for attachment to all makes of cars, and also its other products.

The Hill Pump Valve Co., Chicago, will exhibit the Utility line of heaters, consisting of the Utility protected heater for all cars, the Utility front seat heater for the front seat compartment, and the Utility Jr., heater for Ford cars. The exhibit will also include the Utility Sure-Grip pedals, designed especially for Ford cars. The Utility line of wrenches and automatic tire pumps will also be included.

Other Exhibits.

The Beneke & Kropf Manufacturing Co., Chicago, will exhibit the Rayfield carburetor and thermostat. The Tuthill Spring Co., Chicago, will show a complete assortment of Titanic springs, together with a testing device that will demonstrate the mechanical advantages of the Titanic type of spring construction. The Stiles-Gilliland Manufacturing Co., St. Louis, Mo., will demonstrate the Stiles fender straightener, the Stiles adjustable explosion whistle and the Stiles Liberty siren. The Stiles-Gilliland exhibit will be in charge of J. C. Stiles, president, assisted by E. S. Carmack, representative.

The Brunner Manufacturing Co., Utica, N. Y., has been assigned three spaces on one of the side aisles, and it will display four or five of its standard machines, including two new models. The company plans to equip its booth in such a way as to contribute to the comfort of the visitors, and will probably confine its mechanical exhibit to the five machines and a few wall boards, displaying its line of parts and fittings. G. L. Brunner, general manager; H. S. Atherton, Kansas City district manager; A. B. Jenkins, Cincinnati district manager, and J. H. Meehan, sales manager, will be in attendance.

The Dayton Wire Wheel Co., Dayton, O., will exhibit its latest type wheel for Ford, Chevrolet 490 and Overland Four cars and the Dayton wire wheel carriers. A complete assortment of parts, such as are used in the manufacture of Dayton quick detachable wire wheels, and a nice display of airplane wire wheels will also be included.

The Edison Lamp Works of the General Electric Co., Harrison, N. J., will make a general exhibit of Edison Mazda automobile lamps of the most popular types and sizes and a representative display of the company's advertising material prepared for and furnished to the dealers for their use. C. M. Bunnell, manager of the Miniature Lamp Department of the Edison Lamp Works, and his assistant, C. P. Metzger, will be in charge of the exhibit.

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The K-W Ignition Co., Cleveland, will be represented by C. Albracht, general manager, and A. Edmund Hanson of the sales department. The exhibit will include accessories such as the K-W autolock for the Ford car, K-W Ford coil units, K-W Fordson tractor units, contact points of Tungsten and the new Sparkite contact for the K-W Ford coil.

Victor Gaskets.

The Victor Manufacturing & Gasket Co., Chicago, will display gaskets known as the Victor super-quality copper asbestos cylinder head gaskets and other types, such as manifold, exhaust, closed, French, lug, etc. The display will be unique, as it will be the only one of its kind represented. A. C. Delson, sales and advertising manager, will be in charge.

The Van Briggle Motor Device Co., Indianapolis, has planned a display to show advance in efficiency, emphasize that simplicity is the keynote of progress and finally to impress upon the trade the effective simplicity of the Van Briggle carburetors and shock absorbers. The "P" line of carburetors, with the airplane principle, will be a feature. These "P" line carburetors are built in special models for the Dodge, Maxwell and Ford, and will be displayed and exhibited in an interesting, non-technical way.

The Metal Stamping Co., Long Island City, N. Y., will display the Lyon tire holder for Ford cars, the New "Eazy" bolt clipper, the "Handy" bolt clipper, Leakproof auto curtain lights, the Lyon resilient bumper and others of its products.

The Hall-Thompson Co., Hartford, Conn., will be represented by H. C. Thompson and T. A. Morel, and will have a complete line of its Wonder-Worker chemical automobile specialties.

Chas. O. Tingley & Co., Rahway, N. J., will display the C. O. T. automobile and cycle tire accessories.

Spring Bumpers.

The New Era Spring & Specialty Co., Grand Rapids, Mich., will exhibit New Era "Better" Spring Bumpers of double bar construction, with detachable arms, thus allowing free exchange of arms so the dealer or jobber need not carry any dead bumper stock. The company will introduce a new zinc nickel finish, which it claims is positively rust proof and immersed in rubberized transparent lacquer. The exhibit will also include a complete line of modern, quick operating, thief-proof and strapless tire carriers for every Ford need, also its "Instant" tire carrier for all makes of cars. Various styles of New Era "Better" springs will be shown and demonstrated on a machine that will straighten out flat the spring 3000 times, or over 20,000 times each day. New Era foot accelerators and the Moto Nose will be demonstrated.

The Splitdorf Electrical Co., Newark, N. J., will exhibit the following Splitdorf products: High-tension magnetos, green jacket spark plugs, peened piston rings, cable, electrical measuring instruments, high-tension magneto system for Ford cars, high-tension magneto system for Fordson tractors and the Master electrical primer.

The J. & B. Manufacturing Co., Pittsfield, Mass., will display its electrical and ignition specialties. The Bonney Vise and Tool Works, Inc., Allentown, Pa., will show its open end wrenches and other tools of the automotive nature. The Durkee-Atwood Co., Minneapolis, will have its complete line of Rie Nie products, featuring its fan belt, shellac, liquid radiator cement, auto patches, enamels and dressings.

The Howe Lamp & Manufacturing Co., Chicago, will have space number six, where it will exhibit the following Howe products: Searchlights, safety tail lamps, electric tail lamps, timer for Ford cars, fans for Ford cars.

Business Never Better Say All the Jobbers

There is good reason why everyone will be smiling happily at the big show of the Automobile Equipment Association in Chicago.

Business is splendid—it was never better.

And indications are that it will remain splendid for a mighty long time to come.

The manufacturers of automotive equipment and accessories report that they are simply overrun with orders.

They are having a hard time trying to catch up, but thus far they have not been able to keep pace with the flood of orders.

The jobber is happy, and so is the dealer.

Everyone appears to be perfectly satisfied.

The Dole Valve Co., Chicago, will display its full line of Dole double compression couplings, shut-off cocks and priming cups.

Air Compressors.

The Mayo-Skinner Manufacturing Co., Chicago, will exhibit five styles of hand tire pumps, three styles of hand grease guns and grease pumps, seven styles of stationary and portable compressors and two styles of oil can holders. Some of the air compressor outfits are too large for exhibit in the small space allotted to the company, but the essential parts will be there for inspection. More care and attention is being given this display than any previous one. Three of the items will be entirely new.

The Gemco Manufacturing Co., Milwaukee, will show practically its entire line, including the spring channel number and the full spring bumper. The Weaver Manufacturing Co., Springfield, Ill., will have spaces 108 and 109, where there will be a complete line of Weaver garage equipment. New items of Weaver equipment will be shown for the first time. Salesmen from the company's various territories, except the Pacific coast, will be present.

The National Standard Co., Niles, Mich., will exhibit its complete line of jacks and air compressors. A new line of truck jacks will be shown for the first time. The company is bringing out in small sizes a new feature of the ball bearing, encased, making the jacks unusually easy to operate. On some of the larger sizes will be shown the ratchet and geared type, the gears reducing the friction and making the jacks very easy of action. There will be some new features in the automobile jack line.

The Double Fabric Tire Co., Auburn, Ind., will occupy booths 28 and 29. The sales manager, C. L. Stebbens, with F. D. Higgins and Sam G. Biddle, will be on hand throughout the week, together with other representatives of the company, who will be there from time to time. The display will be devoted entirely to tire reinforcements, with the inside blowout patches, reliners and interlock and outer boots. Headquarters will be at the Congress Hotel.

The Motor Parts Co., Philadelphia, will exhibit at booth 81, main floor, three productions, which will be shown for the first time at any association exhibit. These are the "MP" cables, Pedrick piston rings and "MP" spark plugs. Large attractive display boards will give convincing arguments to the jobbers. The spark plug is brand new, the very first models being shown. The sales department will be represented by F. W. Wilkening and F. I. Fealy, both of Philadelphia; G. V. Swendeman, Atlanta, and A. C. Altree, San Francisco, and the engineering department by E. F. Dickieson.

The Heiser Special Tool Co., Kingston, Mo., will exhibit the Heiser improved cylinder reboring machine for Ford motors in space 140. The Bonney Vise & Tool Works, Allentown, Pa., will display vises and wrenches of all kinds.

Shaler Exhibit.

The C. A. Shaler Co., Waupun, Wis., will exhibit a complete line of tire vulcanizers. The new V type Shaler Roadlighter will be shown. Regarding the Roadlighter, the company states: "This is a radical departure from the usual dimming lens in that while it has passed highest in every official test required for the efficiency of dimming devices, it also has no superior as an illumination device and gives a driving light far superior to that obtained by the use of clear glass."

The Champion Ignition Co., Flint, Mich., will display AC spark plugs and AC magnetic speedometers. The company will be represented by Albert Champion, W. S. Isherwood and E. S. Cummings. The company's space is No. 137 and headquarters will be in rooms 1170-72 at the Congress Hotel.

The Goodrich-Lenhart Manufacturing Co., Hamburg, Pa., will exhibit practically all of its products, with one or two new articles. The new Goodrich coil lock will be shown for the first time. This lock has been designed to take the place of the popular ignition type of lock for the Ford car. The new type of Ford car, having the self-starter attachment, is so constructed that the old popular type of ignition lock cannot be used on it, whereas the new Goodrich lock, the maker announces, has just secured the approval of the Underwriters as suitable for the new car, as well as for the old type. This article is sold in a complete

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unit and entails no expense in attaching.

The A. Nelson Manufacturing Co., Chicago, maker of automobile parts and equipment, will have an interesting display.

Arrow Grip Devices.

The Arrow Grip Manufacturing Co., Glens Falls, N. Y., will display the Arrow Grip lifting jack for use in connection with passenger vehicles and also a complete exhibit of the Arrow Grip traction and non-skid device. The Van Sicklen Speedometer Co., Elgin, Ill., will have a complete line of Van Sicklen-Elgin speedometers for installation on Ford cars. An instrument made especially for the late Ford models, having an instrument board and starter installed on same, will be featured. The company announces that many Ford dealers have experienced trouble in installing speedometers on these cowl boards owing to same being covered with a heavy steel plate. Therefore, a special tool, which is economical and is made for quick and neat cutting of these holes, will be demonstrated.

The Peters & Herron Co., Columbus, O., will exhibit a full line of tire covers, radiator and hood covers, seat covers and top coverings for automobiles. The Anderson Electric Specialty Co., Chicago, will have a somewhat extensive display, but will specialize on the "Autoreelite" and the "Reelite." The model B "Autoreelite" represents an advance in automobile searchlight construction, combined with the exclusive Anderson patented "Reel-feature." The "Reelite" is a new portable lamp for use around garages and machine shops.

The Sunderland Manufacturing Co., Chicago, will show its line of Red Band tire pumps and, in the way of new articles, will have a new high class, single action pump and two new grease guns, which, the company announces, will be of entirely different construction from anything now on the market.

The L. P. Halladay Co., Streator, Ill., will show its complete line of bumpers, shock absorbers, tire holders, suit case carriers, can tippers and carbon tippers.

The Badger Manufacturing Corporation, Milwaukee, will show its complete line of bumpers, tire carriers, steering wheels, etc. The company has two brand new items in the bumper line which are expected to attract a great deal of attention. One of these, the company announces, is the biggest improvement brought out this year.

Walden-Worcester Display.

Walden-Worcester, Inc, Worcester, Mass, will have a general display of its line, and will be represented at the show by 12 members of the sales organization. The company's Chicago office is at 452 Monadnock building, and the representative will be registered at the LaSalle Hotel.

The Western Manufacturing Co., Oskaloosa, Ia., will have space 79 and will exhibit a full line of Eco air and water stations, engine stands and service stands. A special feature will be the first exhibition of the new Eco Universal Motor Handling Machine, which the company believes will be of special interest to the jobbers and dealers.

The Champion Spark Plug Co., Toledo, O., will have a general display of advertising and dealer helps for the benefit of the jobbers and retailers. The entire line of the company's spark plugs will be shown, together with the Champion "Minute" spark plug cleaner.

Albertson & Co., Sioux City, Ia., its complete line of Sioux tools designed to simplify the difficult and tedious automobile repairs.

Motor Specialties.

The Motor Specialties Co., Waltham, Mass., in addition to showing its complete line, will have one or two new specialties. The first of the special features will be the Beamolite, which is a windshield spotlight. All metal parts will be made of composition bronze, heavily nickeled, so that they will be rust proof. The instrument will be guaranteed to remain in any position regardless of the vibration of the car. It can be swung to any position, even backwards. The handle itself forms the switch. The other new offering is the New Front Apron for Ford cars. This device, the company states, changes the appearance of the Ford car, from the radiator down, making it look like a higher priced vehicle. It is shaped in such a way, it is said, that it induces a greater volume of air to pass through the radiator and prevents overheating of the motor. The list price is $6.50 east of the Mississippi and $7.50 west. Five salesmen will be at the show.

NEW M. A. M. A. MEMBERS.

At a meeting of the board of directors of the Motor and Accessory Manufacturers' Association at the New York offices the following companies were elected to membership:

American Hammered Piston Ring Co., Baltimore, Md.; Chicago Steel Wheel Co., Chicago; Corcoran Manufacturing Co., The, Cincinnati, O.; Iron City Products Co., Pittsburgh; Lawrence & Co., L., New York; National Clutch Co., Inc., Irvington-on-Hudson, N. Y.; Roberts Brass Manufacturing Co., Detroit; Schutte Body Co., Chas., Lancaster, Pa.; Sears-Cross Co., Brooklyn, N. Y.; Special Tool Engineering Co., Dayton, O.; Trexler Co., The, Philadelphia; Wellman, Seaver, Morgan Co., Akron, O.

Among other firms elected within the past two months are the following:

General Asbestos & Rubber Co., Charleston, S. C.; Hudson Motor Specialties Co., Philadelphia; McQuay-Norris Manufacturing Co., St. Louis, Mo.; Macbeth-Evans Glass Co., Pittsburgh; Midwest Engine Co., Indianapolis, Ind.; Northwestern Chemical Co., Marietta, O.; Perfection Heater & Manufacturing Co., Cleveland, O.; Story Rubber Co., New York; Toledo Steel Castings Co., Toledo, O.; Triplex Safety Glass Corporation of America, New York.

SCHRADER CASE DECISION RELATIVE TO PRICE FIXING.

A decision of importance to manufacturers of widely advertised products, with relation to the right of a manufacturer to fix the resale prices of his products, has just been handed down by Judge Westenhaver of the U. S. District Court of Ohio in the case of A. Schrader's Son, Inc., whom the Federal grand jury had indicted on the ground of certain contracts made by A. Schrader's Son, Inc., with the tire maker and jobber for the handling of its goods, which contracts fixed the prices at which the tire maker might sell to the jobber, retailer and consumer and the jobber might sell to the retailer and consumer.

A demurrer to this indictment was filed by A. Schrader's Son, Inc., which demurrer was recently reargued before Judge Westenhaver.

The government contended that the entering into of these contracts was an offense against the Sherman anti-trust law, and that the case was not controlled by the decision of the Supreme Court in the Colgate case, which held that a manufacturer could choose his own customers and announce in advance that it would deal only with such customers as maintained the prices fixed by the Colgate company.

The contention of the Schrader company was that there was no essential difference between its selling plan and that of the Colgate company, and that the mere fact that it announced its prices in a written license agreement which was signed by the tire makers and jobbers did not bring the case within the Sherman act.

The decision of Judge Westenhaver was in effect that the charges in the Schrader company indictment did not constitute a crime under the Sherman anti-trust act, and the indictment was accordingly dismissed.

The court refers to the fact that under the decisions in the Colgate case the manufacturer has the right to absolutely refuse to deal with anyone who does not maintain the prices indicated by him, and that the effect of this may be in some cases even to put the dealer out of business.

The Schrader company is engaged in the manufacture of tire valves, valve parts, tire pressure gauges and other accessories related to tires and marketed quantities of such devices through tire makers acting as wholesalers and through jobbers. Such goods are patented, but from the opinion of Judge Westerhaver it would appear that his decision would have been the same if the goods had not been patented.

It is apparent under this decision that if the Schrader company licensees do not observe the prices fixed, the Schrader company would be well within its rights to refuse to sell them any further products.

ASK WAR DEPARTMENT TO SELL SURPLUS AUTOMOBILES.

Republican House leaders at Washington have decided to abandon legislation authorizing the free distribution of army trucks and other motor equipment among the states for road building and have substituted a resolution requesting the War Department to sell this equipment, along with passenger automobiles, as soon as possible.

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Spicer Buys Parish and Sheldon Companies

The Spicer Manufacturing Corporation, a Virginia company, which is the largest manufacturer of universal joints and shafts for automobiles in the United States, has purchased the Parish Manufacturing Corporation and the Sheldon Axle and Spring Co. The Parish company, which has plants at Reading, Pa., and Detroit, Mich., is one of the largest manufacturers of frames for automobiles and trucks in the country and the Sheldon Axle and Spring Co. is the second largest manufacturer of axles. The acquisition of these two properties makes the Spicer corporation one of the most important factors in the automobile industry.

CONVENTION OF SERVICE MANAGERS NEXT MONTH.

The Service Managers' Convention will be held in the Hotel Statler, Detroit, Nov. 10, 11 and 12. General service policies will be discussed at the opening session and factory service organization in the afternoon. The morning session of the second day will be devoted to a discussion of service relations between factory and dealers and the afternoon meeting to the relations between distributors or dealers and customers. On the third day there will be excursions to factories.

SELLS KNOX PLANT.

The plant of the Knox Motors Co., Springfield, Mass., has been sold to Neil R. Sinclair of New York, president of the Militor Motors Corporation. The Knox company reserves the right to use a part of the building for its needs for a period of two years. The Knox company has been identified with the motor industry since its infancy and will continue the manufacture of its present products, as well as parts for its former models, at the Springfield plant. It is understood the company is considering plans for expansion.

NEW FIRESTONE RIM PLANT.

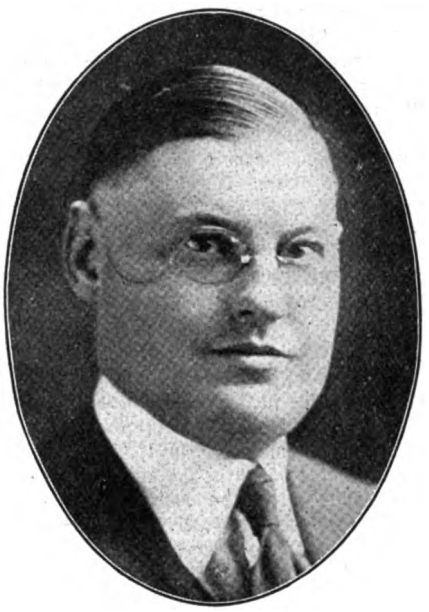
Work has been started on a new $1,000,000 plant in the group of Firestone factories at Akron, O. The new plant will house the Firestone Steel Products Co., which annually makes approximately 1,250,000 demountable rims for pneumatic automobile tires and 65 per cent. of the steel bases used in the United States for solid truck tires.

MUST CHANGE NAME.

Finding that the similarity in the trade names, "Universal Battery Service Co.," adopted by James B. Shafer, Chicago, dealing in automobile storage batteries, and "Universal Battery Co., the name of a previously established Illinois corporation, has caused confusion among purchasers and has deceived and misled the general public, the Federal Trade Commission has ordered Shafer to discontinue use of the word "universal" in connection with the manufacture or sale of storage batteries.

NEVILLE NAMED SALES MANAGER FOR HINKLEY MOTORS.

The appointment of Charles A. Neville as sales manager of the Hinkley Motors



CHARLES A. NEVILLE.

Corporation is announced by President C. C. Hinkley. Mr. Neville joined the Hinkley staff soon after the organization of the company. His promotion is the result of successful result getting effort in the sales department, of which he has now become the head.

BEARINGS MERGER.

A new $10,000,000 Delaware company, the Standard Steel and Bearings, Inc., will combine all the Marlin-Rockwell factories into one big operating concern. The plants to be merged are: Standard Roller Bearing Co., Philadelphia; Braeburn Steel Co., Pittsburgh; Rockwell-Drake Bearings Division, Plainville; Willow Street and Hamden Divisions, New Haven and Norwich Division. Several sales offices are to be centralized ultimately in New York.

Announcement has been made that the executive offices will be at 347 Madison avenue, New York.

STANDARD BRANCH IN NEW YORK.

The Standard Steel Car Co., Pittsburgh, manufacturer of the Standard Eight, has purchased the interest of the Taylor Motors Corporation, 1920 Broadway, New York, and will open there a direct factory branch. E. C. Johnson, vice president of the old company, who since his return from overseas service has had the management of the old business, has been appointed general manager of the new branch.

Fordson Tractors to Be Sold Direct to Dealers

Fordson tractors will be sold direct to the dealer after Aug. 1, 1920, when the present plan of handling them through authorized distributors will be discontinued. The change conforms to the policy of some tractor makers in eliminating the distributors in favor of the branch house plan of distribution. It is expected that selling costs will be reduced. When Henry Ford & Son began the sale of the Fordson last year Ford car dealers were in most instances given preference when distributors were appointed. However, some organizations that did not deal in cars were given rich territory.

HASKELL ASSISTANT GENERAL SALES MANAGER FOR GRANT.

The Grant Motor Car Corporation, Cleveland, announces that J. A. Haskell, formerly of Chicago and Des Moines, who has been connected with the Grant sales department, has been made assistant general sales manager by George S. Waite, general sales manager. Before joining the Grant organization Mr. Haskell was assistant branch manager for the Studebaker Corporation in Chicago and later branch manager for the same organization in Des Moines. Mr. Haskell will devote his energies to detail and field work in the powerful sales and service organization established by Mr. Waite. The new Grant Six is in the hands of dealers in all parts of the country. The 1920 car has an entirely new hood and long, low lines, and, as compared with its predecessor, has a longer wheelbase, a wider power range, greater flexibility and a more artistic appearance.

BEGGAR MUST SELL CAR.

Michael Stark, 23 years old, was ordered by a Brooklyn, N. Y., police court to sell the automobile he had bought with his "earnings" as a street beggar and donate the proceeds of the sale to the Red Cross.

BLACK & DECKER MOVES.

General offices of the Black & Decker Manufacturing Co. have been moved from 105 South Calvert street, Baltimore, Md., to Towson Heights, Baltimore.

STUDEBAKER CAPITAL INCREASE.

The Studebaker Corporation plans to increase its capital from $30,000,000 to $75,000,000. It is planned to issue $15,000,000 immediately.

GARAGES FOR SCHOOLS.

It is no longer unusual to see garages being built at the rear of high schools, as well as private schools, for the cars of scholars who drive to school.

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National Shows to Break Record

EVERY indication is that the national automobile shows, to be held in New York and Chicago under the auspices of the National Automobile Chamber of Commerce, will be the greatest ever held. A record list of exhibitors is already assured. There will be at least 87 different makes of passenger cars and 60 makes of trucks. The display of accessories will be the biggest ever. At least a dozen makes of new cars will be shown for the first time.

The New York show will be held during the week of Jan. 3 to 10. Grand Central Palace will house the exhibits of passenger cars and accessories. Motor trucks and sundries will be shown in the Eighth Coast Artillery Armory, Kingsbridge road and 194th street. A big transportation conference will be held in the armory in connection with the show. The Chicago show will be held Jan. 24-31.

The following makes of passenger cars will be exhibited at both the New York and Chicago shows:

Allen, Amalgamated, American Beauty, Anderson, Apperson, Auburn, Biddle, Briscoe, Buick, Cadillac, Case, Chalmers, Chandler, Cole, Chevrolet, Cleveland, Columbia, Comet, Commonwealth, Crow-Elkhart, Davis, Detroit Electric, Dixie Flyer, Dodge Bros., Dorris, Dort, Elcar, Elgin, Essex, Fiat, Franklin, Grant, Haynes, Hollier, Holmes, Hudson, Hupmobile, Jackson, Jordan, King, Kissel Kar, Leach, Lexington, Liberty, McFarlan, Maibohm, Marmon, Maxwell, Mercer, Milburn Electric, Mitchell, Moline-Knight, Monitor, Moon, Nash, National, Oakland, Oldsmobile, Olympian, Overland, Owen-Magnetic, Packard, Paige, Paterson, Peerless, Pierce-Arrow, Premier, Reo, Roamer, Saxon, Sayers, Scripps-Booth, Standard, Stanley, Stearns-Knight, Stephens Six, Stevens-Duryea, Studebaker, Stutz, Templar, Velie, Westcott, Willys-Knight and Winton.

The Kline Kar will be exhibited at New York only, while the Pilot and Monroe will exhibit at Chicago only.

N. A. C. C. BANQUET.

The grand ball room of the Commodore Hotel in New York has been engaged for the annual banquet of the National Automobile Chamber of Commerce to be held on Tuesday evening, Jan. 6, which is during the New York Automobile Show.

Besides the one speaker which it is customary to have at N. A. C. C. affairs, there will be a presentation of awards to individuals who have rendered important service to the industry during the past 12 months and an original play on timely topics in the industry written and staged by Fred E. Dayton, vice president of the Ajax Rubber Co., and Henry Caldwell, automobile editor of the New York Herald.

With the additional accommodations that the ball room provides, it will be possible to care for a number of men in the industry aside from the motor car and motor truck makers who are members of the N. A. C. C. Balcony seats will be provided for ladies who wish to attend.

IMPLEMENT MEN URGED TO SELL CARS AND TRUCKS.

The National Federation of Retail Implement and Vehicle Dealers' Associations, at the national convention in Chicago, adopted resolutions protesting the sale of especially built power farm equipment to tractor dealers who are not connected with the regular implement trade. It was resolved that the business of the retail implement dealer will fail unless he takes on the tractor, the passenger car and the motor truck, and that tractor makers should not crowd tractor agencies in too closely.

NATIONAL AUTO CHAMBER GETS THREE NEW MEMBERS.

The Daniels Motor Car Co., Reading, Pa.; the William Small Co., Indianapolis, maker of the Monroe, and the Templar Motors Corporation, Cleveland, have been elected members of the National Automobile Chamber of Commerce, making the total membership 120.

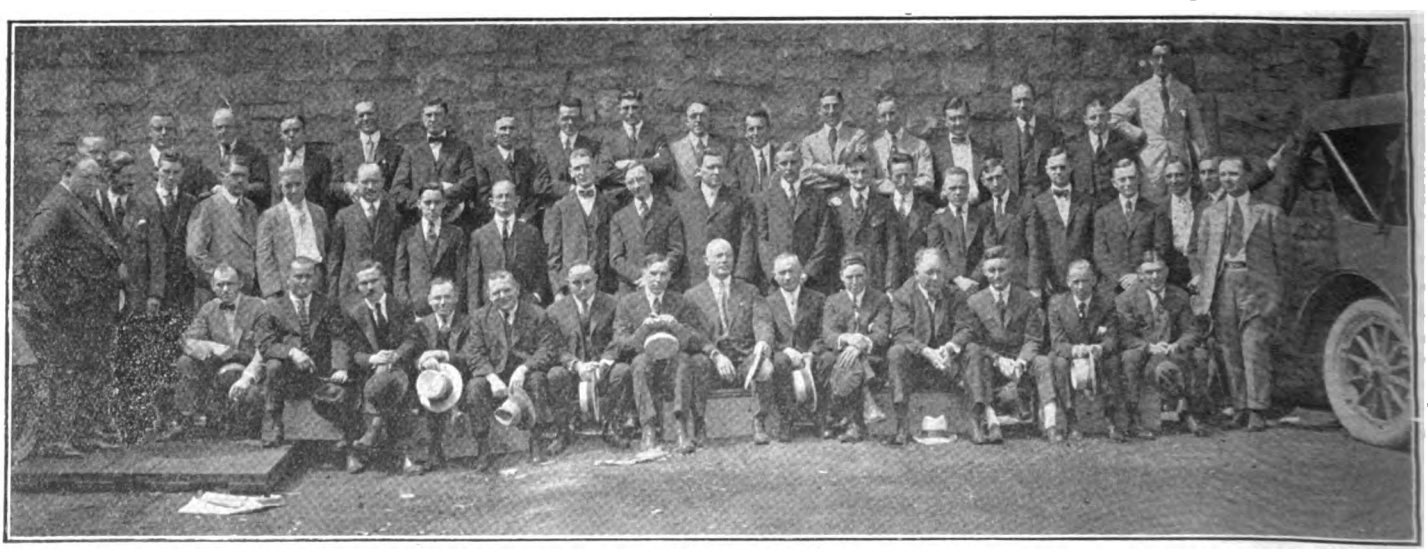
NEW STERLING BUILDING.

Visitors at the Automotive Equipment Association exhibition will see a large photograph of the new factory building of the Sterling Manufacturing Co., Cleveland, O. This building was made necessary by greatly increased business. It is three stories high, 65x100 feet. The building will be devoted to the manufacture of the company's small instruments. Business has been developed not only throughout North America, but in all parts of the world. The new structure is on Prospect avenue, in the heart of the new automotive section of Cleveland. A three-story office building is planned.

At the Chicago show the company will show, in addition to its regular line of pocket and dash ammeters, special instruments made for the Ford Motor Co., Buick Motor Co., F. B. Stearns Co. and the John O. Heinze Co.

The company has made arrangements to make the exhibit educational, as well as interesting.

Gill Branch Managers Attend Convention in Chicago



The Accompanying Photograph Shows a Group of Branch Managers Who Attended the Recent Convention of the Gill Manufacturing Co. in Chicago. The Company Has Branches in Practically All Important Cities from Coast to Coast, and More Than 50 of Its Representatives Attended.

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How the Service Station Should Be Operated

Willys-Overland Co. Outlines the Fundamental Principles for Organization and Underlying Policies--Suitable for Any Size Establishment.

THE following has been prepared by the Willys-Overland Co. for the benefit of those who conduct its sales and service stations in various cities throughout the country:

What is service? In the entire automobile dictionary there is no more abused, misused and misunderstood word than "service." By some car owners it has been interpreted to mean free adjustments, free repairs and even parts without cost. For the dealer it often means a large overhead expense on which there is little or no direct financial return.

Yet no single factor of a dealer's business can be made to contribute as much toward his reputation and success as the proper administration of this most vital department, besides being made to add to the profit side of his ledger.

No matter how good a car the dealer sells today, if the buyer does not receive the value he anticipates — within the bounds of reason, of course—he will not consider another car of the same make when next he is in the market for an automobile. It is in a great measure up to the dealer's service department to assist the customer to get maximum efficiency out of his car at minimum expense.

But this does not necessarily involve the giving of something for nothing. On the contrary, the dealer only weakens his reputation when he gives something to which the owner is not justly entitled. He will create more respect for himself through businesslike, though firm methods, than through liberal, but loose dealings. There are times when a dealer may desire to make a policy adjustment, which may consist of free labor or parts, but the facts of the case should always warrant such action, and should be so explained to the customer.

Never lose sight of the fact that the service department, like the sales department, has something to sell and fully as much care should be devoted to the proper disposal of its goods as is used in the selling of automobiles.

The policy underlying the operation of a service department has never been as clearly defined as it should be. In consequence every dealer has his own method of taking care of this end of his business.

Our idea as to a proper service policy, evolved not only from our actual experience with service problems, but also from the experience of hundreds of our distributors and dealers, is:

First, the car should be thoroughly inspected before delivery to make sure that everything is in the best of order and complete as to equipment.

Second, the purchaser should be carefully instructed as to operation and maintenance of his car.

Third, there should be available a well assorted supply of repair parts.

Fourth, courteous and prompt attention should be given to every customer and capable mechanical attention should always be available, when required, for a proper remuneration.

We believe that this is the kind of service every dealer should aim to have available for his customers and that adherence to such a policy will insure complete and lasting satisfaction to every owner.

Service Organization.

It is impossible to lay down a hard and fast system covering the operation of a service department, as each dealer has to be guided entirely by the volume of his business and by local conditions. But in the following pages of this section we have endeavored to mention some principles of successful service, both from the owners' and dealers' viewpoints.

This does not imply that we expect every dealer to do all that we recommend here. Some dealers' business does not warrant such extensive establishments as we make reference to. But we outline the fundamental principles of a service organization and its underlying policies. These, we feel, can be readily adapted to a one-man garage, yet are so flexible that they can be used with greatest satisfaction by the largest Willys-Overland distributors and dealers. Although we have specified the duties and responsibilities of several positions, these can be allotted to one, two, four or as many men as the size of the business warrants.

Service Manager.

Duties and responsibilities. The head of the service department should have charge of all work in connection with its management and direction. This should include loading and unloading of new cars and their necessary conditioning and delivery to customers, wholesale and retail. Some dealers have also found it advisable to make the service manager

Taken by Order Taker — REPAIR ORDER AND INVOICE — R. A. 9583

DEALER'S NAME (Address)

Name Car Owner — Date 1-30-19 — Mileage 5800

Time 9 00 A.M. P.M. — Date of Sale 4-25-18

Address 460 Washington ave — Model 55 4 T — License No. 380576

Car No. 43757 — Customer's Tel. No. Main 875

INSTRUCTIONS	Charge P.	Charge L.	No Charge P.	No Charge L.	Estimate
① Install New Flywheel	X	X			25 00
② Install 2 New Push Rods			I-P		
③ Wash Car & Polish		X			1 50
					26 50

TERMS NET CASH — We will only do work as above unless written instructions are given for additional work. — Signature Car Owner

Fig. 1-A

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R.A. Nº 9583

NAME Car Owner.

DATE 1-20-19.

ADDRESS 460 Washington avenue.

Req. No.	Part No.	NAME OF PART	Quantity	Price	Amount	Total
4751	13973	Flywheel	1	15 75	15 75	15 75
	11300	Push rods	2	No Charge-Guarantee.		
		Labor - Flywheel			9 25	25 00
		Labor - Push rods		No Charge - Policy		
		Wash Car and Polish			1 50	26 50
		Total				26 50

Fig. 1-B

responsible for all repairs and adjustments necessary in the conditioning of used cars for delivery, except the final adjustments usually done under the direction of the used car department.

His other responsibilities should be supervising all repairs and adjustments on customer's cars; responsibility for building maintenance; care and upkeep of company's car equipment, including demonstrators and service cars; care and conditioning of new and used car stock.

In the final analysis the service manager should be responsible for the employment, discipline and proper direction of all employees under his supervision, and is to see that they are familiar with the duties assigned them and have proper knowledge of the various forms that they use and come in contact with.

Guarantee and policy. All questions of guarantee and policy should be submitted to the service manager for interpretation and settlement, as well as all work done over, free of charge to the owner. The latitude of these decisions is regulated by the management. The interpretation of guarantee and policy should be watched with care as these are sources of expense which reflect greatly on the ability of the service manager. Hold strictly to the wording and spirit of the Willys-Overland warranty. It is at times, however, a matter of judgment in individual cases. In passing on a case have all the facts before you, particularly date of sale, mileage and all other circumstances that may influence the decision. Policy is a matter that should be handled with utmost care to avoid expense and each case should be treated individually, considering all facts as in the case of the warranty. Matters of policy, involving expense, should always be referred to the proper authority.

Complaints. The subject of properly handling complaints is of greatest importance to the service department. Never assume that the customer is wrong in his contention, but analyze the case thoroughly and try to convince him of the facts of the case, if you feel certain that you are right. On the other hand, should there be an element of doubt, the customer should be given the benefit of it.

If a case is decided in favor of the customer, it should not be done in such a manner that the customer receives the impression that he is receiving something for nothing; he should be told that what he gets he is entitled to by the merits of the case.

Courtesy costs nothing, yet the lack of it is expensive to any organization. Do not tolerate any individual discourteous attitude on the part of subordinates who come in contact with customers.

Prompt and personal contact with customers in settling complaints is of great value. Lengthy correspondence is to be avoided.

Order Taker or Service Salesman.

Duties and responsibilities. There is no position in the entire service department quite as important as this task as nearly all the service complaints that the dealer will experience can be traced back to the taking of the owner's order. Either the owner's word for the difficulty may have been taken and the repair made that he specified, when something else was at fault; or else, the owner's directions may not have been specific enough and much work done that was not called for; or, as has often happened, an attempt has been made to correct imaginary troubles in the motor car, merely because the owner thought his car was not running properly, no doubt due to improper driving methods. And there are the many instances when the owner drove into the service station and wanted his motor torn down, when all that was required was regrinding of valves, removing of carbon from the cylinders, or some comparatively slight repair or adjustment.

All customers should be waited upon promptly, courteously and in turn as they enter the service station. The order taker must appreciate the value of a customer and his good will in the expansion of the dealer's business.

The order taker should be competent to discuss with a customer the troubles which he has with his car, or if he is not, there should be a competent tester to diagnose the complaint.

If the trouble has to be located it is well to have the customer go out on the road with the order taker or tester, as in this way an intelligent order can be written up to correct trouble complained of. Very often a small adjustment or instructions that can be given to a customer on such a road inspection will correct the trouble, whether real or imaginary.

It is therefore necessary that the best mechanical skill available should be employed in diagnosing troubles. Care should be taken in filling such positions to see that men are in every way qualified to make correct diagnoses, as inaccuracy in this respect means needless expense to the owner and dealer.

Caution and tact are required in diagnosing as the impression of the customer as to the source of his mechanical troubles is not always correct, and it will be often necessary to point out to a customer with great tact the actual facts in the case. It may even be advisable to request the owner to drive his own car in order to be sure that what he considers the trouble may not be due to the way in which he drives or handles his own car.

How to Write an Order Properly.

An order should be written up clearly and distinctly. The first important step is to get the customer's name, address and telephone number correctly. If he does not have a telephone, arrange with him so as to be able to get in touch with him in event that you require additional instructions in the process of the repair job.

The next step is to indicate model, serial number, mileage and date of sale, as this information will be of value in deciding questions of policy and guarantee. All questions of guarantee, policy, work done over, or other circumstances which involve the dealer's responsibility, should be settled with a customer before work is started. Exceptions, of course, are in order when the conditions complained of are subject to shop inspection upon disassembly of parts. Such conditions must be plainly indicated in the repair order.

Above all things when repair order is written up it should be signed by the customer or confirmed in writing.

When the customer's order has been written up, if he is not satisfied with the decision or with the explanation of the order taker concerning warranty, policy, etc., the order taker should refer him to the service manager for settlement.

THIS IS YOUR INVOICE

R.A. Nº 9583

NAME Mr. Car Owner

DATE 2-8-19.

ADDRESS 460 Washington Avenue

Req. No.	Part No.	NAME OF PART	Quantity	Price	Amount	Total
		To Repairs as Specified				

Fig. 1-C

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Repair items should be grouped under proper headings, such as motor, clutch, steering, brakes, rear end, etc., to facilitate handling in the repair shop.

Paint and trim work should be grouped separately.

In writing up electrical work care should be used to state whether trouble is in ignition, starting motor, generator or lighting circuits. Common errors are made in writing up an order such as "take knock out of motor" or "repair electrical systems." It can be seen that a broad order of this kind can run up expense without limit, as the first may involve tearing down the entire motor, and the second overhauling of the entire electrical system.

Hence, when a proper test, whether road or floor, is necessary to determine condition, it is well in cases involving expense of this kind, to dismantle the motor in the shop, sufficiently to make an inspection. After such an inspection a report can be made to the customer in order to secure instructions as to whether he wants a thorough overhauling of the entire motor, or just a light overhauling, such as tightening up bearings, putting in wristpins, etc., for further service. Service salesmanship enters largely into the question here, for the customer's order and the satisfaction he is going to experience with the completed job, are going to depend on the way repairs are sold to him.

When recommending repairs, bear in mind that you should endeavor to save the customer all possible expense. Don't induce him to go into extensive repairs when they can be avoided. Always consider his interests as though you were spending your own money. While this comment has referred only to the motor, the same policy should apply to any part of the car where repairs are involved.

Additional orders to original should be discussed with customers with utmost care and proper authority obtained to go ahead with additional work.

REPAIR SHOP REQUISITION

TO THE STOREKEEPER 1-30 1919

PLEASE FURNISH THE FOLLOWING FOR USE ON REPAIR ORDER NO. 9583

PART NO.	MODEL	DESCRIPTION	QUANTITY	PRICE EACH	TOTAL AMOUNT	COST
11300	85-4	Push Rods	4			

Guarantee
Ok Service Manager

RECEIVED BY _____ DEPT. NO. _____

SIGNATURE _____

Fig. 3-A

Estimates. After an order is taken clearly and specifically the next important step is the matter of price. A customer should be quoted a price before work is started, as this will avoid controversy when the bill is presented.

Care should be taken to avoid the necessity for additional orders, except when a customer is quoted a "lead" price for dismantling the car or parts to see the extent of repairs that will be necessary. So that no criticism shall be aroused from the customer by additional orders, order taking should be as complete as possible in the first instance.

Delivery promises. When promises are given to a customer they should be lived up to. Do not promise the impossible nor take a chance on the completion of the job. If you find that a promise cannot be kept, due to unforeseen circumstances, notify the customer in advance. It is very bad business to promise delivery at a certain time to a customer and have him find after making a special trip to the service station, that his car is not ready. It is just such instances that bring service stations into ill repute.

Care of customer's equipment and tools. The question of checking the customer's tools and equipment is an important one, as it is very easy for much of this material to be lost while the car is being repaired. Some service stations employ the simple expedient of marking the equipment and tools on the repair order. To hold this equipment it is often satisfactory to lock it up in a suitable locker for this purpose. However, it is not advisable to establish an elaborate system of checking as the losses probably would not always warrant it.

Robes and wearing apparel should be removed before sending the car to the shop, even for small jobs.

When a car is sent to the shop for overhauling it is good practise to make a complete check and remove all owners' equipment and tools. It is important also to note scratches, dents or blemishes, as this avoids controversy with the customer, in case he claims damage had been done while in the service station. By properly checking over a car in this manner much annoyance to the customer and loss to the dealer in making good such claims may be averted.

It is good practise to securely attach shop copy of repair order to the front end of the car in a suitable holder. It is also advisable to attach to the car an identification tag, with customers' name, model number, date received and date completed, which should stay on the car through process of repairs and until delivery. This tag serves to identify the cars awaiting delivery and facilitates

7:30 to 11:30
12:30 to 5:30

WORK TICKET

Customer's Name J. Jones
Employee's No. 12
R. A. No. 9583
Date 1-31-19

WORK TO BE DONE

	Hours Charge	Hours No Chg.	Account
Install new Flywheel			
Install 2 Push Rods			

O. K. _____ Foreman

RETURN THIS SLIP TO FOREMAN WHEN LEAVING JOB

Fig. 2

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REPAIR SHOP CREDIT REQUISITION

1-30 1919

TO THE STOREKEEPER:

CREDIT REPAIR ORDER NO. 9583. WITH THE FOLLOWING STOCK RETURNED HEREWITH:

REASON FOR RETURN Only 2 Needed RETURN AUTHORIZED BY

PART NO.	MODEL	DESCRIPTION	QUANTITY	PRICE EACH	TOTAL AMOUNT	COST
11300	854	Push Rods				
		Guarantee				

RECEIVED THE ABOVE IN GOOD CONDITION

STOREKEEPER

Fig. 3-B

collection of storage charge on cars not called for promptly after completion of repairs.

Shop Foreman.

Duties and responsibilities. The shop foreman should be thoroughly familiar with the routine and handling of various forms that have to do with shop work.

It is important that work tickets, requisitions and shop purchase orders are made out intelligently. The making out of the work tickets should be centralized in the shop as much as practical. When possible a time clock should be used to indicate in and out time of a job.

Operation time should be marked on the work tickets, particularly where warranty or policy, etc., has to be separated for information of the billing clerk or bookkeeper.

The shop foreman should be consulted at all times as to promises on work in process, or work to be sent to the shop when a promise is desired. Much confusion is caused by the service officer or order taker continuing to accept work for the shop when there is already a waiting list. Dissatisfaction among customers is the result of accepting jobs for repairs without explanation as to the possibility of delays, due to the pressure of work already on hand.

Where the volume of work is sufficient to justify such procedure, mechanical work in the shop should be divided and grouped, such as motor, clutch, steering, transmission and differential, electrical, etc. Better results are obtained by arranging the men in gangs or units for the various repair work; in other words, specialize your men, as this makes for better efficiency and more volume. Naturally, this division of labor is also governed by the amount of work handled by the service department.

The shop foreman should see that all work performed under his supervision is done properly, economically and promptly by competent mechanics; he should see that the shop equipment and tools are kept in order and repair; and should make necessary recommendations for improvements from time to time. He should keep in touch with the repair sections of this manual and see that all of his mechanics are familiar with this information.

Shop tools and tool room. Special attention should be given to the tool room and its equipment. A monthly inventory should be taken. All tools loaned out to workmen should be handled on a check system. Tools loaned out during the week should be returned to the tool room on the last day of the week. The tool room of the repair shop is often called "the eye of the shop" and its care and upkeep often tells how a shop is run.

The tool room should be enclosed and locked, with a responsible person in charge. Care should be taken to prevent equipment and tools being removed from customers or company cars without authority, while in the shop.

Keep Shop Clean and In Order.

A clean shop is very essential and an asset to the service department. This can be obtained by prompt disposition of discarded material when removed from cars. Parts taken from cars during repairs should be placed in suitable boxes provided for that purpose. It often happens that material from dismantled cars is placed on the running boards or on the floor, only to be lost and replaced at shop expense.

No shop job can be considered complete and closed until all parts remaining have been removed and properly disposed of. Particular attention should be directed to the return of old parts under guarantee, as losses to the dealer result from failure to do so. Brass, copper, aluminum, etc., should be placed in a suitable box, securely locked and not left indiscriminately around the shop. Scrap, not passed by the part auditor, should be disposed of at the best possible prices.

Disposition of old parts, not under guarantee, removed from customers' cars, should be obtained through the service office. This, of course, does not apply to the average job, but only where extensive repairs have been made.

A daily list of parts not in stock for which repairs on cars are being held up should be sent by the shop foreman to the service office, so that necessary effort can be made to hasten delivery of these parts either from the factory or distributor. A sufficient number of fire extinguishers and boxes of sand should be provided in case of fire. Rags and waste should be kept in metal cans. Workmen's clothes and overalls should be kept in suitable lockers, minimizing danger of fire.

No customer should be allowed to enter the shop. Where it is necessary for a customer to go into the shop, passes should be provided, unless he is accompanied by some authorized employee from the service office.

Chief Clerk of Parts Department.

Duties and responsibilities. The chief clerk of the parts department should be responsible for the preparation of claims

R. A. No. 9583

Customer's Name Car owner License 3805 X

Date Completed 2-2-19 Car No. 43261

Date Promised 2-2-19 Model 85-4 Type T

REPAIR ORDER ENVELOPE

Fig. 4

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against the factory for defective material and the claim record thereof, interpretation of customer's order when received by mail, the approved orders for parts for stock and the correct pricing of all parts and repair sales.

Parts and accessories are of vital importance in the successful management and conduct of business, both in selling and service.

Customers should be waited on promptly and courteously. Intelligent control and handling of stock is accomplished largely by constant vigilance in keeping the stock inventory cards. Stock rooms should be kept securely locked, properly safeguarded and no unauthorized persons should be allowed in them.

No parts or materials are to be delivered without the proper requisitions or forms, duly signed by authorized employees, and on a cash or credit transaction. Credit is to be established through proper authority. Stock rooms should be kept in good order, with particular attention to their cleanliness. Care should be taken to prevent fire hazards. Particular attention is directed to the shipping and packing rooms. A metal or metal lined box is desirable for storing excelsior used in packing. A sufficient quantity of fire extinguishers should be maintained in the stock rooms.

All speed and attention should be given to the filling of shop requisitions to avoid unnecessary delays in repair or replacement jobs.

In handling returned goods on guarantee material, care should be given to getting the correct information so that intelligent claims can be made out. Intelligent handling of claims on guarantees will have a very important influence in controlling service expense.

Minimum and maximum figures on inventory cards should be watched most carefully and excess current or obsolete parts should be promptly returned to the factory.

Cabinet containing parts inventory cards should be securely locked during all periods other than business hours, so as to prevent access to them by unauthorized persons.

Garage.

Proper grouping of cars. The garage of a service station should be neat, clean and orderly and should be provided with proper fire protection. Cars should be grouped and placed in spaces assigned as far as practical, as follows:

Demonstrating and company cars, service trucks, customers' cars waiting to be sent to the shop for repairs and cars which have been repaired and are awaiting delivery to customers.

How embarrassing to the dealer it is to have a customer call for his car after work on it has been completed and then to be notified that it cannot be located and that several employees are searching for it. This reflects on the management.

Keep aisles clear to avoid accident and damage.

The floormen or car movers, if you employ them, should be responsible for keeping the cars in proper spaces.

A list of all cars on which work has been completed should be kept in the service office with their location.

Releasing repaired cars. The outgoing door of the garage should be properly protected by some one responsible to prevent cars from leaving the building without proper authority. A pass or release system should be in force. In establishing such a system care should be taken to see that responsible employees issue them, and that a list of the person authorized to issue passes be given to the door man.

Passes must be signed by the cashier, releasing deliveries of customers' cars on which repairs have been made.

Special "no work" passes should be issued by the service office on customers' cars that come into the garage for information or small adjustments for which no repair order is issued.

Test and inspection. All cars on which repairs and adjustments have been completed should be properly tested and inspected before being turned over to the customer.

Upon completion of the inspection the tester should O. K. the shop job card attached to the car and sign it. The car should not be returned to the shop for such minor details and adjustments as the tester can perform while testing the car.

Should any further trouble show up in the test that was not covered by the order, or that developed through circumstances for which the dealer's establishment was not at fault, the service manager should be notified so that he can advise the customer and secure additional instructions.

A vital feature in the test before O. K.'ing the car is to see that floor boards, running boards, upholstery, steering wheels, etc., are clean.

No matter how satisfactory the job was that is performed by the repair man the customer is anything but pleased when he receives a car soiled with oil and grease. Some of our dealers also have a very commendable practise of cleaning the motor and washing each car that comes in for repairs before delivery to the customer.

The customer who receives a car in the same muddy and dirty condition that he turned it in may get the impression that the repairs he specified may not have been done; but if he receives a car that has been washed and cleaned, with a spick and span motor, as a rule he will be readier to pay the extra sum for the cleaning, which can be included in the repair charge, than he would be to pay the price for the repair and receive the car covered with the same grime as when he turned it in. While this applies more particularly to cars which come in for heavy repairs, yet such a practise on all

Date 1-31-19 Name	R.A.	R.A.	R.A.	R.A.	R.A.	R.A.	R.A.	Total R.A. Time	Clock Card Time	Elapsed Time	Reason
J. Jones	9583										
Time	9							9	9		
H. Smith	9585	9587	9586	9587	9588						
Time	1	3	½	2	2			8½	9	½	No Work
B. Allen	9589	9590									
Time	2	1						3	3		Sick
Time											
Time											
Time											
Time											
Time											
Time											
Time											
Time											
Time											
Time											
TOTAL								20½	21	½	

Fig. 6

CUSTOMER (Car owner - 460 Washington ave)							
CAR No. 43251		MODEL 85-4.		TYPE Touring			
DATE	REPAIR ORDER	DATE	REPAIR ORDER	DATE	REPAIR ORDER	DATE	REPAIR ORDER
[illegible]	7650						
[illegible]	4583						

Fig. 5

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DAILY REPORT OF ESTIMATES

DATE 2-1 191 9

R. A. No	OWNER'S NAME	ESTIMATE PRICE	PRICE ACCORD TO TIME LABOR	PRICE ACCORD TO TIME MATERIAL	PRICE CHARGED	GAIN	LOSS
9583	Car Owner	26 50	6 00	16 76	26 50	4 15	
9586	John Doe	3.50	4 00		3 50		50
9587	Bill Brown	175.00	74 00	76 00	175 00	25.00	
9588	Tom Smith	34 00	70 00	8 00	34 00	6.00	
9590	Sales Dept	26 50	10 50	15 00	26 50		
	TOTAL	11 45	0 11 53	6	2 94 50	35.15	50

Fig. 7

cars that come into the dealers' service station can be pursued with success.

New Cars.

New car receiving, conditioning and delivering. It is of prime importance that close attention be paid to the condition of new cars and to the inspection just before delivery to customers. Many service troubles and much dissatisfaction of owners is traced to lack of proper inspection at the time of delivery.

Upon receiving new cars from the factory they should be checked over carefully for damage or shortage and record made on proper form.

Before being delivered to a customer a new car should be thoroughly inspected, lubricated, water poured into radiator, tank filled with gasoline, battery fully charged, tools and equipment complete, tires properly inflated and the car thoroughly cleaned, washed and polished.

Where the volume of business warrants several cars of the various models should be held ready for short notice delivery; however, advance notice of 24 hours should be received in getting a new car ready for delivery. This takes care of all possible contingencies and will obtain better results from a service standpoint. Of course, it is appreciated that this is not always practical in a sales deal and delivery sometimes has to be made on short notice.

Cars that are held for more than a month should be jacked up off the tires and blocked. Water should be drained from all cars, particularly when they are suspended from the ceiling. This prevents water from seeping into the cylinders and causing "seizing" of pistons. Oil should be injected into the cylinders through petcocks in cylinder heads or through spark plug openings to prevent such trouble. Motors should be turned over by hand at frequent intervals in connection with such lubrication of cylinders.

All closed cars should have camphor preparation put in them to protect the upholstery from moths. Doors and windows of these cars should also be kept closed to keep out dust and dirt. In hanging cars care should be taken to see that they are securely suspended and paper placed under the chassis to catch the grease drips. A thick paper similar to the kind used for roofing is best for this purpose.

All tools should be removed from new cars held for delivery and locked up. The batteries, if wet, should be put on charge. Do not leave batteries in cars that are stored. "Robbing" of new cars to obtain proper repair parts or equipment is to be entirely discouraged unless consent of the proper authority is received.

The service department should be held responsible for all deliveries of new cars to customers and care should be taken that the invoice and shipping order are properly received by the cashier before delivery to the customer. Before the customer accepts his car he should sign the retail sales certificate and an inspection and equipment card showing receipt of complete equipment and tool kit. It is recommended that a responsible man be placed in charge of new car conditioning and delivery, as this is one of the most important features in securing satisfaction for customers.

Service Forms.

To aid Willys-Overland dealers to keep an accurate record of all transactions relating to service, particularly on customers' cars, we have listed a series of forms, which can readily be set up by your local printer. Obviously, all of these forms cannot be adopted by a great many dealers. But there are forms here which a dealer can use as a nucleus for his system, adding to them as the growth of his business or local conditions warrant.

Repair order and invoice. This form, shown in Fig. 1-A, authorizes repairs on customers' or company cars and provides on its reverse side a record of the work done and the material issued. The number of copies required will vary in accordance with the extent of the organization.

Original and customer's copy. These copies sholud be filled in by the person taking the order from the customer. By making a carbon copy the customer will have a copy of the original order which he signs. The blank spaces on the form are self-exaplanatory. As can be seen provision is made for a distinct understanding between the customer and the service department, as the order should show just exactly what repairs the customer desires and what he is to be charged.

In taking the order each item should be numbered thus:

1. Install new flywheel.
2. Install new push rods.
3. Wash car and polish.

The columns on this form, subdivided into parts and labor, are the key to the complete understanding the service department should have with the customer before any of the work is started. For instance, if a new flywheel is to be installed, the customer should be told that he will pay for both parts and labor. If this is the case, place X in the charge column under both "P" and "L." If, however, the customer is to be charged for the labor and the part comes under the guarantee, place an X under "L" in the charge column and write "G," meaning guarantee, under "P" and in the no charge column under "L" as well as under "P."

If the order taker finds the entire question is one of guarantee, requiring further investigation before a decision can be handed down, this should be noted on the repair order. Thus the service department and the customer will thoroughly understand beforehand for what parts and labor the customer is expected to pay.

If the work is done free of charge for a policy reason use the letter "P" in the no charge column; if it is work done over, denote this by the letters "WO."

Customer Signs Order.

After the customer's order is completed he will sign on the signature line and the order taker will give him his copy. The remaining copy can be used either as a shop copy in a smaller service station, or can be copied for further use. In the former instance it is advisable that the shop copy be a hard, strawboard card.

Where only two copies of the repair order are needed the responsibility of entering all necessary work tickets and parts requisitions on the form shown in Fig. 1-B, which is the reverse side of the repair order, devolves on the shop foreman or service manager. As soon as repair job is completed the foreman or service manager sends his copy of the repair order, with complete and itemized information on the back, excepting prices, to the office, where it is checked against the parts requisition.

Prices for all the work are then inserted and totaled and an invoice is made out, which is rendered to the customer upon his arrival for the car. If an estimate has already been submitted to him the invoice can be brief, merely recording "Repairs as Specified" and the amount of the bill. Where no estimate has been rendered prior to the job an itemized statement should be submitted.

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To save time and to avoid possible argument the repair order can be made out in triplicate when the order is taken and the back of the third copy can be used as an invoice. See Fig. 1-C.

Additional instructions to original order should be written or typed on face of same (properly confirmed) when using only two copies as described before. In larger establishments it is better practise to write up additional instructions on a separate sheet or form which is similar in outline to original, the same repair order number being inserted.

Where Various Copies Go.

Service department, invoice, shop foreman and shop copies. After the order is typed from the original made out by the order taker onto the forms required by these various divisions, omitting estimate should one have been rendered, the first two copies are turned into the service department, where they are given to the repair order clerk.

The shop foreman's copy and the strawboard shop copy go along with the car to the repair shop, where the shop foreman takes his copy, while the hard copy remains in the car, preferably in a celluloid faced holder.

As the work tickets are made out by the shop foreman, his clerk or the mechanic, each operation should be noted just as entered on the repair order, specifying guarantee, policy or work done over, wherever necessary. All work tickets not marked in this manner are charged to the customer. In writing requisitions for material to be secured from the stock room, the requisitions should also be marked in this manner. As the work tickets and requisitions are turned over to the repair order clerk, which should be done as often as possible, he will enter this information on the form shown in Fig. 1-B. The no charge items will be entered and marked "no charge." As each entry is made the bill should be extended in total, so that when the bill is completed the total of the amount column will equal the amount in the total column, thus giving the clerk a check on his figures.

After all requisitions and work tickets have been entered by the repair order clerk, the customer should be able to secure his invoice with practically no delay. This is a very important point as in many cases failure to promptly render the invoice prevents payment by the customer for the repairs when receiving his car, or else causes annoying and irritating delays. We earnestly recommend that every dealer place his service department upon a cash basis and so arrange his service routine that an invoice is rendered to the customer at the moment that he calls for his car. The invoice need not be itemized if an estimate has been rendered, as shown in Fig. 1-C; otherwise, an itemized bill should be given.

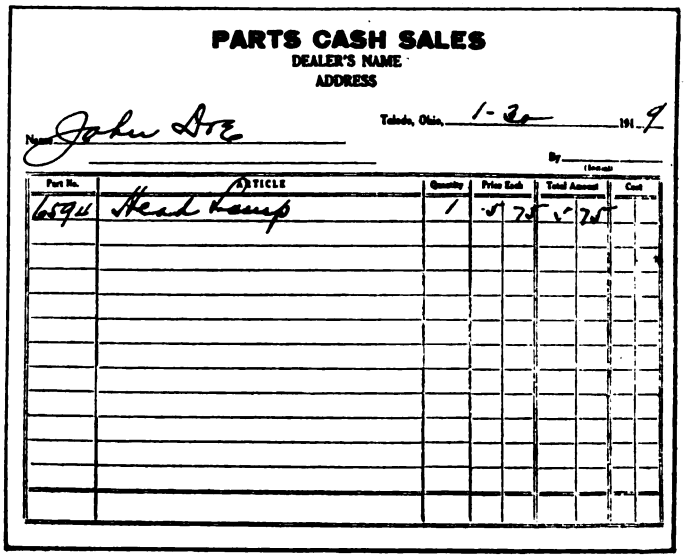

Fig. 9

The strawboard or hard copy of the repair order should be placed on the car in a holder and remain there until the repairs specified are completed. The tester or inspector should check this copy, placing his O. K. and initials on it in a conspicuous spot. The hard copy is then placed in the repair order envelope with all work tickets and requisitions and properly filed.

Work Ticket or Time Slip.

This form (see Fig. 2) is used to record the time the workmen put in on each repair job, as well as the work performed. It is issued in duplicate by the shop foreman or his clerk, who in a smaller organization will also enter it upon the repair order, when that particular job is completed.

In larger establishments one copy of the work ticket, properly signed by the shop foreman should be sent at once to the repair order clerk, after the job is completed; the clerk will then enter it upon the back of the repair order. The other copy should be sent to shop foreman or his clerk to be held until the job is completed, when it is turned in to the repair order clerk, who will use this copy to check against the repair order for possible discrepancies, and then file in the repair order envelope.

Time "in" and time "out" should be clearly marked on every work ticket. It is recommended, although not necessary, that a separate ticket be made out for each operation, even though performed by the same mechanic. If the work requires more than one day a separate ticket should be made out for each day's work. In addition to elapsed time the work ticket should also indicate the work performed. The shop foreman should fill in the columns "hours charge," "hours no charge" and "account" before the slips are sent to the repair order clerk.

Where the service department is conducted by one man the work ticket can be dispensed with and the hard copy of the repair order can be used for this purpose, the time required for each operation being entered behind each item, which the bookkeeper, or the person who makes up the invoice, can enter on the reverse side of the repair order.

Repair Shop Requisition.

This form, illustrated in Fig. 3-A, is used to draw stock from the stock room for use on repair orders. It can be made out by the shop foreman, his clerk or by the workman right on the job. It should be written up in duplicate and both copies of the requisition should be sent to the stock room. After being filled the first copy should be forwarded to either shop foreman or repair order clerk, for entry on back of the repair order. It will then be returned to the parts inventory clerk for entry on the parts inventory cards.

The second copy must be returned to the shop with the parts, where it will be given to the shop foreman or his clerk to be held until the job is completed. When the repair job is finished the requisitions, together with the hard copy of the repair order, are forwarded to the repair order clerk, who will check the requisitions against the repair order to make sure that they have been correctly listed. Requisitions and hard copy of repair order are to be filed in repair order envelope. Parts inventory clerk should check the numerical sequence of the parts requisitions daily, and any missing numbers should be investigated and duplicates secured, if possible.

Repair Shop Credit Requisition.

This form shown in Fig. 3-B is used for the return of parts, requisitioned out of stock for use on repair orders and is

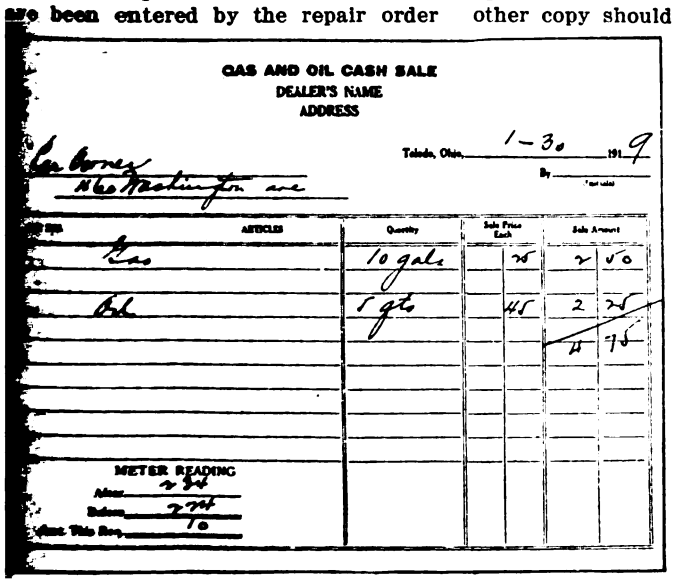

Fig. 8

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usually issued in duplicate by the repair shop office. Both copies are sent to the stock room with the return parts, where both are signed by the stock keeper. The original is then forwarded to the repair order clerk for entry on the repair order; is initialed by him after entry and sent to the parts inventory clerk for entry on his cards. The second copy is returned to the shop and held by the shop foreman or his clerk until completion of the repair job, when it is forwarded to the repair order clerk, along with all work tickets to be checked against the repair order to see that all have been correctly entered. All credit requisitions are then filed in the repair order envelope.

It frequently happens that more pieces are ordered out then are actually needed for the repair job. The balance are then returned for credit on this form.

Repair Order Envelope.

This envelope, illustrated in Fig. 4, is used to keep all repair order work tickets, requisitions and hard copy of repair order, or any other data pertaining to a specific repair job. It is placed in the

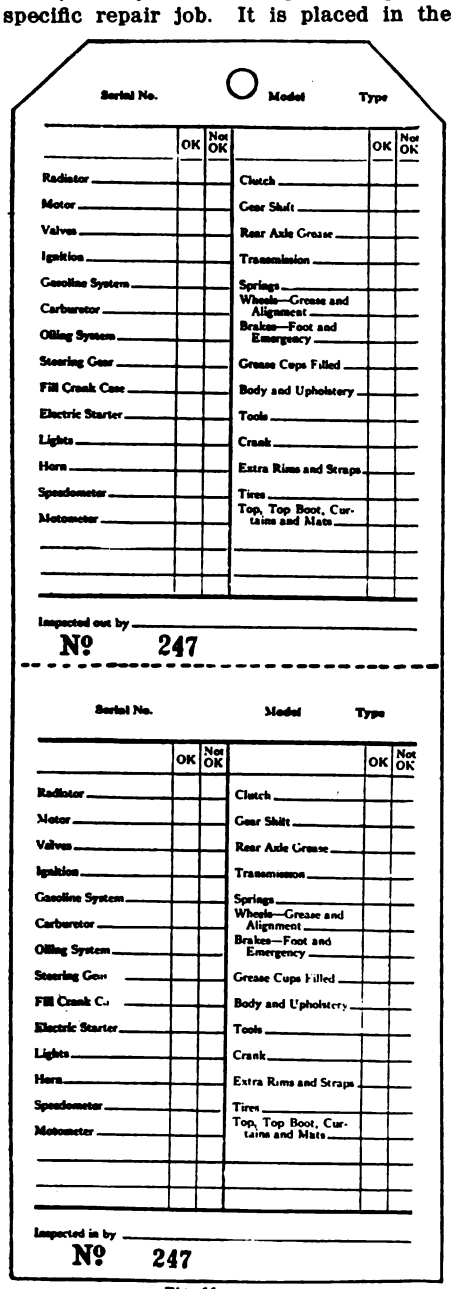

Fig. 11 Front

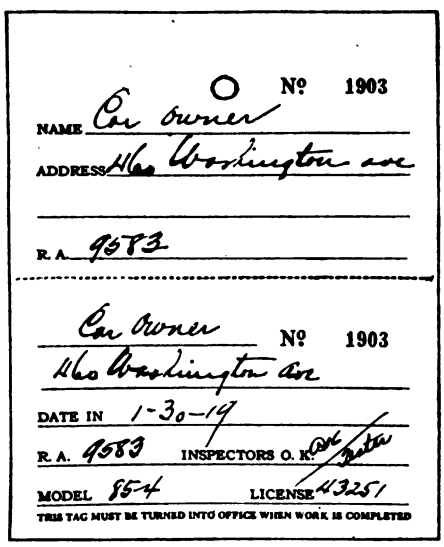

Fig. 10

active repair file until the job is completed, when it is filed away by the service department, numerically by repair order number.

This card, illustrated in Fig. 5, is a file card, kept by the service department, on which should be entered the date and number of every repair order that comes into the shop. In this manner an accurate record can be maintained of every repair or adjustment on a customer's car, information which very often is important in settling controversies. For instance, in the case mentioned on the repair order illustrated here, the purchase and installation of the push rods which proved defective within the guarantee period, would be listed on such a record, verifying the owner's claim for adjustment.

Daily Shop Report.

This form, shown in Fig. 6, can be used in the bigger service stations to record the activities of all mechanics. It will show the amount of time expended upon each job, the day's clock card time and the time elapsed between jobs, if any. It also contains space for the reason for such elapsed time.

In short, it is a summary of the day's work in the repair shop, invaluable to the service manager, or to the head of the company. It should be made out in duplicate, by the shop foreman or his clerk from the time slips. The original should go to the service manager and the duplicate should be retained by the shop foreman.

This report shown in Fig. 7 gives the dealer an accurate picture of each day's business in the service department and should be made out by the repair order clerk for the service manager. It shows at a glance the number of repair orders put through that day, the estimated price, the actual cost for both labor and material, the amount charged and the profit and loss on each job. Can be made out in duplicate, one form for the service manager and the other for the head of the company.

Cash Sales Gas and Oil.

This form, illustrated in Fig. 8, is used to record all gas and cash sales and can be used in all service stations, the number of copies varying in accordance with the number of persons involved in such sales. The usual system is to give one copy to the customer. Another copy of the form should be sent to the cashier and a third copy should be retained by the gas man for his record.

The cashier used his copy to check the cash received and to make out a daily sales record of gas and oil for the day. The cashier also checks the gas tank daily against the day's cash slips and requisitions and any differences can be checked at once.

Cash Sales Parts.

This form shown in Fig. 9 is used to record cash sales of parts, accessories, etc., and like the blank for cash sales of gas and oil, can be used in all service stations, the number of copies of the transaction varying in accordance with the number of people that the sale concerns.

One successful way to handle these sales is to give all three copies to the customer, with instructions to pay the cashier. The cashier then stamps all three copies "paid," retaining one copy and returning the others to the customer. The stock room will then deliver the part or parts to the customer upon surrender of the third sales slip, the customer retaining the original as his receipted invoice.

Where the cashier is not located conveniently for handling the money in this manner the stock room should take the money, turning it in daily to the cashier, who will then check it against the sales slips. The customer, as in the other method, will receive the original invoice.

Entries on the parts inventory cards should be made from the third copies of the cash sales slips, which should be received daily from the stock room, and filed numerically.

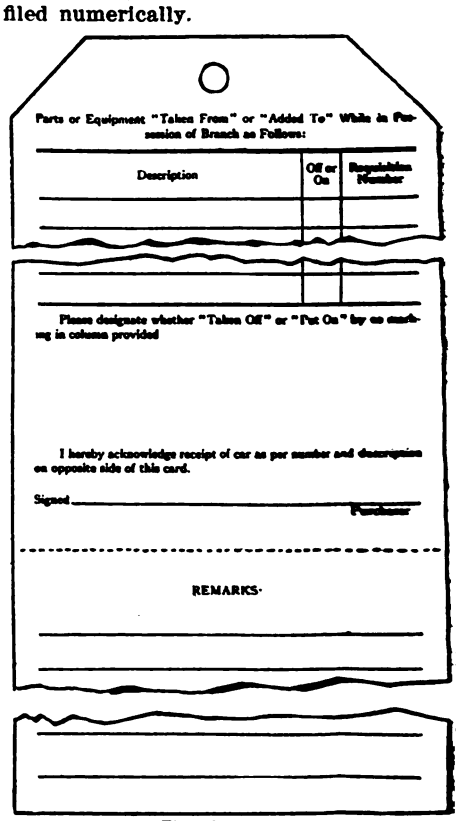

Fig. 11 Back

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When making sales of parts the customer should be cautioned to keep his sales slip as evidence of his purchase. Should a newly purchased part prove defective within the guarantee period it may be a difficult matter to make the proper settlement unless a positive record of the sales is available.

Identification Tag.

This is a strawboard tag in two parts divided by perforation as shown in Fig. 10, which should be fastened on every repair job that comes into the service department. This tag, made out by the repair order clerk, tells the story of the car.

The lower part of the tag is signed by the tester and is turned in at the service department office. Thus cars with the complete tag are still awaiting repairs or in the process of repair; cars with only the upper half of the tag are ready for delivery.

This card will also tell how long after completion of the job the car remains in the service station, thus rendering possible more accurate storage charges on cars that remain in the garage more than a reasonable period aftre the date promised to the owner, or after the owner has been notified that the repairs on his car have been completed.

New car tag and inspection report. This tag shown in Fig. 11 is used to check "in" upon receipt any new car equipment and for inspecting new cars upon receipt, using the lower half of the card for this purpose; and to check "out" the car when delivering to the customer. Any parts missing or damaged en route can be noted at once, so that proper claims for shortage or damage can be filed.

Any parts taken off or put on the car while in the dealer's possession can be noted on the reverse side of the tag, thus keeping an accurate check on the condition of the car from the time it reaches the service department until its delivery to the customer.

ARMY MOTOR TRANSPORT TRAINING SCHOOLS.

The United States Army is definitely launched in the field of vocational training for the motor transport corps. It has no option in the matter, for men skilled in automotive vehicle operation and repair do not exist in anything like adequate numbers for the requirements even of civil life; and the war with Germany has demonstrated that no matter how good our army may be in other respects, its efficiency will be conditioned by that of the motor transport branch.

Therefore, the army is organizing schools to train men in the various branches of automobile repair, construction and operation. They are real schools under trained teachers where the time of the pupil is wholly devoted to receiving instruction.

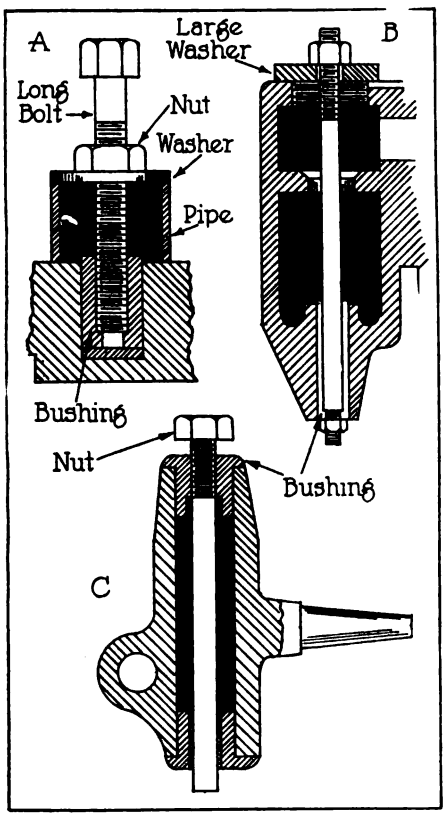
Apart from the military necessity, the automotive industries will benefit by the establishment of this training system.

The United States Civil Service Commission is receiving applications to fill 150 positions of assistant instructor in motor transport training schools.

BUSHING REMOVAL METHODS.

Methods for removing three different types of bushings are shown in the following cuts: A illustrates the removal of a blind bushing that does not completely fill the bore. The bushing is threaded as far as possible. A bolt is screwed into the bushing. A nut is run on the thread at the upper end of the bolt and passed through a plate resting upon two blocks, one at each side of the bolt. By turning the nut with a wrench the bushing is removed.

B illustrates the removal of a valve



stem bushing. A long bolt is passed through the plug opening at the top and the guide at the bottom. A nut is placed on the bottom of the bolt covering the edge of the bushing. A washer and nut are placed at the top covering the plug opening. Turning the top nut will withdraw the bushing.

C illustrates the removal of collared bushings of steering knuckles, etc. Tap one bushing and insert a rod threaded at one end. By driving on the opposite end it is claimed that the bushing may be easily driven out. The new bushings will drive into place without much effort, but will probably have to be reamed for the spindle bolts.

FINE FACTORY FOR TRAILMOBILE.

The new factory of the Trailmobile company in Cincinnati is rapidly nearing completion and will be one of the finest in the industry devoted exclusively to the manufacture of trailers. The first unit will occupy space 200 by 500 feet.

The recent displays of the company's trailers at the California, Texas and Ohio state fairs, and the Cincinnati automobile show, attracted favorable attention.

SIMPLE METHODS OF TESTING LUBRICATING OILS.

To learn whether an oil contains solid impurities, add kerosene to half a cup of oil until the mixture becomes quite thin. This thin fluid is now passed through filter paper or ordinary colorless blotting paper. As soon as all the thinned oil has been passed through it the blotting or filter paper is washed with kerosene. The residue that remains, if there is any, will show whether the oil contains any solid impurities. Impurities of this kind may also be determined in a coarse way by smearing a piece of common correspondence or pad paper with the suspected oil and holding it against the light. If the oil is free from solid impurities the blot of oil will be equally transparent everywhere. If not, the solid particles of sediment will be plainly visible.

To test oil to learn whether it will become resinous, pour a quantity into a shallow dish and place in a warm place for about a week. If at the end of this period there is not the slightest evidence of crust the lubricant may be considered safe to use. Oils may also be tested by mixing them with nitric acid. If the oil is pure a thick mass will form in a few hours. Oils that contain resin do not clot, but remain very thin.

Among other impurities in oils are acids. When acids are present in lubricating oils they etch the polished surfaces of bearings and cause excessive friction and gradually destroy them. A test for such impurities is mixing the oils with copper oxide or copper ash. These are added to the oil in a glass container. If the oil is free from acid it retains its original color. If acids are present their action on the copper makes the resulting color greenish or bluish. This test may also be made by dropping the oil on a sheet of copper or brass. Leave it for a week and if acid is present a greenish discoloration will be seen on the metal. Another chemical test for acids is the use of litmus paper, which will show the presence of acid by turning pink, or its absence by turning blue when inserted in the oils.

A rough and ready method to compare the lubricating values of several oils is to place a few drops on a smooth, slightly inclined metal or glass sheet. The lighter oils will naturally reach the bottom first and should be used on high speed bearings.

J. T. TRACTOR MOVING PICTURES.

The J. T. Tractor has an enterprising representative in the Canton, O., field, in A. N. Whistler, who is giving in his territory a motion picture demonstration of the work of this machine. This is a two-reel run, bringing out the principal features of the J. T. Tractor, showing its construction and method of operation and its utility as a labor saving farm device, and the pictures were explained by Mr. Whistler as they were shown.

Considerable interest has been manifested in the pictures, which have resulted in a number of sales being made.

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The McCord Manufacturing Co., Detroit, through C. B. Bailey, general manager of the Wyandotte plant, announces another record breaking month's business by the gasket division. Shipments for September exceeded those for August, the best previous figure, by over 28 per cent. Orders for current and future delivery continue to pour in and it is assured that the factory will be working at top speed throughout the winter. The management is fortunate in having sufficient raw material on hand and in transit to take care of manufacturing demands for months to come. Mr. Bailey also announces the appointment of Malcolm McCormick in charge of sales and advertising. Mr. McCormick for a number of years was associated with the Burroughs Adding Machine Co. and Chalmers Motor Co. An aggressive sales and advertising campaign is planned for the coming year. The McCord Manufacturing Co. has published a catalog completely describing and giving the specifications for all the various copper-asbestos gaskets which it manufactures. Included are spark plug gaskets, exhaust and flange type gaskets, exhaust manifold head gaskets, cylinder head gaskets for passenger cars and trucks and valve plate gaskets and Ford gaskets. An assortment of shim stock is also shown, as well as miscellaneous gaskets of open and enclosed types.

The Hudson Motor Specialties Co., 1932 Arch street, Philadelphia, announces that it will be represented by Hughsch & Merton, Inc., in Washington, California, Wyoming, Nevada, Colorado, New Mexico, Oregon, Idaho, Utah and Arizona. Hughsch & Merton, Inc., which will act as sales representative, has offices in San Francisco, Portland, Ore., and Denver.

The J. P. Gordon Co., Columbus, O., has issued a new catalog for its auto slips, seat covers, tire covers, top recoverings and radiator robes. Samples of the materials used are included.

Harrison H. Boyce of the Moto-Meter Co., Inc., has become sole owner of the fundamental Erwin patent, long recognized in the fire extinguisher field as basically covering automatic means of extinguishing fires under the engine hood of passenger cars, trucks and tractors. It is understood that Mr. Boyce will form a new company for the exploitation of this invention.

The Black & Decker Manufacturing Co., close upon the heels of the news regarding the removal of the general offices from Baltimore to the new office building at Towson Heights, announces that ground has been broken and work started on a new and larger plant for the company. The new plant will be 100 by 200 feet and will be erected on the west side of the present plant and directly connected with it. The demand for the Black & Decker Towson built devices has made this extension necessary, and it is believed that the output during 1920 will be more than double that for this year.

The Roller-Smith Co., 233 Broadway, New York, announces the appointment of the Alfred Collyer Co., 83 Craig street, west, Montreal, as its agent for the entire Dominion of Canada and Newfoundland. The Montreal firm will handle the Roller-Smith products of instruments and circuit breakers.

The J. C. McAdams Sales Co., Vanderbilt building, New York City, has placed on the market a new device to be known as the "Auto Spark Lite." This article was invented and patented by Mr. Herman Schlaich, chief experimental engineer at the Moto-Meter Co., Inc., Long Island City, N. Y. Men prominent in the automotive industry who have seen the device speak very highly of it, and it is expected that the company will make a big success.

The Ford Motor Co. is to erect a body building plant on the River Rouge, near Detroit, which will have a producing capacity of 1500 bodies daily and provide employment for between 10,000 and 15,000 men, according to announcement by F. J. Hadas, general superintendent of the body plant. "We have set a mark of 1,000,000 automobiles this year," he said, "and unless the unforeseen happens we will do it."

The William Small Co., Indianapolis, manufacturer of Monroe automobiles, announces the appointment of Louis Chevrolet as consulting engineer. Chevrolet was until recently chief engineer of the American Motors Co., Plainfield, N. J.

The Stow Manufacturing Co., Binghamton, N. Y., has issued two new bulletins, Nos. 103 and 104, illustrating and describing its complete line of portable tools.

The F. H. Lawson Co., Cincinnati, O., is manufacturing two new accessories, the White radiator for Ford cars and the Lawco rim tool.

Edward V. Hartford, Inc., maker of the Hartford shock absorber, has moved into a new factory at West Side avenue and Carbon place, Jersey City, N. J. Here there are greatly increased manufacturing facilities. Executive offices have been moved to 35 Warren street, New York City. Communications should be addressed to the New York office, but all return material must go direct to the factory in Jersey City. Arrangements have been made with the Doty-Demos Co., 224 West 65th street, New York, to care for all local service, repairs and attaching work, as well as carry a complete line of spare parts for all Hartford products. This station will be known as the "Hartford Shock Absorber Service." The Doty-Demos Co. will give the usual trade discount.

The Auto Indicator Co., Grand Rapids, Mich., maker of the rear signaling device known as the "Four-in-One Auto Indicator," announces that Charles O. Blackford, the sales manager, recently returned from an extended trip, during which he closed eastern and southern territory and brought back orders and contracts for more than 30,000 indicators. The company's factory is running overtime. More than 10,000 indicators have been shipped to the western coast representative, the Norman Cowen Co., Rialto building, San Francisco, during the last few weeks and this number only fills half of its orders to Oct. 1. Other representatives of the Auto Indicator Co. include the Automotive Exchange of America, Hippodrome Annex, Cleveland, O., for southern territory; S. P. Record, 405 Commercial avenue, East Braintree, Mass., for New England; Auto Indicator Sales Co. of Indiana, 438 Lemcke building, Indianapolis, for Indiana; the Penn-Jay Co., 112 North Broad street, Philadelphia, for Pennsylvania and New Jersey, and the Diamond Tire and Supply Co., 130 Oneida street, Milwaukee, for Wisconsin. The indicator retails for $15 allowing a liberal margin for dealers, garage men, etc.

The Acme Motor Truck Co., Cadillac Mich., has begun construction of the first of four units made necessary because of the ever increasing volume of business coming to the company. The body building department also is rapidly expanding and for several months past orders have been ahead of production. Doubling of the capacity of the present plant was decided upon some months ago.

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CHILE AS AN AUTO MARKET.

American automobiles have become remarkably popular in Chile during the last five years. This has not been wholly due to the elimination of European sources of supply in the war period. It has been largely the result of a growing familiarity with the conveniences of motor driving, combined with the discovery that these advantages are possible for people of moderate means through the comparatively low prices of certain American cars. Moreover, the high grade American makes have been demonstrated with success to the class of Chileans that can afford expensive machines. In the social life of the cities the motor car has become an essential, replacing the family coach or carriage.

Outside the cities the lack of good roads in Chile seriously affects the use of automobiles. The roads of Chile are especially severe on tires, and shipments of tires have shown a great increase principally on this account. Shipments of automobiles from the United States to Chile have represented practically all of Chile's trade in this line since 1916, but the United States' share of this business in 1913, the last pre-war year, was but little more than eight per cent. Germany had 22 per cent. of the trade, France 23 per cent., Great Britain 13, Italy nine and Belgium four, and about 16 per cent. came through Argentina.

Chilean authorities, both local and national, are beginning to realize that good roads are needed for the development of the mining and agricultural industries. Iquique, the chief port in the shipment of nitrate, offers an especially good market for motor trucks if these prove to be adapted to the hauling of supplies through the nitrate desert. Experiments are being made with motor trucks on the soft sand roads, and if the success of trucks is thoroughly demonstrated they will undoubtedly replace the slow and expensive teams and carts.

AUTO TIRES FOR MEXICO.

The great majority of auto tire importers in Mexico City prefer to have their tires packed as follows: First, each tire should be wrapped individually in heavy manila paper and then made up in bundles of from three to six, according to size. These larger packages should be wrapped in extra heavy waterproof paper or hemp cloth to insure their arrival in fresh condition. One firm recommends shipping eight or 10 tires in a wooden box, (but this is not universally approved because of the added weight, which means increased freight charges and increased duty. The duty on tires is 37½ cents United States currency per kilo of 2.2 pounds. The total average cost of freight and duty on outer tires laid down in Mexico.

The estimated number of automobiles in the Mexican republic is 18,000.

MARKET IN BELGIUM.

There is a market in Belgium at the present time for American automobiles. The machines desired are those of a moderate price, not above $800 to $1000, and need to be strongly built, as many Belgium roads are of cobblestone construction. No special adaptation of American cars to Belgian needs seems to be required. The ordinary five-passenger touring car is especially popular.

FOREIGN TRADE OPPORTUNITIES

(Reserved addresses may be obtained from the Bureau of Foreign and Domestic Commerce, Washington, D. C., or from district or co-operative offices.)

30,841—The representative of a firm in South Africa is in the United States for a short time and desires to purchase and secure agencies from manufacturers of automobiles and general merchandise. References.

30,858—The president of an American trading corporation is soon to sail for the Balkan countries and desires to secure agencies for the sale of automobiles, motors, agricultural machinery and implements, etc. References.

30,799—The director of a firm in Belgium desires to secure an agency for the sale of automobiles, motorcycles, agricultural machinery and their parts. Payment, cash. Correspondence with catalogs should be in French. References.

30,800—A firm in Switzerland desires to secure agencies for the sale of large and small automobiles, motor side cars and all accessories. Quotations should be given f. o. b. Switzerland. Correspondence should be in French. References.

30,807—A manufacturer with a storehouse in Spain desires to secure agencies for the sale of greases, gasoline, automobiles, electrical supplies, etc. Correspondence should be in Spanish. References.

30,817—The representative of an American firm who is about to sail for Europe desires to secure agencies from manufacturers for the sale of automobile tires and general merchandise. Reference.

30,819—The representative of a firm in Argentina is in the United States and desires to secure an agency for the sale of automobiles and accessories. References.

30,790—A company in Switzerland organized for the purpose of trade with the United States desires to purchase and later secure agencies for the sale of leather suitable for covering automobiles. Samples, quotations and complete information should be given. Correspondence may be in English. Payment, draft against documents. Reference.

30,764—The sole agency in Czecho-Slovakia is desired by a firm in that country for the sale of passenger auto cars and motor trucks. It is stated that he can sell about 25 large 50-horsepower auto cars and about 40 small auto cars of 18 to 25 horsepower monthly. Correspondence may be in English. References.

30,741—An engineer in Poland desires to secure agencies for the sale of rubber tires for automobiles. References.

30,675—A merchant in Arabia desires to purchase 500 each of tires and tubes to fit Ford motor cars, 300 spark plugs and 25 magnetos. Quotations should be given c. i. f. destination. Payment against documents through bank. Reference.

30,879—An agency is desired by a man in Italy for the sale of automobiles and gasoline. References.

CROCKETT MOTORS AND EXPORT.

The Crockett Motors and Export Co. has been organized in New York, with headquarters at 42 Whitehall street, to take over the H. B. Crockett Co., well known for many years as export agent and import representative, doing business largely in the automotive field. Since the armistice was signed orders have been received for more than $4,000,000 worth of automotive products. The company has agencies throughout the world.

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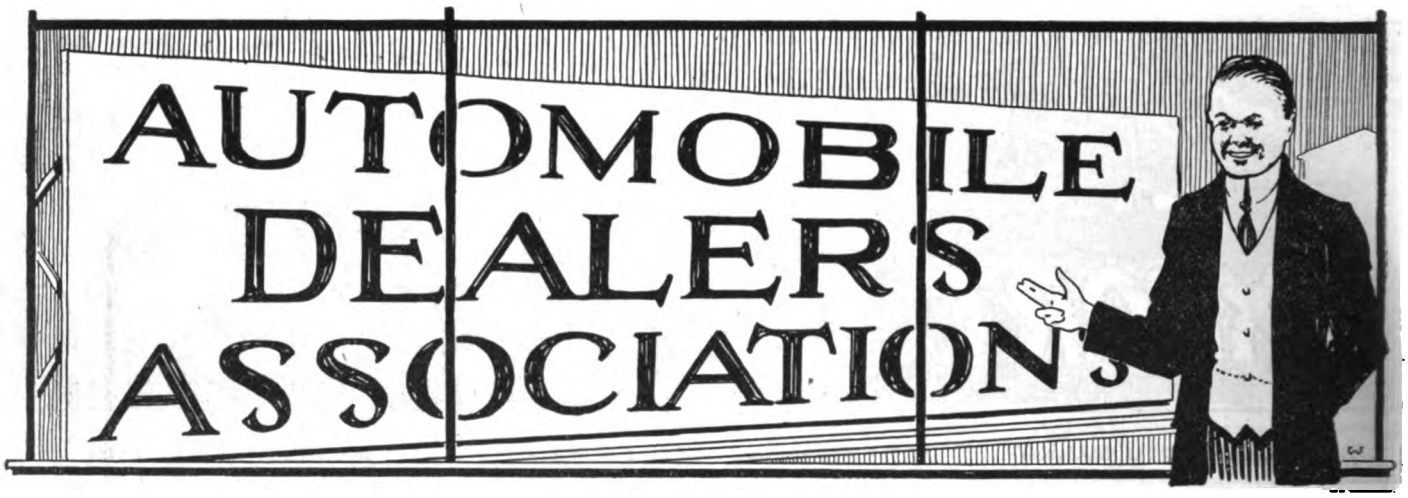

The New York Automobile Dealers' Association has decided to aid the Actors' National Memorial Day program, Dec. 5, and will give generous contributions. Daniel Frohman recently addressed the association in behalf of the nation wide benefit to take place for the Actors' Home and the Actors' Fund. Under the auspices of the Automobile Dealers' Association the Winter Garden, on the afternoon of the national benefit day, will resemble a family theatre party of automobile, accessory and tire men and their friends. The attraction will be the Shuberts' "Passing Show of 1919," which is now in rehearsal and will be produced in that theater for the first time during November. Tickets will not be sold for the performance, but they will be given as compensation to those who contribute generously with checks, in such proportion as the contributions demand. Officers of the general committee of the dealers' association are: Major H. L. Stratton, chairman; H. T. Gardner, secretary, and Frank G. Carrie, treasurer. The vice chairmen are Charles E. Miller for the accessory division, Arthur E. Randall for the Brooklyn division and John B. Elsey for the Bronx division. The executive committee consists of Harry J. De Bear, chairman; William C. Poertner, C. D. Studebaker, J. A. Clark and A. G. Southworth.

The Intra-State Motor Dealers' Association was recently formed at Reading, Pa. Units from Harrisburg, Reading, Allentown, Bethlehem, Easton, Lancaster and York were represented. George G. McFarland, president of the Harrisburg Motor Dealers' Association, was elected president. About 60 dealers attended.

The Hudson County Automobile Trades Association of New Jersey is going ahead with plans for the permanent organization. The association was formed by 12 of the prominent automobile dealers in the county. Archie Elder, president of the Hudson County Oakland Motor Car Co., is temporary chairman, and Robert W. Bowler secretary pro tem. A visiting committee has signed up most of the dealers of the county. It is planned to receive into membership later all of the automobile accessory and garage men.

The Rocky Mountain Auto Trades Association held its third annual convention at Colorado Springs, Oct. 5-8. More than 800 automobile and accessory dealers attended. It was decided to raise a fund to engage a lawyer who will prosecute automobile thieves who steal from any dealer in the Rocky Mountain region. Addresses were made by F. W. A. Vesper, president of the National Automobile Dealers' Association; L. C. Brock, president of the Philadelphia Auto Trades Association, and Edward J. Jordan of the Jordan Motor Car Co., Cleveland. The delegates approved the Townsend bill now before Congress. S. E. Norton, president of the Denver Auto Trades Association, said that passage of the bill would mean a great deal to the automotive industry. A golf tournament and sight seeing trips were among the social features.

The Portland Oregon Motor Car Dealers' Association have received from automobile mechanics of the city a proposed agreement calling for closed shop, 44-hour week with half holiday Saturday and no Sunday work, and division of all mechanics into four general classes. David M. Ellis, business agent for the new union of mechanics, claims 700 members and states that it will soon be state wide in scope. The law passed by the last Legislature requiring that automobile mechanics pass an examination and pay a $5 license fee caused the men to organize. Under the proposed agreement double pay would be paid for overtime on Saturdays, but no Sunday work would be done under any circumstances. The wage scale does not differ materially from the one now in effect.

The Pittsburgh, Pa., Automotive Association is considering the advisability of two automobile shows each year. John J. Bell, manager of the association, says. "I have always maintained that a winter showing, at which models are displayed, helps the trade just as much as a display of the model placed on the market in the spring. There isn't a doubt but that the motor car is seasonable merchandise, so far as body types are concerned."

The Philadelphia Automobile Accessory Business Association will distribute certificates of membership to members in good standing, these certificates to be displayed in the members' places of business to signify that they follow high business ethics.

The National Automobile Dealers' Association held a four-day convention in Denver, Col., beginning Oct. 1. The Townsend bill was favored. The last two days of the convention were spent in Estes Park in the mountains. A tour through the Rocky Mountain National Park was another feature. In Denver the delegates were entertained by Robert R. Hall, president of the Cadillac Motor Co. of Denver, and by the Denver Automobile Trades Association. President Vesper presided. Directors of the association who attended included E. W. Steinhart, Indianapolis; Harry G. Moock, St. Louis; Thomas J. Hay, Chicago; A. F. Maltby, Philadelphia; W. J. Brace, Kansas City; P. E. Chamberlain, Denver; A. E. Metzell, Canton, O.; George D. McCutcheon, Atlanta; J. A. Graham, Minneapolis; P. H. Greer, San Francisco; C. A. Vane and B. Hudnall, St. Louis.

The Motor Trades Association of Allegheny County, Pa., inaugurated a vigorous "Good Roads and Better Streets" movement at a recent meeting. The session was an open one, having been arranged by Manager K. J. Frane as a smoker and "membership booster." Many new members were enrolled. W. A. Johnson, sales manager of the B. F. Goodrich Rubber Co., Akron, was a speaker. A "Good Roads Committee," was appointed to gather data to be used in connection with an effort to induce the Legislature to provide funds for improved roads and also for presentation before the City Council. Another item considered was a proposed bill to be presented to the Legislature that would place a lien on any automobile for which the owner may contract charges and would give the holder of the lien the right to sell after 30 days notice.

The Detroit Auto Dealers' Association announces that its autumn show of enclosed cars was a success. Forty makes of cars, with 100 different body types, were shown.

The Pine Bluff, Ark., Auto and Accessory Dealers' Association is planning for an automobile show. The local association expects to affiliate with the state and national associations.

The Baltimore, Md., Automobile Dealers' Association has awarded several prizes to those who took part in its motor truck demonstration parade.

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Alwin A. Gloetzner, former vice president of the Covert Gear Co., Inc., has purchased the majority holdings in the company's stock formerly owned by P. A. Clum, Rochester capitalist. As a result

Alwin A. Gloetzner, President and General Manager, Covert Gear Co.

he control and direction of the big Lockort company's transmission business asses into the hands of the man largely esponsible for its recent success and exansion. Mr. Clum's retirement from the residency has been followed by Mr. loetzner's promotion to that post. He lso assumes the general management of ie company. As director of sales and ngineering of the Covert forces Mr. loetzner has been for years the chief oint of contact between the company nd the automotive industry. His horough experience in factory manageent, secured in a prior connection with ie Chalmers Motor Car Co., further ualifies him for his broadened activities. The Covert Gear company is one of the ioneer specialists in the building of ears and transmissions in which it has een a prominent factor for more than years. Its factory is centrally located serve the entire automobile industry. n account of its long experience in gear id transmission manufacture the comany has in recent years specialized in e field of truck transmissions and supies a large list of clients. Mr. Gloetzr will make his headquarters at the ctory, but the company will continue s sales and engineering offices in Deoit for the benefit of its clients and to d in taking care of its rapidly expandg business.

L. P. Lessard is now with the M. D. ewald Co., Milwaukee, distributor of the ewart truck in Wisconsin. He was forerly assistant sales manager of the rker Motor Truck Co., Milwaukee.

L. F. Worth is now with the B. F. odrich Co., after having been for over o years in war service. He will be astant manager of the South Bend anch.

Vern Smith is now sales manager of) Elcar Motor Sales Co., Grand Rapids, ch

Frank W. Cooke is now general service manager of the Universal Auto Co., Hartford, Conn. He was formerly general superintendent of the Pope Manufacturing Co., which position he held for 20 years. He was at one time general superintendent of the Norwich plant of the Marlin-Rockwell Corporation.

T. C. Baker succeeds R. P. Page, Jr., in charge of the Boston branch of the Autocar Co. Mr. Baker during the war was chief motor transport officer of the first army in its campaign in France.

H. Jack Conrad has become affiliated with the Carhart Motor Co., Oklahoma City, Okla., dealer in Willys Knight and Overland cars. He was formerly with Nash.

W. J. Buell, associated with the Chicago branch of the Reo Motor Car Co. for a number of years as manager of the exchanged car department, is now manager of the company's branch at Evanston, Ill.

L. T. Knocks, formerly experimental engineer of the Waukesha Motor Co., Waukesha, Wis., is now chief engineer of the Falls Motor Corporation, Sheboygan Falls, Wis.

S. J. Turnes is now general sales manager of the Brunswick-Balke-Collender Co., Chicago, in charge of the tire department. He was formerly advertising manager and will continue in charge of advertising for the general line as well.

L. B. Southerland is in charge of the sales department of the new Chicago branch of the Cadillac Motor Car Co. He formerly sold Cadillac cars in Philadelphia. He will be assistant to C. R. Cunliffe, who recently became manager.

C. W. Branney has become sales manager of the truck department of the Paige Sales Service Co., Detroit, Mich.

Mark A. Smith, captain of Marines in the A. E. F., has re-entered civil life as an expert on the engineering staff of the Midwest Engine Co., Indianapolis, Ind.

Mark A. Smith, Tractor Sales Engineer Midwest Engine Co.

Before the war he was in charge of the passenger car lubrication department of the Standard Oil Co.

Roy Davey has been advanced from assistant sales manager to general sales manager by the Bethlehem Motors Corporation, Allentown, Pa., with the resignation of W. E. Stevenson, who for a con-

Roy Davey, Sales Manager, Bethlehem Motors Corp., Allentown, Pa.

siderable time filled that position. Mr. Davey has had wide experience in selling and advertising. He was assistant advertising manager for the Acme White Lead Co. in 1904 and the following year joined the Burroughs Adding Machine Co. and was engaged in sales planning and promotions. In 1911 he went to the Packard Motor Car Co. as assistant manager of the truck division and in 1915 became sales plan director for the Thorsen-Seelye Advertising Agency of Detroit. He resigned this position the following year to become advertising manager for the Chalmers Motor Co. and in 1918, when the Maxwell Motor Corporation leased the Chalmers plant, he joined the Bethlehem organization. His endeavors were so succcessful that he was selected to carry on the work of the department.

C. W. Couch has joined the forces of the Ford-Clark Co., Cleveland, as sales representative for the Ford-Clark line of automotive specialties. He was recently discharged from army service and prior to the war was with the Western Automatic Machine Co.

Jay V. Hall has joined the Willys Corporation at the Duesenberg plant. He was formerly general sales manager of the Olds Motor Works, having resigned that position two years ago to join the Willys organization.

Walter C. Allen has formed the Allen Waring Auto Corporation, which will distribute the Maibohm Six. The company will be located at 236 West 54th street, New York City.

James R. Hayes is now assistant advertising manager of the Powrlok Co., Cleveland, O. He was recently released from government service, where he was connected with the Detroit office of the director of purchase, storage and traffic in the production of motor vehicles.

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Automobile Starting, Lighting and Ignition Systems

For Detailed Chart See Pages 40 and 41.

IN A single chart it is not possible to show all forms or modifications of automobile starting, lighting and ignition systems in use. A typical system, including all important parts, is shown, and supplementary diagrams reflect several generally used systems. Regardless of type, a motor or dynamo will have the same general construction and will have similar accessories. Other units may vary in design, but the same faults will develop in all of them. The battery ignition system is in two forms: The closed circuit, as typified in the Remy system, and the open circuit as in the Delco. The timer, battery, coil and spark plugs are practically the same in either system.

Hints for Locating Delco Trouble.

1. If the starter, lights and horn all fail, the trouble is in the storage battery or its connections, such as a loose or corroded connection or a broken battery jar.

2. If the light, horn and ignition are all right, but the motor fails to turn the engine, the trouble is in the motor generator, such as dirt or grease in the motor commutator.

3. If the motor fails to turn, or turns very slowly and the lights go out or become very dim, it indicates a loose or corroded connection on the storage battery, or a battery that is nearly discharged.

4. When two set of batteries are used for ignition purposes, the following tests may be made:

If the engine fires on the "M" button, but not on the "B" button, the fault must be in the wiring between the dry cells or the wires leading from the dry cells to the switch, or depleted dry cells. If the ignition functions on the "B" button and not on the "M" button, the cause must be in the leads from the storage battery to the generator, or the lead running from the rear terminal on the generator to the switch, or in the storage battery itself, or its connection to the frame of the car.

5. If both systems of ignition fail and current is supplied from both the storage battery and the dry cells, the cause must be in the coil, resistance unit, timer contacts or condenser. This is apparent from the fact that these function for each system of ignition.

Summary of Starting Failure Causes.

Starting motor cranks very slowly: Indicates battery almost discharged, battery sulphated, engine stiff, brushes loose and poor contact.

Starting motor does not rotate: Battery may be discharged, starting switch not making good contact, motor brush may not make contact with commutator, battery terminals may not make good contact, switch contact poor.

Starting motor rotates but does not crank engine: Roller clutch does not function, gears not properly meshed; if Bendix automatic, spring may be broken.

Starting motor turns and engine will not pick up under its own power: These indicate that the trouble is not in the starting system, Bendix starter gear on threaded shaft may be stuck or spring broken.

A weak starting motor is sometimes caused by using carbon brushes. The latter have three to four times the conductivity, and for this reason their replacement by cheap carbon will not allow sufficient current to pass.

If the battery is normal examine the

DEFECTS IN AUXILIARY UNITS

Storage Battery.

Fault.	Cause.	Restoration.
Liquid low in one cell.	Cracked or broken jar.	New Jar.
Electrolyte gravity will not rise.	Sulphated.	Take to experienced battery man.
Overheating.	Liquid low or charged too rapidly.	Refill with water and inspect regularly or alter generator.
Electrolyte leaking at top.	Solution too high.	Draw out a quantity with syringe.
Battery constantly low.	Under charging.	Examine generator brushes; if right, increase charging rate and charge battery from an outside source.
Buckled plates.	Overheating.	Charge at lower rate, keep liquid in cell keep temperature below 110 degrees
Battery exhausts quickly while idle.	Short circuits.	Examine wiring and renew insulation.
Frozen battery.	Discharged in cold weather.	Damage may be irreparable, charge fo crystalization.
Rotting insulators.	Impure water, too much acid.	Use distilled water or melted artificial ic
Battery will not charge.	Connectors loose or crystalized plates.	Resolder connectors and plate holders.
Terminals corroded.	Acid leak through vent.	Clean with ammonia or washing soda.
Jars break rapidly.	Battery not properly fastened down.	See that cleats and bolts are drawn tigh
Separators punctured.	Overheating.	Renew separator and keep battery fille
Lights rise and fall.	Battery low.	Recharge outside or by a long run at miles per hour.
Battery will not operate after storage.	Should have been kept charged.	Probably cannot be repaired owing disintegration.
Lamps dim although electrolyte is at high level.	Specific gravity too low.	Bring specific gravity up to 1.275 charging, see that the generator gi 20 per cent. more current than la consumption.
Electrolyte down to 1.100.	Overdischarge.	Give reforming charge at three amp until maximum density is reached.
One cell dead.	Insulation destroyed.	Watch overheating and overcharg keep electrolyte up.
Battery dead from usage.	Using without restoring.	Charge for 24 hours at rate marked battery or until electrolyte read 1.275.
Large sediment deposit.	Active material dropping.	Take battery to service station at o as material has become loosened.

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connections, beginning with the battery. The current may be shorted, due to electrolyte spilled over the top of it; or the terminals may be sulphated, in which case resistance to the current may prevent the motor operating.

Scrape off the sulphate and wash all the surrounding metal parts in carbonate of soda or some other convenient alkali. Then replace the wires and coat them thoroughly with vaseline to prevent further corrosion.

With the starting switch closed, begin with one of the wires running from the battery, loosening the various connections in the starter circuit one by one, and note at each point whether there is current flowing by pulling the wire away from the terminal. If there is no current the motor will not operate, and either there is a dead short circuit in some part of the system, or there is a broken wire or connection. An inspection should locate the trouble.

The battery terminal where it is grounded to the frame on single wire systems should be examined to see if the connections are good. This terminal and its contact surface should be kept clean and drawn very tight if not soldered.

Lighting Faults.

If the lights go dim a short circuit is indicated between the battery and starting switch or between the starting switch and ignition generator. The most probable cause is a discharged battery, resulting from leakage of current due to short circuits in the wiring; using bulbs of higher candle power than those recommended; using low efficiency carbon filament bulbs, or defects in the generator which prevent it from charging. Make sure that the generator protective fuse on the relay regulator base is not burned out. Another possible, though hardly probable cause, is that the relay points might remain closed. This would cause the current from the battery to be dissipated in the windings of the ignition generator. If this is the case, remove the cover and release the contact points of the relay with the fingers. If the contact points are roughened or pitted, draw a strip of very fine sandpaper lightly between them and carefully remove all dirt or dust. If the generator protective fuse or circuit breaker is intact and the ignition generator is not charging, the relay regulator cover should be removed and all contact points examined to make sure that they are not kept separated by a small particle of foreign matter that will not conduct electricity. A small quantity of dirt between the points will keep the generator current from flowing to the battery and will naturally cause a discharged battery in time.

Digest of Lighting Faults.

Lamps do not light. Examine the fuse block for blown fuses. If the fuse is blown do not replace it immediately, but look over the wiring for an accidental ground or short circuit. When the trouble has been located and corrected, replace the blown fuse with another of the same capacity. If the fuse is not blown, look for open circuits, loose contacts, battery disconnected or accidentally run down, or burned out lamps. In case the battery is run down, recharge it immediately from an outside source.

No lights or dim lights, with the engine running: There is a group of troubles which may be classified under the general head of open circuits. Eleven of these are very prominent:

1—The generator terminal or brush connections may be loose or making poor contact.

2—The wire connections to the switch may be defective.

3—Defective wire connections to connector terminals.

4—Lamp socket terminal disconnected or loose.

5—Burned out bulbs.

6—Halves of connectors do not make contact.

7—Bulb bases not contacting with lamp sockets.

8—No connections between lighting switch terminals.

9—Broken wires, especially where taped.

10—Joints or places subject to abrasion.

Lamps burn out often. Due to either poor grade of lamp or the lamps are not of proper voltage. With the dynamo on the regulator cut out not operating or the lamps may be of inferior grade.

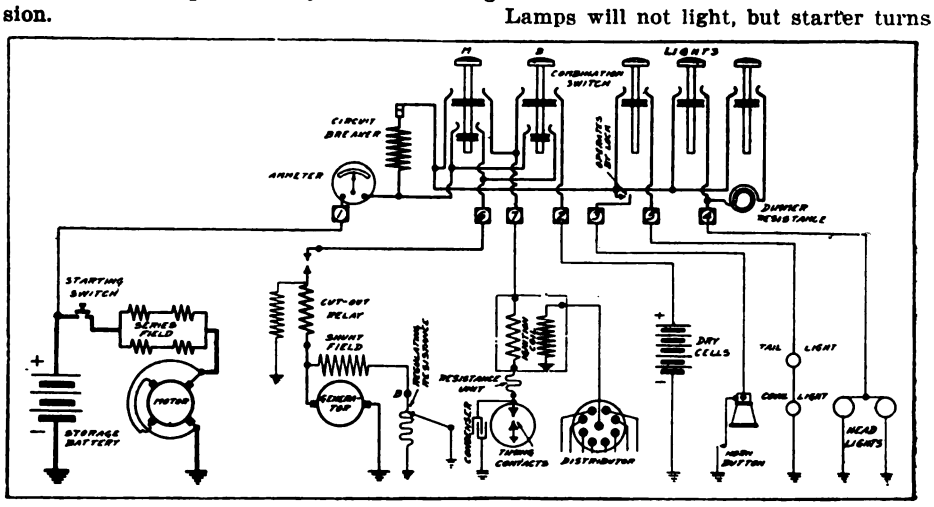
Lamps flicker and ammeter unsteady. Loose connections in light wires, loose connections between battery and generator, loose contact at lamp bulb, exposed wire touching the frame intermittently, causing a short circuit.

Lamps burn very dimly when starting pedal is used. Battery very weak, nearly discharged; battery damaged, probably one or more cells, due to lack of water, or battery terminals not rigidly fastened.

Lamps become dim when engine stops. Indicates a discharged battery. If possible have the battery charged at once from an outside source. If this cannot be done, endeavor to run with fewer lights than normal, for a few days, until the battery voltage picks up.

If the lights grow dim when the car is accelerated the wires are reversed at the generator.

Lamps will not light, but starter turns



Wiring Diagram of Cole Eight Delco One-Unit.

11—Defective connections at the lamp sockets.

Lamps in one circuit do not burn, caused by: (a) The lamp is burned out. Try another lamp in the same socket. (b) If the fuse is blown, try the same fuse in another circuit. Examine the wiring thoroughly before replacing the fuse. (c) An open circuit, or broken connection in the wiring. Examine the places where the connections are made on that particular circuit.

Fuses blow repeatedly. Lamps defective or a short circuit. Try new bulbs.

Lamps go out for an instant only. If the lamps in one circuit so fail there is probably a loose connection on the circuit. If all the lamps go out for an instant there is probably a loose connection at one end of the wire from the generator terminal to the fuse box.

All lights burn dim. The usual cause for this is loose or slightly grounded connections, or poor or corroded connection at the battery. Possibly the battery has not had sufficient charging. Lamps may be old and blackened, try new bulbs.

Lamps too bright. Regulator set for higher voltage. Use bulbs of higher voltage.

the engine. Lamps burned out or filament broken, system short-circuited or open circuit, at fuse or switch.

Lamps burn bright, but fail to illuminate the road sufficiently. Lamps out of focus or brackets bent upward or downward. In case trouble is due to short circuit on some particular lamp socket, disconnect the attachment plug leading to this socket until cause can be repaired.

None of the lamps will burn, and no spark is obtained for ignition, may be due to the terminals of the battery being disconnected or corroded, so that contact is poor. Ground wire from the battery to the chassis is disconnected or broken. If the ignition is normal, the cause may be: Lead from the battery disconnected or broken, lead from generator terminal to the fuse block is disconnected or broken, lamps burned out. This is likely to happen from either of the previous causes mentioned, or if the battery is run down. If one lamp burns dim, change the bulb. If the same lamp continues dim, test the wiring to the lamp. Examine the lamp connector.

Lamps flicker. This trouble is usually

(Continued on Page 42.)

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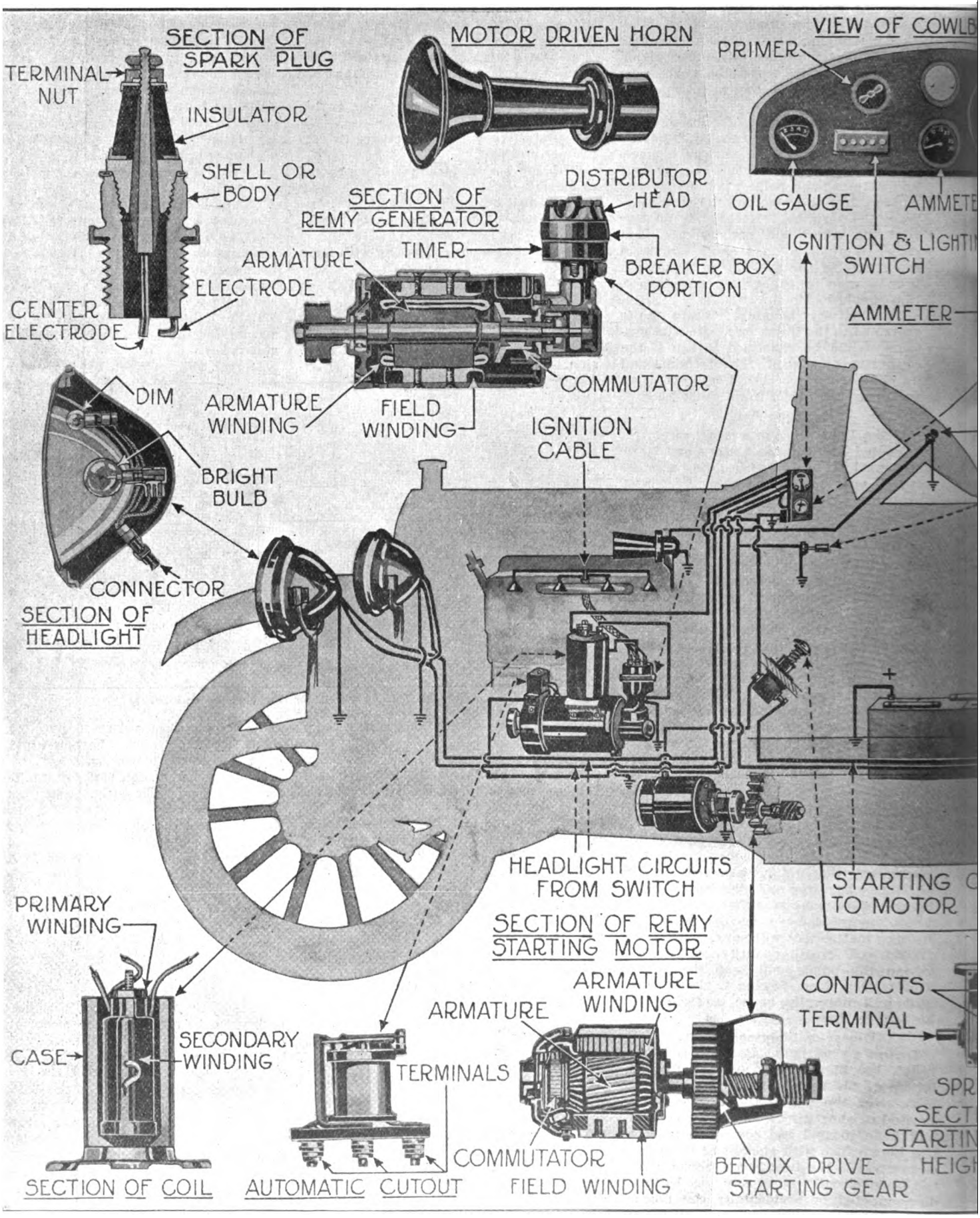
Modern Starting, Lighting and Ig



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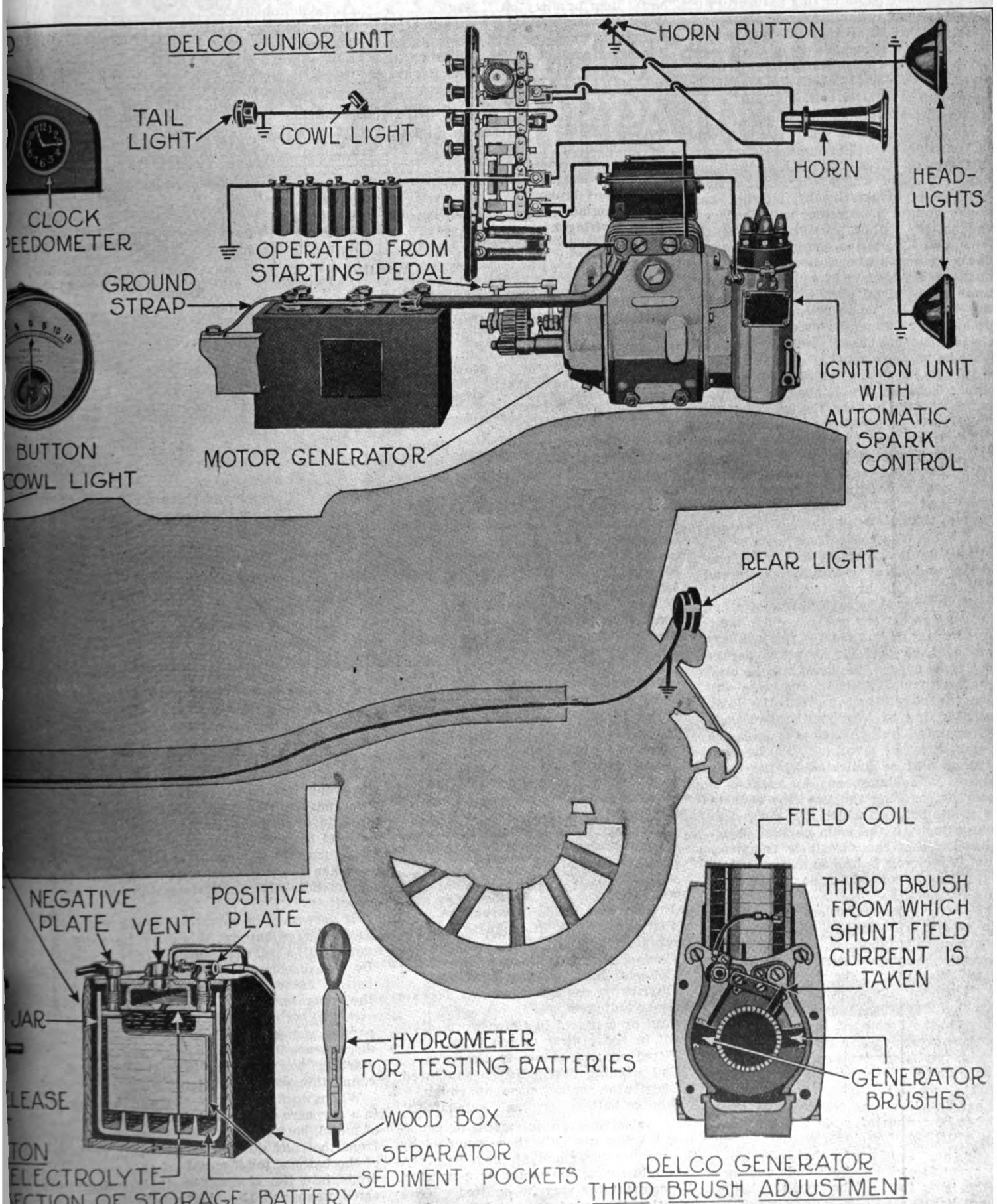
tion Systems Used in Automobiles



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(Continued from Page 39.)

attributed to loose connections. It may also be caused by bad contact or an intermittent ground. Vibration will sometimes cause trouble of this nature to appear. A poor ground connection might be the cause. If all lights flicker instead of one then the trouble is in the generator, or on the main lines running from it, and if only one flickers the trouble is in that individual circuit.

Short Circuits and Grounds.

If the insulation is worn from any one of the wires and the copper touches any of the metal parts of the car, a short circuit will result which will either render the system inoperative by blowing out one or both of the fuses or will discharge the battery. Short circuits may result from two bare wires coming in contact, but in general, where short circuits are mentioned a contact of a bare wire with some of the metal parts of the car is referred to. By "open circuits" is meant broken wires, fuses burnt out, or proper connections not made to the frame. It must be borne in mind that as the frame of the car forms one-half of the electrical circuit between the lamps, the ignition switch and the battery, the frames of the lamps and the terminals of the ignition switch and battery should be well grounded to the frame of the car at all times. In the Delco system, fuses are replaced by a protective circuit breaker which opens and vibrates when any wire is shorted, thus giving a warning.

The Lamp Test.

Probably the simplest and most convenient method of testing for shorts and open circuits is by a test lamp. This may be arranged by making use of a dry cell, storage battery or the regular lighting current. If one side of the ordinary drop cord, as used for shop and garage lighting, is opened, the lamp may be used as a test lamp. Cutting one wire will open the circuit and prevent the lamp from lighting as long as the two ends are separated, but when the two ends are brought together the circuit will be complete, as will be indicated by the lamp lighting. The lamp may be used as a tester by touching the two free ends to any points between which it is desired to make a test. If the lamp glows it is an indication that the circuit is complete, if not, the circuit is broken and a broken wire should be looked for, as an open circuit is indicated.

Proper Caution.

In case it is desired to know whether or not a wire is grounded, one of the test wires may be touched to the frame of the car and the other to the wire to be tested. If the test lamp is lighted it indicates that the wire is in electrical contact with the frame of the car and is therefore grounded. In making the test in a grounded system care should be taken to have the wire or circuit being tested disconnected from the frame of the car in all places where it is supposed to be connected, as in this case the lamp will light if a single connection is left. In the case of a wire that is broken, disconnect the wire at both ends and apply the lamp test. If broken, the lamp will not light.

Trouble.	Cause.	Repair.
Worn or pitted contact segments	Misfiring	Smooth down by grinding
Pitted platinum points	Misfiring	Smooth with oil stone or very fine file
Metal dust or dirty oil	Misfiring	Clean thoroughly
Worn bearing	Misfiring	Renew bearing
Terminals Loose	Misfiring	Tighten
Revolving contact brush	Misfiring	Renew brush
Out of time	Irregular spark	Reset timing gears
Burnt out resistance unit	No spark	Replace with new

INDUCTION COIL.

Defect.	Cause.	Repair.
Loose terminals	Misfiring	Tighten
Defective condenser, defective wiring	No spark	Return to factory
Connections broken	No spark	Renew joints
Switch contact poor	Misfiring	Tighten
Internal wiring broken	No spark	Repair
Coil unit dead	No spark	Return to factory

WIRING.

Defect.	Cause.	Repair.
Loose terminals	Misfiring	Tighten
Broken plug terminal	One cylinder will not fire	Renew
Timer wire broken	Coil will not operate	Try another coil or replace
Broken battery or ground wire	No spark	Replace
Chafed insulation or short circuit	Misfiring	Renew or insulate wire

SPARK PLUGS.

Defect.	Cause.	Repair.
Cracked porcelain	Plug inoperative	New porcelain
Porcelain oil soaked or wet	Plug misfires	Clean plug
Carbon deposits	Plug short circuited	Remove and clean
Porcelain loose	Plug misfires	Tighten bushing
Broken gasket	Lost compression	New gasket
Loose electrode in shell	Plug misfires	Tighten or renew
Loose wire in porcelain	Plug misfires	Tighten
Air gap too close	Spark short circuited	Correct setting
Air gap too wide	Spark will not jump	Set points 1/32 inch apart
Terminal loose	Plug may misfire	Tighten
Loose plug in cylinder	Compression leaks	Tighten
Mica insulation oil soaked	Short circuits plug	Replace

IRREGULAR RUNNING OF ENGINE AND MISFIRING.

Faults of Ignition System.

Wiring or terminals loose.
Spark plug insulator broken.
Spark plug points sooted or oily.
Spark gap at plug points adjusted wrong.
Secondary cable leaking.
Primary wire prematurely grounded.
Battery discharged.
Adjustment of contact points at timer poor.
Broken wire inside of insulation.
Platinum points in magneto loose or improperly adjusted.
Contact spring weak or roller worn.
Collector brush or pencil broken.
Distributor casing or contact breaker dirty or too much oil.
Cam or contacts in timer worn.
Oil in timer dirty or too thick.
Pitted contact points in timer.
Coil winding or condenser punctured.
Distributor contact segments rough.
Storage battery terminals sulphated.

In replacing worn out motor or generator brushes use only those supplied by the manufacturer and fit them properly.

In lubricating the motor or generator, the commutator may be omitted. If lubrication is needed use a small quantity of vaseline and wipe off with a cloth.

In washing the car, cover the engine with a waterproof covering so that the motor and generator will not collect moisture.

Use the starter with care; do not try to propel the car with starter; the engine was put into the car for this work.

Adjustments to the circuit breaker should be made at the factory that manufactured the system.

When the system is operating well do not meddle with it. Serious damage may result.

If necessary to operate the car with a dead storage battery, this may be safely done, till a service station is reached. Do not disconnect the terminals of the battery as serious damage will result to the generator.

In making repairs to the electrical apparatus, especially if it is to be removed, disconnect the storage battery before starting work. Removing the ground connection will be sufficient.

When working over a storage battery in a car, care should be taken that pieces of metal, buttons from your clothes, nails from tool box do not enter open vents of the battery, for if metal of this nature drops into the electrolyte it is quickly acted upon and the electrolyte is soon rendered useless.

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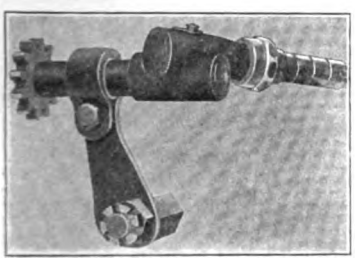
ACCESSORIES, EQUIPMENT AND TOOLS FOR THE GARAGE AND REPAIR SHOP

Standard Speedometer No. 505 for All Models of Ford Cars is a new instrument of the flush dash type that is fitted into the special cowl board supplied by the manufacturer. It is set in a strong steel

case with a nickel flange for fastening it to the cowl board. The odometer is of the planetary type, having a centrifugal governor. The speedometer, it is claimed, is not affected by atmospheric changes or adjoining electrical apparatus. It has a 10,000-mile season register that repeats automatically, 100-mile trip that can be set to zero in a few seconds time and a silver etched dial with large black numerals that are easily read.

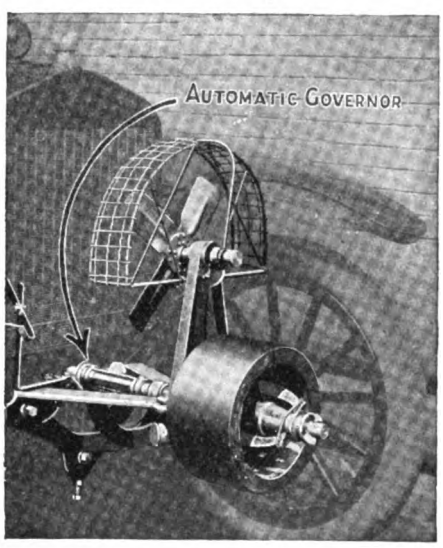


The Standard speedometer is guaranteed, all parts except fiber pinions, against defective material for one year from date of shipment, provided that they are not taken apart or tampered with. Transportation must be paid when returning parts to the factory for repairs.

Manufactured by the Standard Thermometer Co., 65 Shirley Street, Boston. Price, F-505, which comprises the special sedan model No. 205 with angle stem and all fittings for 1919 Fords with starter equipment, $16.

McGill Autopower Attachment for Ford Cars is a power attachment for driving farm machinery of various kinds that requires power within the range of the Ford engine.

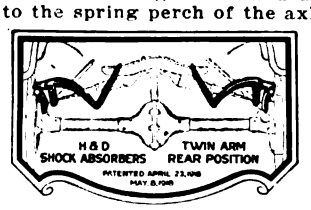
A three-cornered plate is attached to the frame, below and parallel with the radiator, which becomes a permanent part of the car. The attachment is bolted to this plate and consists of a suitable length of shaft that connects with the crankshaft of the engine, the opposite end carrying a friction clutch and pulley supported on a suitable bracket fastened to the permanent plate. The engine is cranked in the usual manner at the end of the length of shaft. After the engine is started the friction clutch allows the engine to pick up its load easily. A fan is mounted above the pulley, protected by a wire screen that supplies air to the cooling system of the engine. This fan is mounted on a standard that is fastened to the front end of the bracket.



The device is equipped with a governor that operates on the throttle of the engine, allowing the engine to supply power according to the work being done.

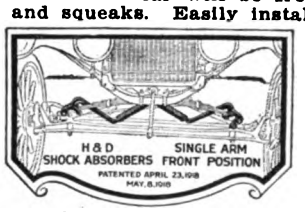
Manufactured by the Knight Metal Products Co., Detroit, Mich. Prices and literature on application.

H & D Ford Shock Absorbers for Passenger Cars or Trucks are manufactured either in twin or single arm and are attached to the spring perch of the axle and



the end of the spring. A coiled spring connects the end of the arm to the body beneath the radiator in the single arm construction. In the twin arm construction two coiled springs are employed, both fastened to the frame member beneath the radiator.

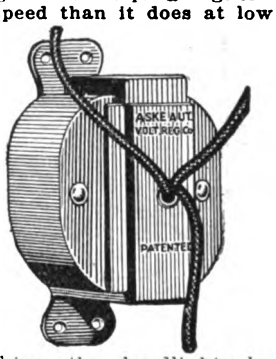
The manufacturer claims that installing a set of H D shock absorbers on a Ford car will greatly improve its riding qualities and that the car will be free from rattles and squeaks. Easily installed by



any one handy with tools in a few hours.

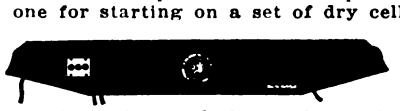
Manufactured by the H & D Co., Inc., Goodland, Ind. Prices on application.

The Aske Automatic Voltage Regulator for Ford Cars is a regulating device that is placed inside the dash of the Ford and automatically regulates the current of the Ford magneto as it is used by the lights. Advantage is taken of the fact that the Ford magneto develops a higher voltage at high speed than it does at low speed,



thus making the headlights burn dim when running slow and very bright when running at speed. The Aske Automatic Voltage Regulator, it is claimed, overcomes this difficulty and is backed up by statements of many users and by experiments carried out by the manufacturer.

The regulator is attached between the magneto and the lights much in the same manner as the regular switch and by means of a switch control, located on a dash board fitted to the cowl, may be dimmed or brightened at the will of the operator. Three pull switches are provided, one for starting on a set of dry cells,



a second for bright lights and the third for dim lights. Use is made of the dry cells for electric lighting the tail light when the car is standing with the engine not running. The regulator and dash board may be attached in a few moments and once installed becomes a part of the car.

Manufactured by the Aske Moore Corporation, Duluth, Minn. Price, regulator, $5. Instrument board complete, $15 including regulator.

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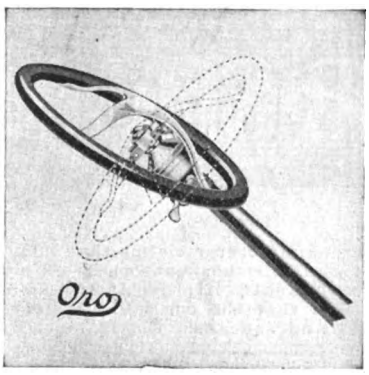
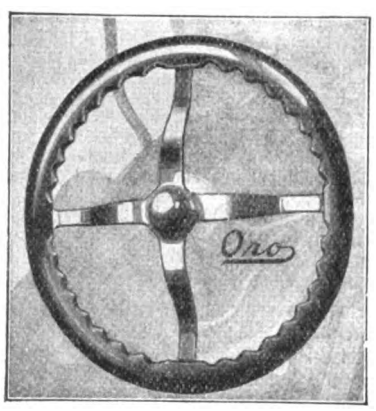
The "Oro" Steering Wheel for Ford and Chevrolet Cars, No. 324, has a spider fitting the shaft of the steering column as in the Ford wheel. It is a highly finished, corrugated wheel that may be tilted forward to the plane of the steering column for the convenience of the operator.

The wheel is 17 inches in diameter, instead of 15 inches, as used on the Ford, increasing the steering leverage and allowing the operator more comfort in driving and steering. When the driver is leaving the car the wheel is tilted forward, giving more room. Spider is made of malleable iron, finished in black enamel.



No. 326 wheel is similar to No. 324, but does not have the tilting feature. The spider is of the same material and the finish is black enamel. No. 325 has the tilting spider to which only the ordinary Ford wheel may be attached, giving the tilting effect to the Ford wheel.



Manufactured by the Auto Compressor Co., Wilmington, Del. Prices, No. 324 wheel, complete for Fords, $6; No. 325, tilting spider only, for Fords, $3.63; No. 326, non-tilting, corrugated wheel, complete for Fords, $4.63; No. 402, non-tilting, corrugated wheel for Chevrolet cars, $4.63; No. 403, non-tilting spider only, for Chevrolet cars, $2.25.

Emo Transformers consist of a small condenser like attachment that is placed at the terminal of the spark plug where the wire terminal usually attaches, this wire terminal being attached to the terminal of the transformer instead. Current in this manner is led into the transformer where, by means of a condenser like arrangement, the electricity is made to cross a space where there is no conductor, forming a vacuum in its passage.

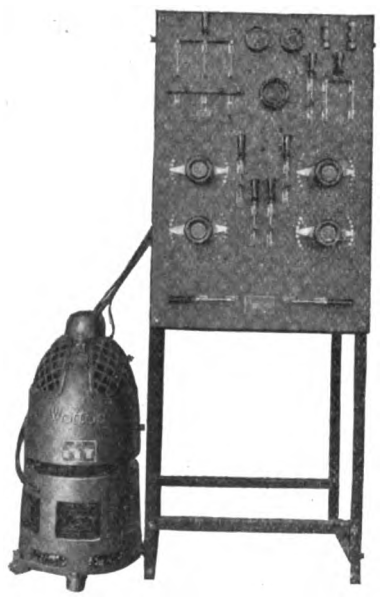
This jumping of the gap has a tendency

to raise the potential of the current to a somewhat higher voltage, so that the current upon reaching the tip of the plug at the spark gap at the points gives off a heavier and more intense spark. This is particularly desirable where the current is of a weak nature.

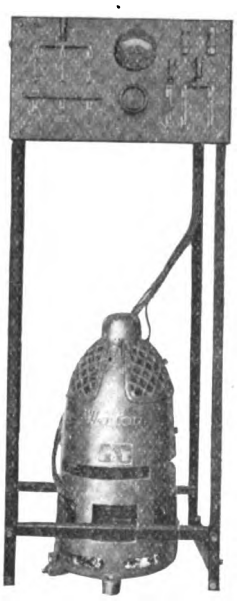
The manufacturer claims that the spark delivered is an intense blue white flash that keeps the plug points free from carbon, soot and oil, prevents bucking and loping of the engine, especially at low speeds, and that after a complete set has been installed the gasoline mixture may be made much leaner by shutting down the gasoline feed at the needle valve.

Manufactured by the Emo Laboratories, 2255 N. Illinois Street, Indianapolis, Ind. Price $1. Special dealers' proposition.

Wotton Vertical Motor Generator Type KS-12-20 is of the single charging circuit type, having control switches for the incoming and outgoing current, rheostat and ammeter for the charging current. One charging circuit is shown, but others may be added as business increase warrants. As many different charging rates as are desired can be obtained by grouping the batteries on the bench.



Each individual charging rate, if more than one is desired, requires an extra wall rheostat. All types of the Wotton motor generator charging sets are built on the vertical type except the smallest type HS-12-8, which has a capacity of 12 lead cells. This type has been developed for the beginner in the charging business and is not especially adapted to larger installations. Wotton motor generators convert alternating current at line voltage into direct current at battery voltage. Thirty-two, 55 and 110 volts are the standard voltages for charging batteries, the lowest voltage being ample for the largest battery and the regulation is such as to charge the smallest battery without useless waste of current, the manufacturer claims.



Manufactured by the Electric Products Co., Cleveland, O. Prices and literature on application.

Chauffeur's Hand Soap is used principally for removing grease from the hands of repairers or operators of automobiles. The maker states that it is made from the purest and best of materials, is non-injurious to the skin and leaves the hands

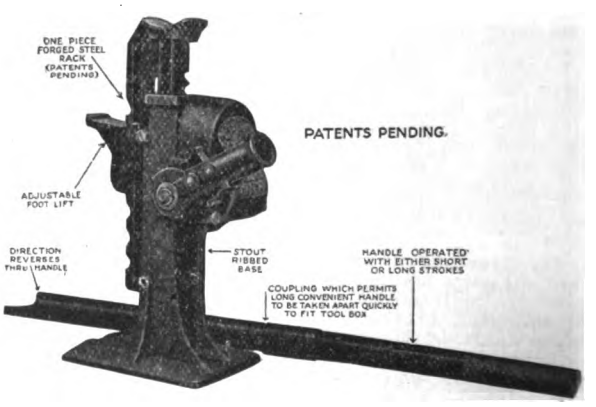
smooth and pliable after use. It is claimed that it will remove all grease and grime. The soap is packed in individual cartons, 100 to the case.

Manufactured by the Decatur Union Chemical Co., Decatur, Ill. Prices on application.

The New Duff Universal Automobile Jack is manufactured in a 1½ ton size only, which is ample for all passenger cars. The jack is operated by as long or as short a stroke as desired and with the operating handle inclined at any angle, a feature desirable in the case of cars having gasoline tank, tires or other obstructions in the rear.

The Duff jack may be either raised or lowered, without reaching under the car, by simply turning the handle half way round. To raise the operating handle is inserted in the socket with the side of the operating handle marked "raise" in the up position. To lower, the operating handle is withdrawn until it disengages the operating mechanism, but still remains in the socket, and is then turned half way round with side marked "lower" up. A spring maintains the socket in a raised or horizontal position so that the operator may insert the handle without bending down to adjust the socket.

By means of an adjustable foot lift this jack may be instantly made to fit under the lower axle of any car. The range of adjustment varies from four to 18 inches and is wide enough to handle any car in any position on or off the road, the manufacturer states.



The operating handle is twice as long as the ordinary jack handle, making it easy to operate on account of the greater leverage. The long handle easily clears all obstructions at both front and rear of the car. When not in use the long handle uncouples for half its length, easily fitting into the smallest tool box.

Manufactured by the Duff Manufacturing Co., Pittsburgh, Pa. Sold through jobbing houses. Literature and prices on application.

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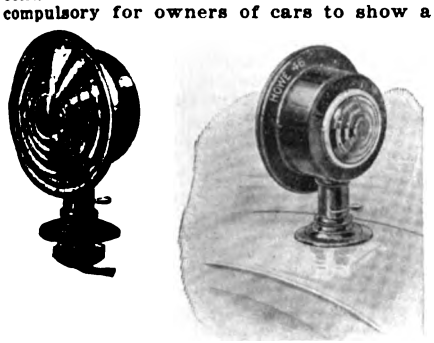
The Howe No. 46 Parking Light consists of a single lamp, placed on the rear left fender and lighted direct from the storage battery of the car. When the car is parked at night the owner may turn out his head lights and tail light and turning on the switch of the Howe Parking Light, have a light that will show white in front and red in the rear.

It may also be applied to buggies or wagons and lighted from a set of dry cells. The laws of some states make it compulsory for owners of cars to show a



red light in the rear and a white light in front when cars are left standing on public streets or in a public parking space at night.

The outfit includes a switch in the support of the lamp, three feet of water proof wire and a six-eight volt, two candlepower bulb. The face of the lamp is 3¾ inches in diameter. The lamp is made of steel and finished in black enamel. The entire weight is one pound. Packed in individual cartons, 50 to the shipping case.

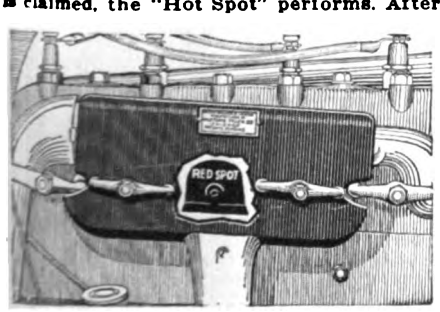
Manufactured by the Howe Lamp and Manufacturing Co., 115-123 E. Ontario Street, Chicago. Price, $2.50.

"Tinol" Tinning Stick" is a new form of solder and flux combined. When the stick begins to melt it deposits a film

of tin which enables the solder to flow freely. It may also be used for all kinds of tinning work without the use of solder. It is non-corrosive and will answer the purpose of radiator repairers and others in the automotive industry using solder and flux.

Manufactured by Hess & Son, 2910 N. 10th Street, Philadelphia. Prices on application.

The Red Spot or Hot Spot for Ford Cars and Trucks consists of a patented device that is attached between the intake and exhaust manifold of the Ford engine. The maker states that the gasoline today is of a poor grade and to get the utmost power out of it the gasoline must be warmed before entering the cylinders. This duty, it is claimed, the "Hot Spot" performs. After



the "Hot Spot" is positioned, it is covered by a metal cover fitting over the exhaust manifold and inlet manifold. The heat of the exhaust manifold is thus retained and helps still further to warm the entering gas.

The manufacturer claims that its use will make a Ford act similar to a six, in traffic, or on the hills, delivering from 35 to 80 miles more from every tank full of gasoline used. It is claimed that the "Hot Spot" during cold weather will keep the intake manifold warm, insuring easy starting of the engine. It may be attached by anyone in a few moments simply by loosening two nuts and fitting the "Hot Spot" in place. It is guaranteed on a money back basis.

Manufactured by the Axleford Truck Co., 7311 Crandon Avenue, Chicago. Price, $5.

Clover Grinding and Lapping Compounds are put up in four-ounce and one-pound cans, with two grades, grade A being used to polish the surfaces and insure a perfect contact and grade C to seat the valve.

The manufacturer claims that Clover grinding compounds contain the best abrasive and grease binder that money can buy and that emery is not used for the abrasve material.

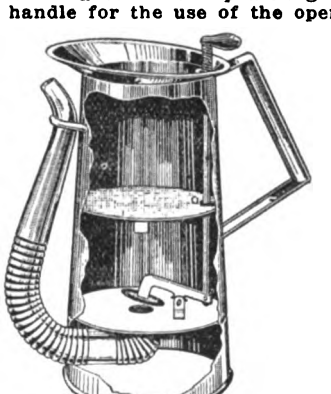
The four-ounce can is a convenient size for the motorist or garage man who wishes to give Clover grinding compounds a trial, while the one-pound can is more convenient and economical for the service

station that has decided to use this brand in valve grinding and piston lapping work.

Seven grades are manufactured: 1-A (very fine), A (fine), B (medium fine), C (medium coarse) D (coarse), E (very coarse) and No. 50 (extra coarse).

Manufactured by the Clover Manufacturing Co., Norwalk, Conn. Prices and literature on application. Special terms to manufacturers.

The All-in-One Liquid Measure is a container having a flexible spout and a valve connected to a suitable trip arrangement at the handle for the use of the operator



in putting oil into car engines. It is made throughout of the best of material and has either a copper or tinned finish as the purchaser wishes.

The flexible spout is lifted up out of the way after using and is held in this position by a small hook on the front of the measure at the top. It is claimed that this device is very handy for the garage or service station, as much of the trouble of supplying oil to autoists is eliminated.

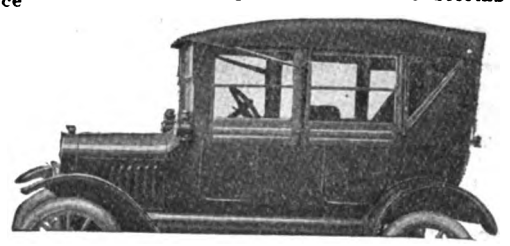
Manufactured by the Dayton Iron and Steel Co., 119 East Third St., Dayton, O. Price, one-half gallon, coppered, $3.50; one-half gallon, tinned, $3.25.

Ustus Limousette for Ford Cars is an attachment for converting the regular top of the Ford touring and roadster into a closed top for winter use. It consists of the necessary sections equipped with slides for attaching to the windshield and bows and curtains of the roller type, fastened at the top as in an ordinary window curtain and made of heavy rubber fabric, with DuPont Pyralin windows inserted in the side.

The curtains may be rolled up out of the way for summer driving and drawn down for winter driving, the sides of the

curtains fitting the slides of the bow and windshield sections so that the curtain is prevented from working loose or blowing open.

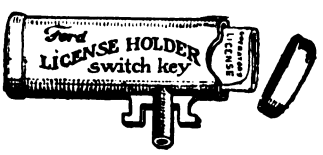
The curtains and sections are easily installed by one handy with tools in two hours without mutilating or altering the present top. After once installed the fixtures become a permanent part of the top, protecting the operator from the storms



of the winter months. A clear range of vision is provided by the use of Pyralin windows in the curtains, giving the operator an unrestricted view on all sides. It is claimed to be wind and rain proof at all points, and improves the general appearance of the car.

Manufactured by the Dufoe-Eustice Co., Inc., West Jefferson Ave., Detroit, Mich. Price, touring car, $46; roadster, $30; f. o. b. Detroit. Duty added for Canadian prices.

License Holder and Key for the Ford Car Switch is a metal container for the driver's license and a key for the Ford switch, combined in one article. The container



is made of metal, finished in polished nickel, having a pressed on cap. The container is of ample size for the license when folded and makes a neat, convenient carrier. It is small enough to be carried in the vest pocket when not in use as a switch key and when used as the switch key is not too large to be cumbersome. Put up on neat display boards for the jobbing trade.

Manufactured by the Metal Specialties Co., Attleboro, Mass. Price, 50 cents each.

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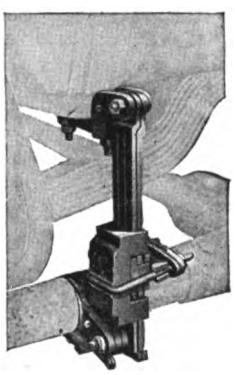
The National Shock Absorber consists of a simple arrangement that is attached to the axle housing at the bottom and the side of the body at the top. The device is composed of two blades, slightly thicker at the top than at the bottom, suspended from the body hanger by a hinged joint and passing between clamps and rollers that offer more or less friction to the passage of the blades. This friction is adjustable by means of two nuts at the side fastened to a clasp. The clamp and rolls are fastened to the axle support by means of a hinged joint.

The device is easily applied to a Ford car in a few minutes and is adjustable to the weight of the car by turning the two nuts at the side of the clamp to tighten

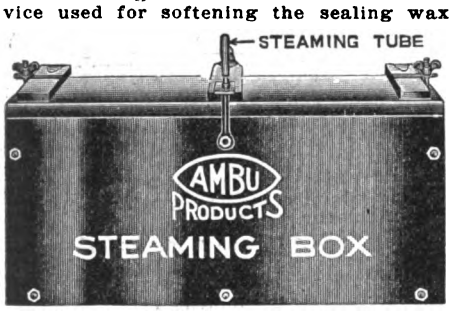


the friction exerted upon the bars or loosening the nuts to make the friction less.

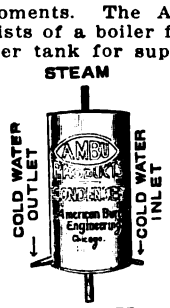
The manufacturer claims that its use will greatly increase the comfort of riding over rough roads and the life of the car, and that the strain on the running gear and tires will be reduced.

Manufactured by the J. S. Lang Engineering Co., 5 Park Square, Boston, Mass. Price, Ford equipment, set of four, $30; set of two, $18; equipment for other cars up to 2400 pounds, set of four, $42; set of two, $24; all extra fixtures for attaching to the car included. In ordering mention the make of car, year and model.

The Ambu Battery Steamer, Condenser and Steaming Box is a steam heated device used for softening the sealing wax



on the top of storage batteries, allowing the removal of the cells and their elements in a few moments. The Ambu battery steamer consists of a boiler for producing steam, a water tank for supplying water

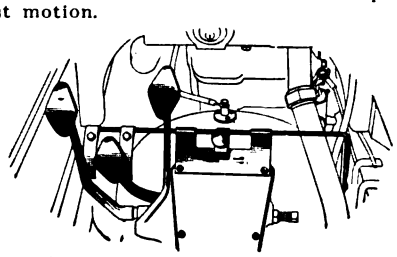


to the boiler and a steaming box in which the battery is placed. An automatic inlet valve keeps the level of the water in the boiler at one inch. When used with the Ambu condenser ½ to ¾ gallons of distilled water per hour is obtained. The Ambu steaming box allows the battery to

be immersed in a bath of hot water, which greatly facilitates the softening of the sealing compound.

Manufactured by the American Bureau of Engineering, 1601-1603 S. Michigan Avenue, Chicago. Prices, complete outfit, $25; with condenser for distilled water, $35; condenser alone, $12.50.

Speederator for the Ford Car consists of a cross rocker shaft located behind the foot pedals and supported by a bracket as shown in cut. On the shaft are two fingers immediately behind and in connection with the slow speed and reverse pedals, the position being such that a movement of either pedal rotates the rocker arm shaft. Rotation of the shaft opens the carburetor valve by means of a vertical arm on the shaft and a connecting rod to carburetor. A spring tends to keep the carburetor valve closed and takes up all lost motion.



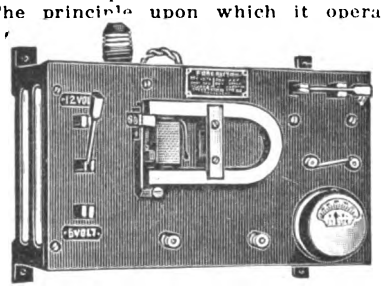
The foot throttle used for operation on high speeds is clamped to the center of the cross shaft and projects through the finger hole in the floor boards in such a position that the right foot pivoting on the heel in normal position may be conveniently brought to operate the foot throttle. A special pull rod is supplied with the device, to be used in place of the regular pull rod. This rod connects with the arm on the present steering post throttle shaft and the carburetor valve, giving a link motion.

It is claimed that racing of the engine is eliminated by this device when using the low or reverse gear and that stalling of the engine is an impossibility. The Speederator is easily attached by any one handy with tools in a few minutes.

Manufactured by the Versal Products Manufacturing Co., Detroit, Mich. Price, $4.85.

The Fore Rectifier Type 2-B has a capacity of 12 volts and will charge both six and 12-volt batteries from an alternating current line. It may be used with direct current when suitable additional apparatus is purchased.

The principle upon which it operates

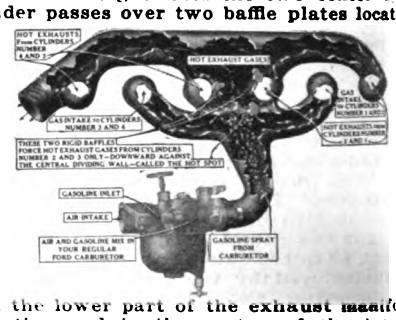


is that the current alternates; that is, for one cycle it flows in one direction and during the next cycle it flows in the opposite direction. A rectifier is made to take advantage of this change in cycles, but operates on only one of the cycles, in this manner charging the battery in one direction at all times. Regardless of the manner in which it is connected to the alternating current line, it picks the proper cycle and charges from this till the battery is fully charged, reducing the charging rate automatically as the battery approaches full charge.

The manufacturer claims that a battery may be attached at night and left on charge till morning without harm to the battery, as the automatic control will care for the rate of charging. Other sizes are also manufactured up to 220 volts.

Manufactured by the Kentucky Electrical Co., Owensboro, Ky.

Anco Evenheat "Hot Spot" Manifold for Ford Cars is a device that takes the place of the regular intake and exhaust manifold on the Ford engine. The Anco manifold casting is in one piece and it receive its name, "Hot Spot," from the fact that the exhaust gas from the two center cylinder passes over two baffle plates located



in the lower part of the exhaust manifold section and in the center of the intake manifold. The inrushing fresh gas comes in contact with this hot metal surface, warming the gas before entering the cylinders.

The result of the use of this manifold is claimed by the manufacturer to be a smoother running engine, developing more power and increased mileage. It is further claimed that the raw gas entering the intake manifold encounters the heat from the exhaust at this central point and that the particles of gas are broken into a mist that is consumed to better advantage when fired in the cylinder.

Manufactured by the Anderson Co., South Bend, Ind. Price, including instructions for installing, one in a box, $9.75.

"Zip" Cementless and Heatless Patch for Inner Tubes is sold in sheet form, ready for use. It consists of a rubber composition, coated on one side with a cement preparation and covered with gauze. When needed for use, a section is cut from the strip of the desired size, the gauze is taken from the cemented surface and gas-

oline applied to moisten the cement. When the gasoline evaporates the patch is applied to the puncture on the tube. Pressing the patch firmly in place is all that is necessary, the manufacturer claims, as the tube may be immediately inflated and the patch will become vulcanized to the tube by the heat of the road, with the tire in service.

Manufactured by the Baker & Lockwood Manufacturing Co., Kansas City, Mo., 3021 Michigan Avenue, Chicago; 173 Kent Avenue, Brooklyn, N. Y. Prices on application. Money back guarantee.

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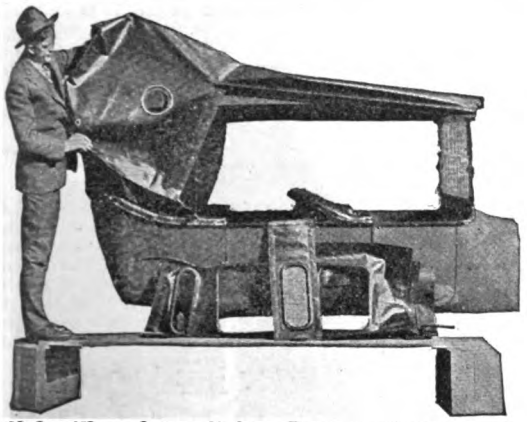
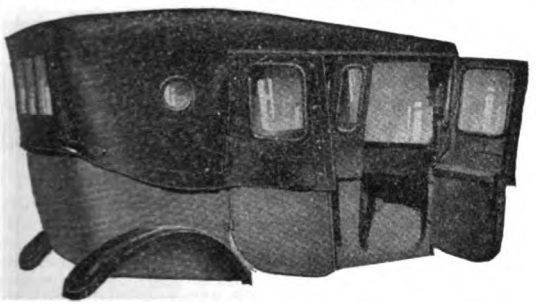
Baker "Over-the-Top" Auto Top is a patented device for converting the regular top of many passenger cars, including the Ford, into a closed car for winter use. It consists of a covering of extra heavy artificial leather that is applied by fitting it over the old top now on the car. It has three lights in the rear curtain and a single round light at each side. Special side sections are supplied for the doors and the section between the doors, each provided with a large light. Door sections fasten to the top of door by a strap iron and swing open with the door. It is made for the following cars:



Class one, Ford touring and roadsters only, special with all celluloid windows; regular with all glass windows, except over right front door.



Class two (1917, 1918, 1919 models only), Buick, D, E and H, 34-35-44-45; Chevrolet, Dodge, Dort, Hupmobile, Maxwell, Oakland 32, Overland 75-83-90, touring and country club models.

Class three, Buick E and H 49; Essex, touring only; Hudson, speedster and touring; Nash, touring only; Oldsmobile, four-passenger, sport and touring; Overland 85, four and six-cylinder; Reo, Studebaker, touring only.

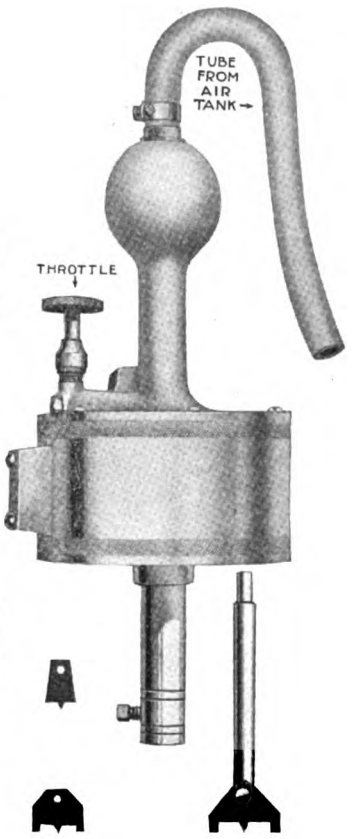
Patterns for other models will be ready very soon.

Manufactured by the Baker & Lockwood Manufacturing Co., Seventh and Wyandotte Streets, Kansas City, Mo.; 473 Kent Avenue, Brooklyn, N. Y., and 3021-23 Michigan Avenue, Chicago. Prices and literature on request.

Norwesco Iron Cement is a new product which the manufacturer claims will permanently repair cracks, blemishes and sand holes in iron and steel castings and leaks in radiators, boilers, steam, hot and cold water pipes, threaded joints, etc. It is made in powder form and manufactured under strict laboratory supervision, which insures a standard quality that will give the desired results.

Norwesco Iron Cement is put up in cans of three sizes, six ounces, one pound and five pounds. When mixed with water and applied according to directions repairs may be made at small expense.

Manufactured by the Northwestern Chemical Co., Marietta, O. Prices on application.



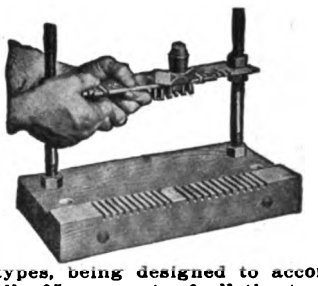
Veltum Pneumatic Valve Grinder is a new tool for the repair shop and service station that differs from the regular run of tools for this class of work in that air is used for the source of power instead of electricity.

In the Veltum Pneumatic Valve Grinder the operator has complete control of the speed of the tool from 50 to 1000 strokes per minute at an air pressure of from 15 to 500 pounds of air taken from any source of supply that one may now have. The maker states that it is possible to do the entire job of grinding, using low speed for preliminary grinding, intermediate grinding at high speed and finishing at low speed.

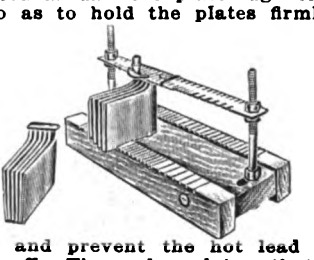
The manufacturer states that this tool will grind any size valve, fit over any size valve stems into valve guides and is capable of handling delicate work, such as grinding carburetor float valve stems and fuel system valves. All castings are of aluminum, which gives the tool unusual lightness.

Manufactured by the Warnock-Worth Co., 624 S. Michigan Avenue, Chicago. Price, $22.50. Sold only through the jobbing trade.

Ambu Plate Burning Racks are to be used when burning-in battery straps to plates or burn-in new plates. The racks have guiding slots cut in the base and in the iron bar, or comb at the top. In this way the plates are held at exactly the right distance apart both at the top and bottom. Bases are made of hard wood. The small rack is large enough to take care of practically all ⅛-inch plates made by Willard, Gould, Philadelphia and U. S. L. It will also accommodate all thin plates such as the Exide 3xC, Willard and Gould. The large rack will take care of many other types, being designed to accommodate fully 95 per cent. of all the types of plates which are made.



Special iron fittings are furnished, which are placed around the plate lugs on the comb so as to hold the plates firmly in position and prevent the hot lead from running off. The maker claims that this device enables the operator to burn-in plates in half the time required when using the ordinary rack.



Manufactured by the American Bureau of Engineering, 1601-1603 S. Michigan Avenue, Chicago, Ill. Prices, small rack, $7.50; large rack, $12.50.

Baker Hood and Radiator Covers for All Cars Except Fords are manufactured from three grades of material, enameled drill, enameled duck and artificial leather, and in three sizes—class number one for small cars, class number two for all medium size cars and class number three for very large cars. A line of radiator covers for commercial cars and trucks is also manufactured, as well as a special line for the Ford car.

The covers are so made that the shutter at the front may be rolled up only half way or all the way, exposing the top alone to the air and leaving the bottom covered or open all the way as desired. They fit the engine from the dash to the radiator, including the radiator, or may be purchased for the radiator alone.

Manufactured by the Baker & Lockwood Manufacturing Co., Kansas City, Mo., 3021-23 Michigan Avenue, Chicago; 473 Kent Avenue, Brooklyn, N. Y. Prices on application.

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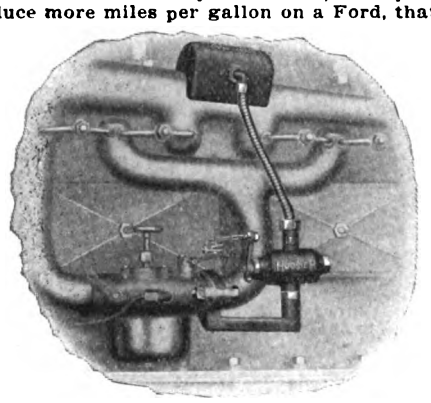
The Hoosier Sub-Carburetor is a heating device that is attached to the manifold flange adjoining the carburetor. A suitable valve is provided in a separate cylinder, operated by the pull rod that opens the throttle, controlling the flow of warm air. Connection is made from the top of the device to a stove securely fastened over the exhaust manifold, allowing the heat of the exhaust manifold to pass through a connecting pipe to the valve and through this valve to the intake manifold, where it enters with the gasoline passing to the engine cylinders.

The purpose of the device is to admit the warm air ahead of or with the gasoline, allowing the engine to operate on a lean mixture, the amount of heat admitted depending on the opening of the throttle and the speed of the engine.

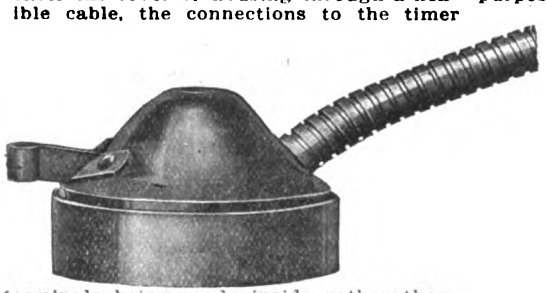
The manufacturer claims that this device is mechanically automatic, will produce more miles per gallon on a Ford, that



the formation of carbon in the cylinders will be reduced and that starting of the engine will be greatly facilitated. It is easily installed by any one handy with tools. Installations are also shown on other make of cars which require special fittings.

Manufactured by the Hoosier Sub-Carburetor Co., Indianapolis, Ind. Prices, Ford, $10; Maxwell, Dodge and other four-cylinder cars, $11; Premier, Studebaker, Buick and other six-cylinder cars, $12; Cadillac, Packard and other eight and 12-cylinder cars, $14. Thirty days free trial.

The Yankee Timer for Ford Cars departs from the usual Ford timer construction in that a swinging arm brush contact is employed instead of the conventional roller rotor. The cover is constructed in two sections, fitting tightly together and forming a compact unit. The terminal wires enter the cover or housing through a flexible cable, the connections to the timer



terminals being made inside rather than outside, as is the custom. This construction prevents oil collecting on the wires,

eventually short-circuiting them and rendering them useless, the manufacturer states.

The sliding contact brush of the Yankee timer revolves over the flat surface of a fiber disc in which contact terminals are imbedded and perfectly machined leveled. The manufacturer claims that wearing and jumping over grooves and irregularities are eliminated and that the ignition is greatly improved. Oil or grease is not required in a timer of this construction as the contacts are made by a brush or sliding contact.

Manufactured by the International Metal Manufacturing Co., Wayne Junction, Philadelphia, Prices and literature on applica-

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The Howe Safety Tail Light is attached to the rear lamp hanger in much the same manner as the ordinary rear lamp, but combines a rear danger light with red glass and a brilliant white light for driving when in reverse, showing the operator what is behind him. The light is especially convenient when backing up or turning around on a country road at night. The light is thrown off and on by a switch located near the driving seat, the switch controlling the white light, the rear light being operated from the regular lighting circuit. The lamp gives a brilliant white light for 50 feet back and the full width of the road. One push of the switch throws on the light and the second push throws it off.

The lamp is finished in black enamel and comes complete with bulbs, connectors, etc., and is packed in an individual carton with full instructions and wiring dia-

gram for attaching.

Manufactured by the Howe Lamp and Manufacturing Co., 115-123 E. Ontario Street, Chicago. Price, No. 40, $4.50; west of Colorado, $5; in Canada, $6.75.

Adpasco Treated Gasket Paper is treated with a compound, making it a very useful paper packing for general use in garages and repair shops. It is suitable for all purposes and for all joints in automobiles

excepting joints in direct contact with extreme heat. It is claimed that Adpasco is water proof.

Tenax Sheet Packing is tough, compressed asbestos fiber sheet that is claimed to withstand temperatures up to 1200 degrees Fahrenheit and 250 pounds steam pressure. Will not squeeze out of joints and will pack a joint perfectly tight.

Manufactured by the Advance Packing and Supply Co., 11-15 N. Franklin Street, Chicago. Prices on application.

The L & L One-Piece Slip On Lining embodies a new idea in Ford transmission and brake linings and has just been placed on the market by the L & L Automobile Accessories Corporation of Hartford, Conn. Instead of adhering to the old three-piece principle, that is, a separate lining for each band, the L & L is made in one piece.

The maker states that the advantages of a one-piece lining over the three-piece ones are numerous. Most important is the saving of time and labor. It requires

about 3½ hours to put in an ordinary transmission and brake lining. The L & L one-piece goes on in less than one hour, and after the first one has been put in the succeeding ones require only about a half hour's time to attach.

Another decided advantage of the L & L is that no rivets or new felt gaskets are required when installing. It is even unnecessary to remove the transmission cover to put one in after the first one has been attached.

L & L linings do away entirely with all chatter and vibration and will not glaze or stick. They are made of the very best material and retail for $3.

From the many advantages claimed for the L & L one-piece lining it will no doubt be warmly welcomed by Ford owners, garages and repair men.

Manufactured by the L & L Automobile Accessories Corporation, 135 Church St., Hartford, Conn. Dealers and others desiring further information should write to the corporation.

The Apco Combination Muffler and Cut Out for Ford Cars is made from a one-piece gray iron casting with the valve and attaching bracket malleable. The valve

is held closed by twin springs, which prevent leakage of gas, and the valve is guaranteed by the manufacturer not to stick.

When open the valve gives a full, clear opening for the exhaust and a skipping cylinder may be instantly detected. The installation is very simple and may be done by the owner with an ordinary wrench in 15 minutes, it is claimed.

Manufactured by the Apco Manufacturing Co., Providence, R. I. Price, $5.

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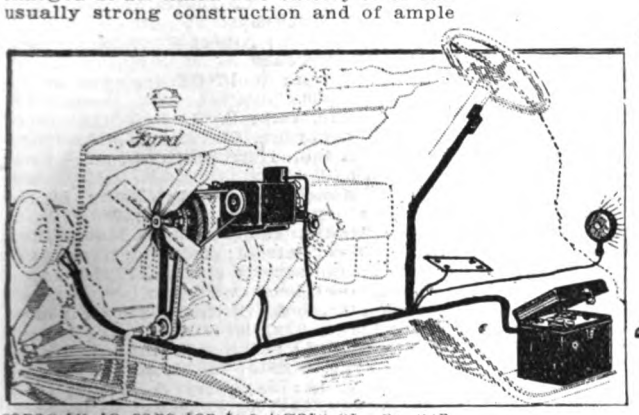
Titan Electric Lighting System for Ford Cars consists of a generator, cut-out, battery and battery box, tail light, two headlight bulbs and special attachments. Special Ford attachments consist of generator bracket, complete wiring assembly with switch, pulleys, belts, bolts and full instructions for installing in the car.

The generator is two-pole, shunt wound, with ball bearings, and is provided with a third brush for regulating the output. A simple, reliable cut out relay is mounted on top of the generator, making a single unit of the two. The output of the generator is sufficient to keep the battery charged at all times. The battery is of unusually strong construction and of ample

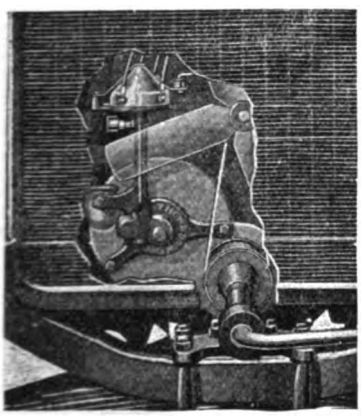


capacity to care for the lights of any car.

The wiring assembly is complete in itself and takes the place of the original wiring for the lights. The switch is mounted on the under side of the steering column next to the wheel and is provided with two push buttons, one of which throws the lights on while the other is used in dimming the lights, and they are within easy reaching distance.

Manufactured by the Titan Engineering Co., Union City, Ind. Price on application.

The Thomas Timer Elevator consists of a suitable bracket or housing and the necessary drive shaft and bevel pinions attached to the end of the camshaft of the Ford engine, and elevates the timer to a vertical position, where it is protected from dust and mud. The Thomas Timer Elevator is installed in a short time and allows the placing of the wires from the coil to the timer in an overhead position,



where they will be free from oil. The timer is placed in a more accessible location and may be repaired to better advantage.

Lubrication for the drive shaft is provided by means of a compression grease cup, placed below the timer case. It is claimed that elevating the timer in this manner will eliminate many of the troubles to which the Ford timer is subject. The Timer Elevator will fit any Ford car, truck or tractor and may be installed without removing the radiator.

Manufactured by the Thomas-Andrews Corporation, 624 South Michigan Avenue, Chicago, Ill. Factory, Waukegan, Ill. Price, $3.50.

The Ab-rec is a device that enables the motorist to charge a 6, 8, 12, 18 or 20-volt storage battery from an alternating current circuit. The Ab-rec will pass a current of about two amperes charging a six-volt battery. When charging a higher voltage battery the current will be somewhat less. The charger is operated by screwing a plug into a lamp socket, connecting two wires to the battery and turning the socket button.

The outfit is automatic in operation, as there are no regulating appliances. An ampermeter is not included, although the

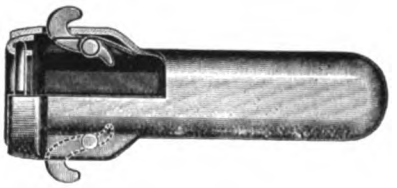
manufacturer recommends its use and sells it as an extra. The device, it is claimed, cannot be burned out regardless of whether one is charging a 6, 8, 12, 18 or 20-volt battery. After long service, usually a year for a private owner, two small electrodes will be consumed and a change of fluid will be necessary. The fluid is made by dissolving in pure water a powder, obtained from the manufacturer.

The device has been thoroughly tested by the manufacturer and, in fact, is an improvement of an older one manufactured by the same company.

Manufactured by American Battery Co., 1132-1134 Fulton St., Chicago, Ill. Price, for alternating current circuits of from 50 to 125 volts pressure, $24; ammeter, extra, $8. Shipping weight, 45 pounds.

Schrader Universal Quick Acting Dust Cap. The firm of A. Schrader's Son, Inc., is bringing out a new patented quick acting dust cap which, besides being easy and rapid in attachment and detachment, possesses the additional quality of being highly ornamental. The new dust cap is made of brass drawn into a shell and has two lateral teeth or prongs made of tempered steel which fasten into the thread of the valve stem.

There is no screwing or turning of the cap to engage the thread of the valve stem. One simply slips the cap over the valve stem as he would slip a thimble over



Schrader Universal Quick Acting Dust Cap No. 3199, Patented Nov. 23, 1915, April 29, 1919.

his thumb. The entire operation of putting on or taking off the new dust cap occupies less than two seconds.

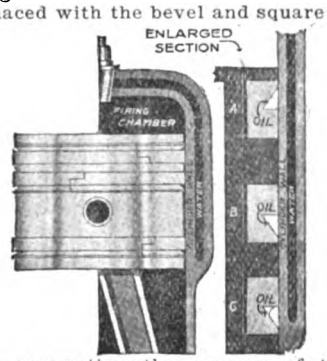
Because of its clean lines and high nickel finish it will make a special appeal to motorists who are fastidious as to the appearance of their cars.

Manufactured by A. Schrader's Son, Inc., 800 Atlantic Avenue, Brooklyn, N. Y. Retail price, 50 cents; $2.50 for a set of five.

The No-Leak-O-Oil Sealing Piston Ring is a patented piston ring that is guaranteed by the manufacturer to prevent the passage of oil from the base of the engine into the combustion chamber and also prevent the passage of kerosene, or coal oil as it is sometimes called, from passing from the combustion chamber, where it is present in the fuel gas, to the base of the engine and mixing with the oil of the reservoir.

The rings are similar in construction and form to the regular cast rings, differing from them by having a groove cut at right angles to their face, and passing completely around the ring. One edge of the groove has a square edge, while the other is beveled at a 45-degree angle.

In placing a set on the piston the upper ring is placed with the bevel at the top and the square edge down, to prevent the passage of the kerosene. The other rings are placed with the bevel and square edges



down, preventing the passage of the oil from the base. In operation oil from the base works up on the cylinder walls, fills the two bottom grooves, acting as a cushion or packing between the piston and the cylinder wall, while the upper grove, filled with oil and kerosene, acts in the same capacity. By this method, it is claimed, carbon in the combustion chamber is reduced to a minimum, and the wastage of oil from the base is prevented. If a cylinder is scored or badly scored, it is further claimed that no direct benefit will be obtained.

The accompanying cut well illustrates the placing of the rings on the piston.

Manufactured by No-Leak-O Piston Ring Co., 824 W. North Avenue, Baltimore, Md. Prices and literature on application.

Ford Car Enamel is an enamel paint that the manufacturer claims can be applied to the car one day and will dry so that the car may be used next day. The paint and varnish are combined so that only one coat is necessary, requiring but very little time and effort to apply.

The ingredients used in its manufacture have been proven by the manufacturer to be highly satisfactory for applying to

metal surfaces, for withstanding the expansion and contraction of the metal, and insures a beautiful lustrous and lasting finish.

Other articles manufactured by the company include Waterproof Mohair Top Dressing, Leather R-Nu, Nu-Auto Finish, Diamond Carbon Remover, Engine Enamel, Lining Dye, Aluminum Paint, Body-Nu, Brass-Nu, Rubber-Nu, Nu-Back Shellac and Lamp and Fender Enamel.

Manufactured by the Nu-Back Manufacturing Co., St. Louis, Mo. Prices, Ford car enamel, quart, $1.50; pint, 90c.

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RECORD OF BUILDING OPERATIONS FOR OCTOBER

Contracts Made and Plans Contemplated for Alterations or Erection of Garages, Repair Shops, Service Stations and New Plants.

CONTEMPLATED PLANS AND SPECIFICATIONS.

Foley, Ala.; Sinclair & Shane; one-story garage, 60x70.

Montgomery, Ala.; J. S. Pinchard; one-story garage; $10,000.

Samson, Ala.; Sellers Auto Co.; one-story garage, 100x120; $30,000.

Chandler, Ariz.; Richardson & Timpel; one-story garage, 50x150.

Ashdown, Ark.; Ashdown Motor Co.; one-story garage, 25x135; $30,000.

Dermott, Ark.; Henry Thane; one-story garage; $25,000.

Fayetteville, Ark.; J. C. Figitt; one-story garage; $25,000.

Little Rock, Ark.; Moxley Graham Motor Co., 916 Main street; one-story auto building, 50x140; $20,000.

Dinuba, Cal.; Albert A. Gondron; one-story garage, 50x100; $7500.

Fresno, Cal.; Bottoms-Williams Motor Co.; one-story garage, 150x150; $30,000.

Fresno, Cal.; Claude M. Thompson; one-story garage; $17,000.

Modesto, Cal.; Mrs. Maria F. Hewell; one-story garage; $50,000.

Oakland, Cal.; John H. Barry; one-story garage; $6000.

Santa Barbara, Cal.; W. I. Billings; one-story garage; $4500.

San Francisco, Cal.; Thomas O'Day; one-story garage; $18,000.

Denver, Col.; J. H. Smith; one-story garage; $35,000.

Sedgwick, Col.; E. B. Davis & Son; one-story garage, 50x100; $20,000.

Washington, D. C.; Harry Wardman, 1430 K street; two-story garage, 80x100.

Washington, D. C.; Weddy B. Wood, 816 Connecticut avenue; three-story garage, 74x120.

Washington, D. C.; Hill & Tibbetts, 1407 H street, N. W.; two-story garage, 100x100.

Washington, D. C.; Milburn-Heister Co., 718 14th street, N. W.; three-story public garage, 150x300.

Jacksonville, Fla.; H. L. Snelson; one-story garage; $12,500.

Jacksonville, Fla.; P. J. McCullough; one-story garage; $15,000.

Jacksonville, Fla.; H. B. Odell; one-story concrete garage; $35,000.

Miami, Fla.; W. P. Smith, 1102 Boulevard; two-story garage, concrete block, fireproof; $4000.

Miami, Fla.; Joseph Hamm; one-story garage; $65,000.

Miami, Fla.; W. A. Thompson; two-story brick garage, 24x25.

Miami, Fla.; Carmichael-McCalley Co.; one-story garage, 50x125; $30,000.

Okechobee, Fla.; H. Haydes; one-story garage, 50x75.

Okechobee, Fla.; J. C. Platt; one-story garage, 50x80.

Ormond, Fla.; M. E. Lowe; one-story garage, 50x100.

Sanford, Fla.; Maxwell & Landstreet; two-story brick garage and repair shop, 70x117.

St. Petersburg, Fla.; R. H. McBroom; one-story garage, 95x135.

Atlanta, Ga.; Mack Truck Co.; one-story garage; $25,000.

Conyers, Ga.; Francis & Barksdale; one-story garage, 25x70.

Dublin, Ga.; E. Streett; one-story brick garage, 81x241; concrete floors; $65,000.

Griffin, Ga.; J. P. Nichols, Jr.; one-story garage, 90x110.

Griffin, Ga.; Williamson Motor Co.; one-story garage; $25,000.

McRae, Ga.; W. Z. Williams Co.; one-story garage, 70x190; $15,000.

Rome, Ga.; Rome Buick Co.; one-story garage; $15,000.

Boise, Ida.; L. H. Cox; one-story garage, 50x122; $14,500.

Homedale, Ida.; Johnson & Estes; one-story garage, 50x80.

Lewiston, Ida.; Charles E. Bennett; one-story garage, 102x103.

Nampa, Ida.; James Fairley; one-story garage, 50x140.

Wieder, Ida.; Kilmer & Crow; one-story garage, 50x80.

Brighton, Ill.; H. F. Heidemann; one-story garage, 75x80.

Carlinville, Ill.; Woodmanser & Crawford; one-story garage, 60x150.

Charlestown, Ill.; C. B. Muchmore; one-story garage, 50x78; for Owner Co-Operative Delivery Co.; $20,000.

Champaign, Ill.; S. E. Dillavon; two-story brick garage, 35x86x168; $30,000.

Chicago, Ill.; Harry I. Holton, 140 S. Dearborn street; one-story brick garage, 45x150; at 4078 Broadway; $15,000.

Chicago, Ill.; J. J. Novy, 2434 S. Ridgeway avenue; one-story garage, 75x125; at Ogden and Central Park avenues; $18,000.

Chicago, Ill.; J. J. Nevy, 2434 S. Ridgeway avenue; one-story garage and repair shop, 50x90; at Washington boulevard and Kenton avenue; $10,000.

Chicago, Ill.; Carl J. Hull, 7339 Harvard avenue; one-story brick public garage, 50x130; at south side Vincennes avenue, between 74th and 75th streets; $12,000.

Chicago, Ill.; Leslie Hughes, 4628 W. Washington boulevard; one-story garage and auto show room, 50x90.

Chicago, Ill.; W. E. Linn, 140 W. Van Buren street; one-story brick sales room and service station, 84x154; at 2707 Michigan avenue.

Chicago, Ill.; L. & E. Auto Dealers and Parts Co., 32 W. Jackson boulevard; one-story brick and stone trim garage and salesroom, 48x135; $25,000.

Chicago, Ill.; G. A. Peterson and E. J. Hull, 7339 Harvard avenue; one-story brick garage, 55x130; on Vincent avenue, between 74th and 75th streets; $30,000.

Chicago, Ill.; E. W. Sproul Co.; one-story garage,, 105x197; $50,000.

Decatur, Ill.; James J. Moran; one-story garage, 80x110; $7000.

Monmouth, Ill.; Consumers' Service Station; one-story service station; $10,000.

Murphysboro, Ill.; W. J. Arbeiter; one-story garage; $30,000.

Newman, Ill.; Joseph C. Dawson; one-story garage, 56x98; $8000.

Tremont, Ill.; Frank Hirman; one-story garage, 60x125.

Weldon, Ill.; O. B. Clemns; one-story garage, 60x120.

Bicknell, Ind.; T. E. Littell; one-story garage, 40x120; $10,000.

Bicknell, Ind.; Kixmiller & Son; one-story garage; $10,000.

East Chicago, Ill.; Joseph Hartley; one-story garage, 78x100.

Edinburg, Ind.; Craig McIlwain; one-story garage, 76x130.

Gary, Ind.; W. D. Donnoff; two-story brick garage and machine shop, 50x100; $20,000.

Gary, Ind.; Frank Lello; one-story brick garage, 25x50; at 12th and Adams street; $4000.

Gary, Ind.; Thomas Magrammes; one-story brick private garage, 25x35; at Seventh avenue and Madison street; $3000.

Gary, Ind.; Aaron Kyles and Eugene Smith; one-story repair shop, 66x68; $1000.

Goodland, Ind.; Cleremont Rider & Son; one-story garage, 50x140.

Holland, Ind.; Holland Garage; one-story garage; $2500.

Indiana Harbor, Ind.; George Sabo; one-story garage; $15,000.

Indiana Harbor, Ind.; Mark Co.; one-story garage, 60x128.

Indianapolis, Ind.; Joseph Rilus, Eastman and J. M. Somerville; one-story garage, 66x145; $25,000.

Indianapolis, Ind.; New Town Corporation; one-story garage and service station, 25x150.

Kendallville, Ind.; Dunlap & Kissler; one-story garage; $12,000.

Lafayette, Ind.; L. L. Galbraith; one-story garage; $20,000.

Linnsburg, Ind.; Albert Chambers; one-story garage, 30x70.

Michigan, Ind.; Wolff Garage; one-story garage; $80,000.

New Castle, Ind.; S. O. Jennings; one-story brick garage, 64x125; $25,000.

Newburg, Ind.; Herr Brothers; one-story garage, 35x50.

North Manchester, Ind.; Knuu Motor Co.; one-story garage, 78x156; $60,000.

Terre Haute, Ind.; Nichols Motor Co., 574-18 Cherry street; two-story garage, salesroom and service station, 75x150; terra cotta front brick walls.

Union City, Ind.; Central Auto Co.; one-story garage, 92x135.

Warsaw, Ind.; Felkner & Rudd Co.; one-story garage, 60x132; $25,000.

Cherokee, Ia.; Salisbury & Kress; one-story garage, 50x100; $10,000.

Clarion, Il.; O'Dea Motor Co.; one-story garage, 66x120.

Des Moines, Ia.; Bernhard & Turner; one-story garage; $30,000.

Des Moines, Ia.; McPherrin & Co.; one-story garage, 150x264.

Iowa City, Ia.; J. A. CLeary Auto Co.; one-story garage; $60,000.

Iowa City, Ia.; P. W. Unrath; one-story garage, 30x70.

Oelwein, Ia.; Oelwein Auto Co.; one-story garage, 100x140; $60,000.

Rhodes, Ia.; B. F. Cummings; one-story garage, 60x140.

Buhler, Kan.; John and Paul Warner; one-story garage, 50x100.

Colby, Kan.; Ackard Garage; one-story garage, 125x150.

Herington, Kan.; Herington Motor Co.; 40x72.

Hutchinson, Kan.; A. C. Welchon; one-story garage, 50x160; $12,000.

Moundridge, Kan.; Unrush & Schlender; one-story garage, 50x140; $15,000.

Topeka, Kan.; J. C. Holland & Son; three-story garage, 75x150.

Topeka, Kan.; Croxby Brothers, 717-23 Kansas avenue; one-story garage, 25x50.

Wamego, Kan.; D. N. Biddinger; one-story garage; $10,000.

Wichita, Kan.; Charles W. Lewis; one-story garage; $60,000.

Wichita, Kan.; George H. Ludhoff, 121 Market street; one-story garage, 75x140; $10,000.

Ashland, Ky.; Max Biderman; one-story garage; $20,000.

Bowling Green, Ky.; G. P. Evans; one-story brick scrvice station; $10,000.

Covington, Ky.; August Matracia; one-story garage; $2000.

Covington, Ky.; Harry C. Sprinks; one-story garage, 66x115; $14,000.

Guthrie, Ky.; J. M. Abshire; one-story garage, 75x100; $6000.

Hardin, Ky.; Ross & Lents; one-story garage, 90x150.

Knoxville, Ky.; J. F. Schultz & Son; two-story brick and frame garage, 28x81.

Maysville, Ky.; Caproni Brothers; two-story brick and reinforced concrete garage, 74x156; steel trussed roof.

Louisville, Ky.; Funeral Auto Association, 708 Baxter street; one-story garage, 75x200.

Louisville, Ky.; Embry-Weir Motors Co., 507 E. Broadway; two-story garage, 60x200; $50,000.

Louisville, Ky.; Marion E. Taylor; one-story garage, 80x80.

Louisville, Ky.; Roy E. Warner; three-story garage; $135,000.

Louisville, Ky.; Mattingly & Hubbard Motor Co.; one-story garage; $75,000.

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Pikeville, Ky.; L. L. Stone; one-story garage, 40x80.

Lafayette, La.; Farmers' Garage; one-story garage; $8000.

Lafayette, La.; Teche Motor Co.; one-story garage; $20,000.

Lake Charles, La.; Miller Brothers Motor Co.; one-story garage, 150x150.

Lake Charles, La.; B. F. Singleton; one-story garage, 50x100; $13,500.

Baltimore, Md.; John Bridger; one-story garage, 140x400; $200,000.

Baltimore, Md.; John Gerken; one-story garage, 30x60; $5000.

Baltimore, Md.; James Keelty; one-story garage, 50x100; $20,000.

Baltimore, Md.; E. H. Kiester; one-story garage, 60x80; $7500.

Baltimore, Md.; L. M. Reinhard; one-story garage, 40x110.

Baltimore, Md.; Selenkow Brothers; one-story garage, 42x121.

Baltimore, Md.; Bentalou Garage Co.; Bentalou street and Lafayette avenue; one-story garage, 40x80.

Baltimore, Md.; Joseph Lotz, 235 S. Clinton street; one-story garage, 83x270; at Clinton and Fayette streets; $40,000.

Baltimore, Md.; Horowitz Garage Co., 109 N. High street; two-story brick and concrete garage, 60x140.

Baltimore, Md.; Callis & Callis, 2055 Kennedy avenue; one-story brick garage, 65x65; $10,000.

Frostburg, Md.; M. R. Race; one-story garage, 40x60.

Hagerstown, Md.; Conner Garage; two-story fireproof garage, 60x63; $4000.

Hagerstown, Md.; Carl Brandt; one-story garage; $12,000.

Hagerstown, Md.; John Jones; one-story garage, 40x100.

Salisbury, Md.; W. B. Lowe; one-story garage, 61x175.

Boston, Mass.; Almy, Bigelow & Washburn; one-story garage; $40,000.

Lowell, Mass.; J. B. Morin; two-story garage, 60x110; at 674 Middlesex street; $10,000.

New Bedford, Mass.; David Duff & Son; one-story garage, 54x136.

New Bedford, Mass.; Alex Petit; one-story garage; $20,000.

Springfield, Mass.; Edward J. Pinney; one-story garage; $9000.

Taunton, Mass.; Joseph A. Glenn, 15 Prescott street; two-story auto service station, 60x112; $35,000.

Worcester, Mass.; Morris Bearsky; one-story garage, 154x293.

Worcester, Mass.; Anderson & Patterson, 34 Church street; one-story garage, 75x75.

Armanda, Mich.; Bishop & Brainwooe; one-story garage, 70x112.

Bay City, Mich.; Beck Auto Co., 201 S. Second street; three-story garage, sales and display room, 100x100; at Adams and Sixth streets; $100,000.

Detroit, Mich.; Warijas Realty Co., 580 Garfield avenue; two-story garage, 30x60; $14,000.

Detroit, Mich.; Hugo Scherer, 282 Jefferson avenue; one-story public garage, 175x901; $25,000.

Detroit, Mich.; Garfield Cartage Co.; one-story garage, 30x70; at 81 Harper avenue; $10,000.

Harrison, Mich.; W. E. Green & Co.; one-story garage, 49x199.

Hudsonville, Mich.; Pierre Lindhout; one-story garage, 50x130; $20,000.

Saginaw, Mich.; Michigan Sugar Co.; Eddy building; one-story garage; $10,000.

Alexandria, Minn.; P. A. Johnson; two-story garage and salesroom, 51x90.

Argyle, Minn.; Argyle Implement Co.; one-story show room, 75x140.

Crookston, Minn.; S. W. Larsin; one-story garage, 75x120.

Crosby, Minn.; J. Miran; one-story garage, 72x125.

Fenston, Minn.; Satren & Olsen; one-story garage and repair shop, 50x140.

Harris, Minn.; Nyquist Brothers; one-story garage, 50x70.

Mankato, Minn.; Willard Service Station; one-story service station, 30x100.

Pine River, Minn.; Pine River Motor Co.; one-story garage, 50x180.

Red Lake Falls, Minn.; Gilbert Marchidon; one-story garage, 48x80; $2500.

Sauk Rapids, Minn.; Poppenfus Brothers; two-story garage, 90x100.

St. Cloud, Minn.; Edward Wahl; two-story garage for Senvey & Maiers; $50,000.

St. Paul, Minn.; Central Garage, Inc.; one-story garage; 45,000 square feet floor space; $185,000.

Gulfport, Miss.; Daniels Auto Co.; one-story garage, 126x150.

Lexington, Miss.; L. E. Barr; one-story hollow tile garage, 37x114; fireproof windows; concrete floor; $8000.

Cape Girardeau, Mo.; H. H. Mueller; one-story garage, 74x149.

Eugene, Mo.; Sanning Garage; one-story fireproof garage, 30x80.

Joplin, Mo.; McNeal Machinery Co.; one-story garage; $5000.

Kansas City, Mo.; A. B. Lafaeth; one-story brick, stone trim and reinforced concrete garage, 50x140; at 3421-23 Prospect avenue; $10,000.

Kansas City, Mo.; J. Shapiro, 1327 Commercial building; two-story garage, 50x130; at 430-32 Minnesota avenue; $20,000; lessee, Buick Motor Car Co., Admiral boulevard and McGee street.

Kansas City, Mo.; J. W. McMurray, 3304 Flora avenue; two-story fireproof garage, 60x75; $25,000.

Kansas City, Mo.; Lion-Eagle Realty Co.; one-story garage, 50x100; $110,000.

Perryville, Mo.; Cashion & Strong; one-story garage, 60x80; $1000.

St. Louis, Mo.; William McDonald, Odd Fellows building; one-story garage, 60x268; for Trought Rogers & Co.

St. Louis, Mo.; Daynite Auto Co., 3914 Washington avenue; two-story garage, 50x245; at 3628 Washington avenue; $30,000.

St. Louis, Mo.; Whinning and Charles Peters, Chemical building; eight-story steel and reinforced concrete garage; each floor 17,850 square feet; double entrance; four exits; three high speed elevators; capacity, 300 cars.

St. Louis, Mo.; Weber Implement and Auto Co.; one-story garage; $250,000.

St. Louis, Mo.; Isaac Lionberger; one-story garage; $300,000.

Willow Springs, Mo.; J. N. Wilton; one-story garage, 55x100.

Butte, Mont.; Nels Pearson; one-story garage, 75x140.

Cody, Neb.; Lee Sellers and G. H. Jack; one-story garage, 50x138.

Enders, Neb.; William Otoman; one-story garage, 35x60.

Falls City, Neb.; Southeastern Auto Co.; one-story garage, 100x113; $25,000.

Grand Island, Neb.; Teeter & Homan; one-story garage; $30,000.

Hastings, Neb.; Hunt Motor Co.; one-story garage, 50x125.

Hastings, Neb.; John A. Paris; one-story garage, 65x65; $6000.

Hebron, Neb.; Leo and Aug Fels; one-story garage, 38x75.

Omaha, Neb.; Nebraska Oldsmobile Co., 2559 Farnum street; four-story brick, stone and terra cotta trim garage, sales and display room, 102x105; at 18th and Howard streets; $100,000.

Omaha, Neb.; North Side Garage, 4303 N. 20th street; one-story brick garage, 124x126; $20,000.

Ogallala, Neb.; Searle Garage; one-story garage, 38x75.

Plattsmouth, Neb.; Peterson Parker Construction Co.; one-story garage and shop, 48x140; for John Bauer, Jr.; $14,000.

Fanwood, N. J.; Rockwood & Co., 88 Washington avenue, Brooklyn, N. Y.; seven one-story garages, 44x103; $100,000.

New Brunswick, N. J.; F. C. Bissett & Son; one-story garage, 80x150.

New Brunswick, N. J.; Armstrong Brothers; one-story garage, 35x80.

Newark, N. J.; Herbert Austin; one-story garage; $25,000.

Newark, N. J.; R. M. Clark; one-story garage; $10,000.

Newark, N. J.; Bertha Ficke; one-story garage; $12,000.

Newark, N. J.; Johnson Brothers; one-story garage; $17,500.

Newark, N. J.; General Service Co.; one-story garage, 25x100; at Hunterdon and Grant streets; $6000.

Newark, N. J.; Louis Huckman, 649 S. 19th street; one-story garage, 35x100 and 29x30; at 556-58 S. 13th street; $7000.

Newark, N. J.; Francis McCabe Construction Co., 142 Market street; one-story public garage for Judson C. Presser, 105 Roseville avenue; $12,000.

Newark, N. J.; Fairchild Baldwin Co., Firemen's building; three-story garage and show room, 50x164; $120,000; lessee, Franklin Motor Car Co., 35 Halsey street.

Newark, N. J.; Samuel Hirschberg, 621 High street; one-story brick garage, 19x81; at 17-19 Morton street; $3000.

Newark, N. J.; H. H. Salmon Co.; one-story brick and hollow tile garage, 36x38; at 684-86 Summer avenue; $4500.

Newark, N. J.; William Kaufman, 347 Bank street; one-story concrete garage, 16x82 and 16x37; at 349-51 Bank street; $4000.

Newark, N. J.; A. M. Griffith, 315-17 Market street; two-story garage and machine shop, 50x106; at 39-41 Hamilton street; $25,000.

Jersey City, N. J.; Michael Florman, 326 Central avenue; one-story garage at 144 Cambridge street; $10,500.

Perth Amboy, N. J.; Potter & Kauffman, 226 Washington street; one-story garage, 80x138; $30,000.

Trenton, N. J.; Niedt Ertle Motors Co.; two-story brick public garage, 60x181.

Albany, N. Y.; R. B. Hayes, 25 Barclay street; one-story brick garage, 50x192; at 306 Delaware avenue; $10,000.

Brooklyn, N. Y.; Liebond Realty Co., 44 Court street; one-story brick garage, 100x100; $40,000.

Brooklyn, N. Y.; M. Turner, 297 Snediker avenue; one-story garage, 100x100; $25,000.

Brooklyn, N. Y.; Jacob Stander, 756 Park avenue; two-story garage; $5000.

Brooklyn, N. Y.; Harry Simon, 1689 St. Louis place; one-story brick garage, 15x18; $3000.

Brooklyn, N. Y.; M. C. K. Contracting Co., 2168 Lean street; one-story garage, 100x100; $25,000.

Brooklyn, N. Y.; Henry Cestreicher, 437 Hancock street; one-story garage at southeast corner, Fulton street and Buffalo avenue; $20,000.

Brooklyn, N. Y.; F. Schwartz, 5326 Sixth avenue; one-story garage, 40x100; $18,000.

Brooklyn, N. Y.; M. Boyle, 58 Clinton avenue; one-story brick garage, 50x99; at northeast corner Vanderbilt and Park avenues; $12,000.

Brooklyn, N. Y.; Lincoln Park Building Corporation, 594 Bradford street; one-story concrete garage, 18x18; $5500.

Brooklyn, N. Y.; Boro Park Realty Co., Inc., 1545 45th street; one-story concrete garage, 18x18; $2400.

Brooklyn, N. Y.; Herman Kronenberg, 26 Bristol street; one-story brick garage, 60x100; $25,000.

Brooklyn, N. Y.; M. B. Smith & Son, 131 E. 43rd street, New York; one-story garage and show room, 92x143; at northeast corner Bedford avenue and Albemarle road; $50,000.

Brooklyn, N. Y.; Silvi Rosanelli, 861 Third avenue; one-story brick garage, 50x200; $20,000.

Brooklyn, N. Y.; Felix Givannetti, 238 De Graw street; one-story garage, 60x75; $15,000.

Brooklyn, N. Y.; Nathan Schwartzstein, 231 Beaumont street; one-story brick garage; west side West End avenue, south shore boulevard; $8400.

Brooklyn, N. Y.; William Mersek & Son, 1124 Myrtle avenue; one-story brick garage, 12x20; south side Crown street; west Albany avenue; $4000.

Brooklyn, N. Y.; Pasquale Rosasco, 3 First place; one-story garage, 25x75; northeast corner Carroll and Henry streets; $5000.

Brooklyn, N. Y.; Isidor Gootzeit, Middle Village, L. I., N. Y.; one-story garage, 100x100; at southwest corner Sackman street and Newport avenue; $20,000.

Buffalo, N. Y.; Buffalo Fuel Co., Marine

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Bank building; one-story brick and concrete garage, 75x107; $20,000.

Buffalo, N. Y.; Joshua Robinson; two-story brick garage, 60x150; $25,000.

Geneva, N. Y.; O'Malley Motor Co.; one-story frame garage, 52x100; $20,000.

Glendale, L. I., N. Y.; Charles Fritz, 711 125th street, Richmond Hill, L. I.; one-story frame garage at Lafayette and Edsall avenue; $32,000.

Gloversville, N. Y.; Isidore Hyman; one-story brick and frame garage, 64x100; $10,000.

Jamaica, L. I., N. Y.; Harry Fein, 626 Essex street, New York; one-story garage, 75x173; $35,000.

Jamaica, L. I., N. Y.; Acme Garage, 21 W. Catherine street; one-story brick garage, 50x100; east side Rockaway road, north Catherine street; $15,000.

New York, N. Y.; Kahn & Shaffer, 18 Stanhope street, Brooklyn; one-story garage; $10,000.

New York, N. Y.; De Rosa & Cababieri, 370 E. 49th street; one-story garage; $10,000.

New York, N. Y.; Samuel Katz, 1411 Grand Concourse; two-story public garage, 75x100; north side 47th street, west First avenue; $35,000.

New York, N. Y.; Frank Alberti, 186 Bleecker street; one-story brick garage, 50x83; at 66-68 Seventh avenue; $30,000.

New York, N. Y.; C. & P. Realty Co., 2167 Belmont avenue; one-story garage, 102x136; $35,000.

New York, N. Y.; 410 West 55th Street Corporation, 128 Broadway, five-story garage, 101x254, southwest corner 55th and 9th avenue; $700,000.

Oneonta, N. Y.; Oneonta Sales Co., Warren and Market streets; two-story garage, 100x100; at Market and Chestnut streets; $35,000.

Rensselaer, N. Y.; L. J. Tibbitts, 312 Broadway; one-story brick and concrete garage and machine shop; $30,000.

Richmond Hill, L. I. N. Y.; Louis Tufano, 2153 Seattle street; one-story garage, 60x100; at southeast corner 106th street and Jerome avenue; $20,000.

Schenectady, N. Y.; Levi Case & Co., 412 Warren street; two-story garage, 22x40; at 15 Stanford road; for W. Howard Wright; $4000.

Schenectady, N. Y.; George J. Pitts and William Pomeroy; one-story garage, 70x117; $10,000.

Schenectady, N. Y.; G. W. Cassidy, 466 State street; one-story hollow tile garage, 24x119; $6000.

Syracuse, N. Y.; J. E. Hefferman, 721 S. Salina street; two-story garage, 95x96; $70,000; lessee, De Witt Motor Sales Co.

Syracuse, N. Y.; F. C. Soule, 1054 James street; one-story brick garage, 30x54; at 1054 James street; $6500.

Winfield, L. I., N. Y.; Joseph Klein; one-story garage, 81x170; south side boulevard, East Lawrenson place; $10,000.

Asheville, N. C.; E. C. Chambers, Lexington avenue and Eston street; two-story garage, 55x100.

Smithfield, N. C.; W. C. Sanders; one-story brick garage, 80x200; concrete floor; $20,000.

Cincinnati, O.; Groesbeck, Diejson & Kahn, Fourth and Walnut street; four-story garage and salesroom; $100,000.

Columbus, O.; Felix A. Jocba, 1441 Hamlet avenue; three-story garage, 60x80; at 569-73 N. Fourth street.

Dayton, O.; A. Schantz Estate, Fifth and Ludlow streets; two-story garage and salesroom, 90x130; $100,000.

Girard, O.; East End Garage Co.; one-story brick and stone trim commercial garage, 50x60; $18,000.

Toledo, O.; D. Friedman, Bancroft and Walnut streets; one-story garage, 60x90; $12,000.

Toledo, O.; E. H. Close Co.; one and two-story brick garage, 50x100 and 60x150; concrete flat slab floor; $75,000.

Enid, Okla.; L. Morris, Second street and Broadway; two-story brick, stone and reinforced concrete garage, 50x150.

Frederick, Okla.; Joseph Moore; one-story brick and stone garage, 50x100; $10,000.

Oklahoma City, Okla.; A. J. Doherty, Fort Worth, Tex.; two-story brick, stone and reinforced concrete garage, 50x140; $40,000.

Sapulpa, Okla.; Texas Co.; one-story brick and galvanized iron garage, 28x40 and 22x26; composition roof.

Imperial, Pa.; A. Wehr; one-story garage, 50x100; $10,000.

Lancaster, Pa.; George Croswell, 141 E. Marion street; one-story brick garage, 101x138; $15,000.

New Philadelphia, Pa.; J. B. Scott; one-story brick garage, 20x160; $10,000.

Pittsburgh, Pa.; D. K. Taris, Webster avenue and High street; one-story commercial garage, 36x70; at 1221 Bluff street; $20,000.

Pittsburgh, Pa.; J. J. Heimburcher, 3801 Fifth avenue; one-story brick garage, 45x100; at 420 Atwood street; $15,000.

Reading, Pa.; W. I. Holt; two-story brick public garage, 40x100; at Wood and Cherry streets; $12,000.

Reading, Pa.; George H. Beecher, 611 N. Third street; one-story public garage, 30x90; at 228 N. Fifth street; $8000.

Reading, Pa.; Humane Society of Berks county; two-story garage, 45x110; $12,000.

Waynesboro, Pa.; J. V. Hoffman; one-story and two-story brick garage; $15,000.

Wilkes-Barre, Pa.; John Luksie, 112 Scott street, two-story public garage, 54x81; $15,000.

Greenville, S. C.; W. N. Watson, 9 E. Coffee street; two-story brick garage, show room and service station, 40x100; $12,000.

Walhalla, S. C.; Piedmont Auto Co.; two-story reinforced concrete garage, 50x100; $2000.

Mitchell, S. D.; Bjodstrup & Voges; two-story garage, 50x142; for W. H. King Auto Co.

Sioux Falls, S. D.; Leavitt & Walkins; one-story brick garage and service station, 150x220; at Minnesota avenue and Ninth street.

Memphis, Tenn.; H. H. Roth; one-story brick service station; $18,000.

Memphis, Tenn.; William Brinkley; one-story garage; $30,000.

Memphis, Tenn.; J. S. Fargason; one-story garage; $55,000.

Memphis, Tenn.; Erwin & Hicks; one-story garage; $75,000.

Nashville, Tenn.; George W. Kellebrew; one-story brick and concrete garage; $50,000.

Athens, Tex.; Walter Dupree; one-story brick garage, 50x100.

Dallas, Tex.; Bruce & Owens; one-story brick garage, 50x100; $16,000.

Fort Worth, Tex.; W. B. Fishburn; one-story garage, 50x100; $25,000.

Houston, Tex.; Frank Dunn Estate; one-story garage, 104x140; lessee, J. J. Bonner.

San Antonio, Tex.; A. A. Brown; one-story concrete garage; $30,000.

San Antonio, Tex.; Citizens Auto Co.; three-story concrete and hollow tile, 50x160; metal windows, elevator; $100,000.

Norfolk, Va.; Dixie Motor Co., Cranby and Butte streets; two-story brick garage, 40x104.

Norfolk, Va.; Overland Motor Car Agency, 742 Granby street; two-story garage salesroom and service station, 53x230; $50,000.

Richmond, Va.; A. H. Nolde, 1914 Jefferson Park; one-story brick garage, 18x53x59; slate roof.

Winchester, Va.; Hicks Motor Co.; two-story brick and reinforced concrete garage, 112x180.

Elkins, W. Va.; Elkins Garage Co., Davis and Fourth streets; one-story brick and concrete garage, 90x150; concrete floor; $40,000.

Mt. Hope, W. Va.; Overland Fayette Garage Co.; one and two-story garage, 50x150; $12,000.

Yakima, Wash.; T. M. Anderson; two-story brick and hollow tile garage, 60x140; $20,000.

Hortonville, Wis.; Dabareinar Hardware Co.; one-story brick public garage and repair shop, 60x120; $25,000.

Jamesville, Wis.; B. J. Winslow; one-story brick garage, 60x90; $10,000.

Milwaukee, Wis.; American Cartage Co., 1071 29th street; one-story reinforced concrete garage, 32x120; at 30th and Clark streets; $6500.

Milwaukee, Wis.; Frederick C. Schultz, 401 Perles building; one-story brick garage, 60x90; at 129 13th street; $12,000.

Milwaukee, Wis.; Gindley Dairy Co., 822 Sycamore street; three-story garage, 77x150; at Eighth and Sycamore streets; $100,000.

Newberg, Wis.; John P. Lochen; one-story brick garage, 45x60.

New London, Wis.; New London Motor Car Co.; one-story brick garage, 58x120.

CONTRACTS AWARDED.

Wilmington, Del.; Egbert Nutter, 5 W. 30th street; one-story public garage, 60x131; at 28th and Market streets; for Roy L. Keans; $15,000.

Washington, D. C.; W. B. Porch, Guarantee Trust building, Atlantic City, N. J.; two-story public garage, 40x144; for H. B. Boyle; $30,000.

Washington, D. C.; R. P. Whitty, Union Trust building; three-story garage and show room, 100x100; at 14th street and Ohio avenue, N. W., for Hill & Tibbitte, 1407 H street, N. W.; $50,000.

St. Petersburg, Fla.; Beard & French; one-story concrete block garage and machine shop, 100x120; for Ford service station; concrete floors; $11,000.

Eastman, Ga.; Reynolds Auto Co.; one-story brick and concrete garage, 80x118.

Chicago, Ill.; Carl Bergstron, 750 S. Peoria street; one-story garage and salesroom, 50x75; at 7713-17 S. Halstead street; $18,000.

Chicago, Ill.; M. Robinseau, 4646 Broadway; one-story garage, 39x226; $60,000.

Chicago, Ill.; J. Hannion Auto Sales Co., 5414 Ashland avenue; one-story garage and salesroom, 50x100; $12,000.

Chicago, Ill.; R. T. Davis, 133 W. Washington street; one-story garage and repair shop, 99x124; at 5718-26 Broadway; $25,000.

Newton, Ill.; Walls Brothers; one-story public garage, 50x100; for John Moomaw; $20,000.

Robinson, Ill.; M. J. Hoffman Construction Co., Evansville, Ill.; three-story public garage; for A. L. Maxwell Co., Lawrenceville, Ill.; $50,000.

Sterling, Ill.; Ransdell Construction Co.; one-story garage, 50x100; at Third street and Fourth avenue; for Homer Light; $150,000.

Alexandria, Ind.; W. E. Thompson, 120 West Seventh street, Anderson, Ind.; one-story garage and salesroom, 52x112; at Carral and Church streets; for H. L. Holcomb, 113 E. Ninth street; $20,000.

Decatur, Ind.; T. F. Snyder; one-story public garage, 64x78; for Booker & Clark; $8000.

New Castle, Ind.; Everett Bowery; one-story garage, 47x132; $25,000.

New Castle, Ind.; W. F. Chambers; two-story garage, 50x122; $35,000.

Winchester, Ind.; Leslie Colvin, North and Hiawatha streets, Indianapolis, Ind.; one-story garage and salesroom, 80x160; for Hecker & Doyel Co.; $35,000.

Atlantic, Ia.; Co-Operative Delivery Co.; one-story garage, 100x100; $15,000.

Des Moines, Ia.; H. L. Rockwell, Flynn building; two-story garage, 84x84; at 1306-10 W. Grant street; for B. Frank Prunty, 3705 University avenue; $30,000.

Manning, Ia.; C. T. Hess; one-story garage, 90x150; for F. D. Ross; $61,000.

Iola, Kan.; Baker & Humphrey; one-story brick and stone trim garage, 25x80 and 26x30; $5500.

Topeka, Kan.; A. W. Whitsett, 1021 Harrison street; two-story garage, 24x30; for E. Hoine.

Topeka, Kan.; F. M. Spencer & Son; 215 Mulvaine building; two-story garage, 100x151; for Whittaker Brothers. First and Kansas avenue; $80,000.

Louisville, Ky.; Alfred Struck, Garden and Chestnut streets; two-story garage, 50x95x130; at Fourth and Chestnut streets; for Wright & Taylor; care J. M. Atherton, Atherton building; $75,000.

Louisville, Ky.; General Construction Co., Inter-Southern building; two-story

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fireproof garage, 50x180; for A. V. Thompson, 700 W. Main street.

Portland, Me.; D. E. McCann & Sons, 61 Preble street; two-story garage and machine shop, 117x127; $35,000.

Portland, Me.; F. A. Rumery Co., 21 Portland street; one-story garage, 60x200; for Dartmouth R. E. Co., 21 Portland street; $30,000.

Baltimore, Md.; Price Construction Co., Maryland Trust building; one-story public garage, 54x67 and 19x25; at 34th and St. Paul streets; for Fanway Apartment Co.; $18,000.

Brookline, Mass.; J. Caddigan Co., 27 School street, Boston; two-story public garage, 60x110; at 209 Boylston street; for William H. Young, 40 Harrison street; $40,000.

Lawrence, Mass.; Arthur Steinert, Bay State building; one-story sales and service station, 68x82; for Mills Motor Car Co.; $20,000.

New Bedford, Mass.; Meryan Maciejmsky, 225 N. Front street; one-story garage, 78x95; for Antoni Okulski, 23 Viall street; $12,000.

Springfield, Mass.; L. S. Wood; one-story garage, 54x142; for Winchester Square Realty Trust; $25,000.

Worcester, Mass.; F. W. Mark, 4 Walnut street; one-story garage, 50x100; for Crompton Knowles Loom Works, 93 Grand street; $15,000.

Detroit, Mich.; Bryant & Detwiler, 2338 Dime Bank building; one-story public garage, 60x162; for C. M. Harmon, 2138 Penobscot building; $15,000.

Saginaw, Mich.; Wilson Kern Sons, 212 Annissley street; two-story garage, salesroom and service station, 100x130; at Genesee and Water streets; for Hubbell Auto Sale Co., Court and Niagara streets.

Minneapolis, Minn.; H. C. McMillan, 2 S. Fifth street; two-story garage, 40x43; at 2108 Fifth avenue, S.; for E. C. Gale, 2115 Stevens avenue.

Minneapolis, Minn.; M. Schumaker, 89 Dell place; two-story public garage, 86x100; at 1008 Nicollett avenue; for Clarkson Lindsay Hill Holdings Co., 332 McKnight building; $68,000.

Minneapolis, Minn.; C. W. Lundquist, 712 15th avenue, N. E.; two-story public garage, 17x55; at 10 E. Grant street; for G. W. Goosman, Excelsior, Minn.; $22,000.

Sebeka, Minn.; Gust Skoberg, 4202 Fifth avenue, Minneapolis, Minn.; one-story garage, 78x80; for Jacob and Charles Koistinen; $13,000.

Joplin, Mo.; Wooten & Stroup; one-story garage, 50x120; at 209 Joplin avenue; for city of Joplin; $8300.

Kansas City, Mo.; George M. Bliss Construction Co., 526 Lathrop building; three-story fireproof garage, 110x140; for 10th Street Garage and Sales Co.

Kansas City, Mo.; Walter Judkins, 1316 42nd street; one-story garage, 21x140; at 35th street and Broadway; for W. W. Sylvester, 429 W. 57th street; $8000.

Kansas City, Mo.; Long Construction Co., 600 Rialto building; two-story garage and warehouse, 50x142; at 915 Wyandotte street; for National Bank of Commerce; $50,000.

Kansas City, Mo.; C. C. Peterson, 3934 Wyoming street; one-story garage, 50x130; at 3020 Prospect avenue; for J. A. Miller, 2814 Prospect avenue; $18,000.

Kansas City, Mo.; C. C. Smith, 422 Reliance building; two-story auto sales building, 100x115; at 19th and McGee streets; for Mastin Mining and Realty Co., 809 Republic building; lessee, Vesper Motor Co.

St. Louis, Mo.; Gregory Miller Investment Co., Fourth and Olive streets; one-story service station, 55x115.

St. Louis, Mo.; William McDonald, 428 Odd Fellows building; one-story public garage, 60x268; at Whittier and Olive streets; for Ollie E. Haupt Motor Co., 4129 Olive street; $75,000.

St. Louis, Mo.; F. J. Cornwall, La Salle building; four-story garage, salesroom and service station, 100x122; at Leonard and Lucust street; for United Motor Service Corporation, 782 Woodward avenue; $500,000.

Lincoln, Neb.; C. R. Vaughn Construction Co., 522 Peters Trust building, Omaha, Neb.; six-story garage and salesroom, 142x150; at 13th and P streets; for Nebraska Brake Auto Co., 13th and P streets; $150,000.

Omaha, Neb.; James Kzakes, 6365 Spencer street; one-story garage, 50x125; at 5210 S. 30th street; for Stanley Zagar, 5231 S. 30th street; $15,000.

Omaha, Neb.; John E. Wakefield Construction Co., 751 Branders Theater building; three-story auto sales and storage building, 108x184; at 27th and Harney streets; for Packard Omaha Co., 3016 Harney street; $250,000.

Paxton, Neb.; O. H. Strauser; one-story public garage, 45x88; for Edward Boffer; $15,000.

Nashua, N. H.; Peterson Construction Co., 7 Water street, Boston, Mass.; one-story garage and service station, 20x100; for Spear and Gibson, 87 Granite street, Manchester, N. H.; $25,000.

Jersey City, N. J.; Samuel Wiley, 517 Monmouth street; one-story public garage, 55x60; at 62 N. Clinton street; for Isaac Goldberg, 102 S. Broad street; $6000.

Morristown, N. J.; A. M. Trowbridge, Chatham, N. J.; one-story garage and salesroom, 50x100; for A. S. Kirkpatrick, 29 Washington street.

Newark, N. J.; H. M. Doremus, 36 Orange street; one-story garage, 22x24; Clifton street; for American Realty Co.; $3000.

Newark, N. J.; Joseph Cochioli, 29 Holland street; one-story brick garage, 44x59; rear 17-19 Holland street; $3000.

Newark, N. J.; Charles Del Vecchio, 135 Ridge street; one-story garage, 25x100; at 210 Newark street; for Alexander Deloia; $4000.

Newark, N. J.; Oschwald & Schmidt, 84 Broad street; one-story garage for Solomon and Samuel Berla, 232 Mulberry street; $10,000; lessee, John W. Parker, 132 Boyden street.

Albany, N. Y.; James Cickroyd & Sons, 966 Broadway; two-story garage, 60x68; at 255 Hudson avenue; for G. P. Gleason; $35,000.

Hornell, N. Y.; E. S. Copeland; one-story garage; $4000; lessee, Warren & Abenathy, 61 Seneca street.

New York, N. Y.; Trombatore & Son, 671 E. 188th street; one-story garage, 22x60; at 236 E. 151st street; for Louis Voloano, 370 E. 149th street; $3000.

Oneida, N. Y.; Keller & Miller; two-story garage and repair shop, 50x80; $25,000.

Rochester, N. Y.; Alexander Shimway and Utz Co., 16 State street; one-story tile garage, 27x75; at 367 Orchard street; for Alderman & Fairchild Co.; $3000.

Troy, N. Y.; William G. Patterson; one-story garage, 21x40; for H. H. Butter.

Winston-Salem, N. C.; Lancaster Brothers & Son; one-story concrete garage, 80x100; metal windows, tar and gravel roof; for J. H. Clinard; $11,800.

Carrington, N. D.; W. H. Carson, New Rockford, N. D.; one-story public garage, 75x140; for C. E. Field.

Cincinnati, O.; Ohio Building and Construction Co., McMillan and Burnett avenues; three-story garage and salesroom, 50x60; at Eighth and Broadway; for Lloyd Baker, 310 Mercantile Library building; $60,000.

Cleveland, O.; Piscopi Brothers; two-story garage and salesroom, 88x105; for F. A. Foyer; $40,000.

Dover, O.; Union Lumber Co.; one-story garage, 70x80; for Tuscarawas Motor Car Co.; $10,000.

El Reno, Okla.; J. C. Hubbard; one-story garage, 50x118; for King Motor Co.

Oklahoma City, Okla.; J. K. Wells, American National Bank building; two-story brick, stone and reinforced concrete garage, 75x135.

Oklahoma City, Okla.; F. A. Gross Construction Co., 132 W. Second street; two-story garage, 100x150; at 60 N. Broadway; for McDaniel Automobile Co., 318-20 W. California avenue; $100,000.

Allentown, Pa.; Schaffner & Laudenslager, 112 N. Fifth street; three-story public garage, 33x130 and 66x100, at 1033-35 Linden street; for Wink Motor Car Co., 24 N. 10th street; $75,000.

Bethlehem, Pa.; Benedict Berkel, 106 E. Fourth street, one-story public garage, 31x65, at 11th avenue and Broad street; for Ludwig Godyek, 445 Birch street; $18,000.

Harrisburg, Pa.; Harold Hipple, 14 S. Second street; two-story public garage, 90x100; at 127 S. Cameron street; for Howard J. Williams; $12,000.

Harrisburg, Pa.; H. W. Black, 110 Broad street; one-story community garage, 19x88, rear 15th and Woodbine streets; for W. H. Moody, 2331 N. Third street; $20,000.

Philadelphia, Pa.; Charles L. Gunn; one-story garage, 15x16, at 817 S. 57th street; $1050.

Philadelphia, Pa.; Joseph F. Myers, Jr., Co.; one-story stone garage at 384 E. Gowan avenue; for Hobert Morris; $2500.

Philadelphia, Pa.; Kard E.; one-story garage, 24x36, at 2516-24 Huntingdon street; for McShane; $1950.

Philadelphia, Pa.; Potts Brothers and Cooperson; one-story brick garage, 64x65, at 1410-16 Melon street; for Louis J. Kalb; $12,000.

Philadelphia, Pa.; Potts Brothers and Cooperson; one-story garage, 48x69, at 1409-13 Melon street; $11,000.

Philadelphia, Pa.; George Rimer; one-story garage, 17x27; north side Castor road, west Herbert street; for J. B. Sidebotham; $800.

Philadelphia, Pa.; D. James; one-story garage; north side Kingston street, east Jasper street; for W. Lentz; $4200.

Philadelphia, Pa.; George A. Mahn; one-story garage, at 1922 Sedgley avenue; $1500.

Philadelphia, Pa.; Ketcham McQuade; auto service and storage station, at 1310-14 Callowhill street; for Robert and Freda Green; $16,000.

Philadelphia, Pa.; Frank K. Stahl; one-story garage, 13x20, at 6429 N. 13th street; for Otto Reinet; $1000.

Philadelphia, Pa.; William B. Morris; one-story brick garage, 18x196; for J. H. Taylor; $15,000.

Philadelphia, Pa.; C. Yocknitz; one-story brick garage, 16x26, at 4048 Park side avenue; for Bessie Asebrod; $1000.

Philadelphia, Pa.; P. M. Huster; three one-story garages, 13x21; east side 16th street, north Lycoming avenue; $34,400.

Philadelphia, Pa.; Edward B. Miller; one-story garage; northeast corner Third and Ashdale streets; for R. Phifstieker; $750.

Philadelphia, Pa.; B. Goldberg; one-story garage, 15x16; at 1528 Morris street; for Benjamin Oliver; $15,000.

Philadelphia, Pa.; Tony Stelana; one-story garage, north side Cambria street, east 23rd street; for C. Ovgt; $4000.

Philadelphia, Pa.; Burklebach & Co.; one-story garage, at 5731 N. Third street; for Louis Seitz; $3900.

Philadelphia, Pa.; J. D. Fisher; one-story brick garage, 40x150, at 2005-7 S. Broad street; for Benjamin Alferdi; $12,000.

Philadelphia, Pa.; Edward F. Judge; one-story garage, 70x150, at northeast corner Richmond and Hensley streets; for Joseph Kowskin; $25,600.

Philadelphia, Pa.; M. P. Welsh; one-story brick garage, 80x90; east side 55th street, south Chester avenue; $6300.

Philadelphia, Pa.; C. E. Lloyd, Jr.; one-story garage, 18x20, rear east side Eighth street, north Chelton avenue; for W. H. Baker; $1000.

Philadelphia, Pa.; C. M. Swartley; one-story garage, 19x75, at 2251 Watts street; for Albert S. Mitchell; $4200.

Philadelphia, Pa.; Traveling Brothers; one-story brick garage, 24x32, at 431 Rhawn street; for William Hess; $1500.

Philadelphia, Pa.; J. Fisher; one-story garage, 16x40; west side Felton street, north Catherine street; for William J. Bavis; $2000.

Pottsville, Pa.; O. J. Aregood, 434 E. Arch street; two-story garage and show room, 60x100; for Auto Sale Corporation; $30,000.

Mitchell, S. D.; Bjodstrup & Vogus; one-

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story public garage, 50x142; for George E. Logan; $40,000.

Tyler, Tex.; Currie, Gaston & Bryarly; two-story garage, 100x200.

Norfolk, Va.; J. H. Pierce; one-story reinforced concrete garage, 53x233; composition roof, tile and concrete floor; $90,500.

Norfolk, Va.; Buick Sales and Service Co.; two-story garage, 53x233.

Norfolk, Va.; Oldsmobile Co.; two-story brick garage; $30,000.

Norfolk, Va.; Overland Motor Car Agency; two-story garage, 53x230.

Norfolk, Va.; Dixie Motor Co.; two-story garage, 40x104.

Norfolk, Va.; Baker & Briskley, Dickson building; one-story garage, auto show room and repair shop, 50x200; for Oldsmobile Co., 2400 Granby street; $25,000.

Richmond, Va.; S. Lubicuski, 200 E. Main street; one-story garage, 25x75x12; for J. Lapland, 1914 E. Broad street.

Yakima, Wash.; W. H. Miller; one-story garage; for Sheane Auto Co.; $13,000.

Cumberland, Wis.; Erickson Brothers; one-story commercial garage, 50x120; for William Sherman; $15,000.

NEW CONCERNS RECENTLY INCORPORATED

Monthly Record of New Business Houses for which Charters Have Been Issued in the Various States and Classified According To Nature of Business.

NEWLY ORGANIZED MANUFACTURERS OF CARS, TRUCKS AND TRACTORS.

San Francisco, Cal.; MacDonald Truck and Tractor Co.; $100,000.

Worcester, Mass.; Hammond Motor Car Co. of Worcester; $45,000; to manufacture automobiles; R. Dunbar, Sarsfield J. Wolohan, John M. Burton, Earl S. Hammond, Seymour E. Hale.

Passaic, N. J.; The Donnelly-Roegner Motor Co.; $25,000; to manufacture automobile trucks and accessories.

Buffalo, N. Y.; Elbridge Automotive Corporation; $500,000; to manufacture combustion engines and motor vehicles; F. C. Owen, H. E. McComber, D. B. McCarriagher.

New York, N. Y.; Mark Wright Motor Truck Co.; $30,000; M. F. Cratle, H. W. Walton, E. Egan, 2366 Webster avenue.

Troy, N. Y.; The Wein Manufacturing Co.; $50,000; to engage in general and automobile business; John D. Wein, Marie Wein and Neils Schmidt.

Pittsburgh, Pa.; General Motors Truck Co. of Pittsburgh; $100,000.

Kenosha, Wis.; Kenosha Motor Sales Co.; $25,000; to manufacture, buy, sell and deal in automobiles and motor vehicles; Peter Fhode, Rene Ruster, R. H. Jones.

PARTS AND FITTINGS MAKERS.

Little Rock, Ark.; The Dixie Battery Co.; $10,000; R. J. Shaw, Frank McCarroll. T. C. Wadley, Carl B. Whyte, Blanche Whyte, W. M. Whyte.

Dover, Del.; Miller Carburetor Production Corporation; $1,000,000; Carl Puban, Jr;, Clarence J. Caldwell, Edwin H. Hegesy.

Dover, Del.; Motor Parts Corporation; $400,000; Frank Jackson, Mark W. Cole, W. N. Lofland.

Dover, Del.; Sunshine Motor Co.; $1,000,000; L. B. Phillips, M. S. Anderson, J. Baynes.

Wilmington, Del.; Howard Manufacturing Co.; $500,000; to manufacture spark plugs.

Albany, N. Y.; Battery and Auto Supply Corporation; $5000; to manufacture batteries and do a general automobile business; William P. Crawford, William R. Rouse, Adam E. Morlock.

Buffalo, N. Y.; The Perfect Auto Lock Corporation; $125,000; to manufacture vehicular safety devices; F. G. Safec, A. A. Patrzkowski, F. E. Pond.

Lockport, N. Y.; The Lockport Automobile Radiator Corporation; $30,000; J. L. Branch, Carl Nye, Charles Roberts, Frank M. Capell, George Tolsma.

New York, N. Y.; Atlantic States Electric Supply Co.; $10,000; to deal in motors, engines and electrical work; W. Poklop, B. W. Sandback, S. Graham, 108 West 95th street.

New York, N. Y.; Bertholini Motor Carburetor Co.; $100,000; B. Vensuti, S. Mangiapane, J. Coppola.

New York, N. Y.; M. N. F. Auto Manufacturing Corporation; $25,000; to manufacture automobiles and parts, including metal bodies, cowls and crowned fenders; M. Moses, H. Newman, J. Friedman.

Niagara Falls, N. Y.; Schwartz Motor Corporation; $20,000; M. H. Schwartz, N. P. Himmell, H. R. Marcuse.

Newark, N. J.; New York Motor Car Device Co.; $100,000; Wm. G. Huguley, G. A. Knillschritt, Herbert Knillschritt.

Knoxville, Tenn.; Byrd Motor Co.; $30,000; G. P. Byrd, B. A. Morton, F. F. Cooley, J. T. Dewitt, W. C. Rose.

El Paso, Tex.; Garrett Motor Co.; $10,000; F. J. Garrett, Crawford Harvie, William S. Cooke.

GARAGE AND REPAIR SHOPS.

Westfield, N. J.; Westfield Auto Sales Co.; $50,000; to conduct a general garage and automobile business.

Buffalo, N. Y.; P. M. Tire and Repair Co., New York, N. Y.; $15,000; W. B. McLaughlin, E. H. Fahmer, E. W. Studt.

Brooklyn, N. Y.; W. G. & R. Corporation; $10,000; Morris Weitz, Samuel Rosen, Charles Greenberg.

Brooklyn, N. Y.; Pilgrim Garage, Inc.; $10,000; R. Pilgrim, T. Pilgrim, A. T. W. Pilgrim, 585 Eastern Parkway.

New York, N. Y.; Major Garage Holding Corporation; $25,000; S. Tartar, B. Nelson, S. Bakowitz.

New York, N. Y.; Rain-Rose Garage Corporation; $10,000; to conduct a garage business; Morris Rosenberg, Sol Nekritz, James S. Friedman.

Troy, N. Y.; Washington Park Garage; $30,000; F. A. Dunn, A. M. Dunn, C. S. Erlich.

Pittsburgh, Pa.; Kaylor-Carroll Garage; $10,000; Joseph F. Carroll.

ACCESSORIES, EQUIPMENT AND SUPPLIES.

Dover, Del.; All-In-One Auto Tire Co.; $100,000; William F. O'Keefe, George G. Steigler, W. J. Dowdel.

Dover, Del.; Amalgamated Tire Stores Corporation; $25,000,000; J. Robinson Duff, Frederick A. Travis, John T. McGovern.

Dover, Del.; The Avan Tire and Rubber Co.; $1,000,000, M. I. Blossoms, Benjamin Lowenstein, John W. Covell.

Dover, Del.; The Greene Tire Sales Co.; $100,000; T. L. Croteau, H. E. Knox, S. E. Dill.

Dover, Del.; University Rubber Co.; $600,000; William Mackay, Charles E. Barker, John H. Jones.

Wilmington, Del.; Acorn Tire and Rubber Co.; $1,000,000.

East Orange, N. J.; Alexander Auto Service and Motor Sales Co.; $5000; C. L. Alexander, Lawrence A. Ball, Fanny A. Ball.

Newark, N. J.; Vanguard Motor Supply Corporation, 790 Broad street; $50,000; for the sale of automobile accessories and parts; Edwin H. Lubold, Redolf A. Peter, W. T. Vanderlipp.

Trenton, N J.; Puritan Rubber Manufacturing Co.; $250,000; to manufacture rubber goods.

Jamestown, N. Y.; Mobile Accessory Co., Inc.; $25,000; to manufacture automobile accessories; A. Wedsborg, A. F. Tunberg, W. E. Tiffany.

New York, N. Y.; P. D. Motor Sundries Corporation; $35,000; to manufacture motor sundries; D. A. L'Esperance, Jr., B. F. Plaisantine, M. A. Hogan.

New York, N. Y.; Anniston Tire and Rubber Co.; $6000; J. Jacobs, S. Bernheim, W. Loewenthal.

New York, N. Y.; The Automotive Specialty Corporation; $15,000; A. Pinover, E. Rogol, L. E. Rogel, 311 West 59th street.

New York, N. Y.; Collins Tire and Rubber Co.; $5000; W. Lowenthal, S. Bernhelm, J. Jacobs.

New York, N. Y.; Continent Tire and Rubber Co.; $5000; W. Lowenthal, S. Bernhelm, J. Jacobs, 1877 Broadway.

New York, N. Y.; Kolman Tire and Rubber Co., Inc.; $25,000; to manufacture automobile tires, B. Alper, G. A. Dorfman, C. A. Weldon.

New York, N. Y.; National Auto Accessories; $25,000; Louis Epstein, Meyer Epstein, Harry Epstein.

New York, N. Y.; Owensboro Tire and Rubber Co.; $5000; W. Lowenthal, S. Bernhelm, J. Jacobs.

New York, N. Y.; Sabine Tire and Rubber Co.; $5000; W. Lowenthal, S. Bernhelm, J. Jacobs, 1877 Broadway.

New York, N. Y.; Toston Tire and Rubber Co.; $5000; W. Lowenthal, S. Bernhelm, J. Jacobs.

New York, N. Y.; Winston-Salem Tire and Rubber Co.; $5000; W. Lowenthal, S. Bernhelm, J. Jacobs, 1877 Broadway.

Syracuse, N. Y.; Syracuse Auto Specialty Co., Inc.; $25,000; to manufacture automobile supplies; George E. Scherrer, George M. Blackman, John M. Griswold.

Akron, O.; Ace Tire and Rubber Co.; $10,000; Herman Gruewald.

Cleveland, O.; Alkay Motor Supply Co.; $10,000; Alfred M. Kronberg.

Defiance, O.; The Defiance Tire and Rubber Co.; $600,000; Edward W. Saltsman, H. J. Heller, Charles E. Smoyer, Nellie P. Grunigan. F. O. Smoyer.

Lima, O.; The Bybee Tire and Service Co.; $25,000; G. A. Bybee, Allen Bybee, C. F. Miller, J. A. Jenkins, W. S. Jackson.

Massilion, O.; The Strong Auto Supply Co.; $10,000; J. A. Carnes, L. E. Strong, Wilson Wefler, M. P. L. Kircholfer, Kathleen Remley.

Toledo, O.; Automobile Cylinder Regrinding Co.; $5000; L. A. Foley.

Cleveland, O.; American Asbestos Products Co.; $25,000.

Charleston, S. C.; The Essenkay Sales Co.; $50,000; Frank I. Koplin.

Memphis, Tenn.; Engler-Stotz Auto Supply Co.; $25,000; James Engler, W. J. Stotz, Bertha Stotz, H. A. Stotz, A. J. Calhoun.

Wichita Falls, Tex.; Southern Tire and Vulcanizing Co.; $10,000; Joe B. Carrigan, William S. Toney, L. B. Carrigan.

Norfolk, Va.; The General Tire and Accessory Co.; to conduct a general automobile supply and repair business.

DEALERS IN AUTOMOBILE, MOTOR TRUCKS AND TRACTORS.

Greenville, Ala.; Lane Edison Auto Co.; $50,000; W. W. Edison, L. M. Lane, J. F. Miller.

Mobile, Ala.; Southern Automobile Co.; $21,000; Frank Engwall, Frank Chessar, F. W. Mooney, John Barron.

Texarkana, Ark.; The McGuire Motor Co.; $10,000; J. W. McGuire, W. J. Springer, A. L. Burford.

Stamford, Conn.; The J. J. Kihn Motor Car Co.; $15,000; J. J. Kihn, D. George Bennett, H. H. Cumminger.

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Dover, Del.; Maryland Motors Corporation; $60,000; William J. Finley, Walter B. Guy, Howard W. Phillips.

Wilmington, Del.; Liberty Car Sales Co.; $75,000; to deal in automobiles; Charles B. Bishop, S. H. Baynard, A. M. Fox.

Wilmington, Del.; Hares Motors, Inc.; $3,000,000; T. L. Croteau, P. B. Drew, C. L. Rimlinger.

Wilmington, Del.; Mercer Motors Co.; $11,000,000; T. L. Croteau, C. L. Rimlinger, P. B. Drew.

Jersey City, N. J.; Morris County Motors Co., 243 Washington street; $100,000; William B. Harley, Jr., John H. Young, Bertha J. Haas.

Newark, N. J.; Advance Auto Service Co.; $125,000; to conduct a general automobile and garage business.

Newark, N. J.; Eastern Motor Sales Corporation; $100,000; James V. Igoe, W. E. Atz, Michael Silver.

Paterson, N. J.; Paterson Used Car Market; $50,000; to deal in automobiles; Albert Braisch, William Hoffman, Russell Ritter.

Albany, N. Y.; Thompson & Smith, Inc.; $10,000; Frank Thompson, Harry Smith, Edward Vinnicombe.

Brooklyn, N. Y.; Auto Life Extension Corporation; $25,000; to repair and lubricate in and about automotive vehicles; M. Geiberg, M. Laiken, E. C. Miller.

Brooklyn, N. Y.; The Cate Motor Co.; $5000; auto business; M. H. Mitzner, J. Ponemone, H. Romer, 11 Foxall street.

Brooklyn, N. Y.; Montague Importing Corporation; $25,000; to conduct an automobile business; Thomas J. Molloy, Henry C. Clemens, Herman J. Witte.

Brooklyn, N. Y.; Effby Sales Co., Inc.; $2000; to conduct an automobile business; Joseph Bicke, Edward E. Funk, Henry Brunjes.

Buffalo, N. Y.; Jinker Manufacturing Co., Inc.; $300,000; to deal in automobiles and aeroplanes; John F. Jinkner, Geraldine A. Jinkner, Harriet Yousett.

Buffalo, N. Y.; The Motor Sales Co.; $10,000; James V. Igoe, William E. Atz, Michael Silver, Abe Warshawsky.

Buffalo, N. Y.; United Auto and Electric Service, Inc., 210 Central avenue; $100,000; Nathan Schwartz, Morris Berkowitz, Lillian Berkowitz.

Brooklyn, N. Y.; Anderton, Ltd.; to conduct an automobile business; $50,000; J. A. Davidson, M. T. Rochford, G. A. Arkwright, 411 Halsey street.

Brooklyn, N. Y.; Oldsmobile Company of Brooklyn, Inc.; $50,000; to deal in automobiles; C. J. Larson, S. A. Marks, H. S. Martin.

Brooklyn, N. Y.; Turner Brothers, Inc.; $15,000; trucking and stevedoring; S. Turner, B. Turner, R. Turner, 397 Snediker avenue.

Brooklyn, N. Y.; Morris Pack Auto Service Corporation; $5000; A. Pinaker, A. Michaelson, B. Morris.

Flushing, N. Y.; North Shore Motor Sales Co., Inc.; $25,000; Harold B. Colton, Joseph E. McKeon, John W. McKeon.

Elmira, N. Y.; Silverton Motor Co., Inc.; $40,000; Alfred J. Meyer, John T. Osowski, George Petzke.

Mount Vernon, N. Y.; Reginald N. Jordan, Inc.; $25,000, to conduct an automobile business; R. N. Jordan, Olga R. Jordan, William C. Jordan.

New Rochelle, N. Y.; Hill Motor Corporation; $20,000; C. H. and C. B. Hill, C. Hollender.

New York, N. Y.; Al-Ford-Able Co., Inc.; to conduct an automobile business; $30,000; M. Kavner, D. D. Piner, A. Piner, 949 Hoe avenue.

New York, N. Y.; Aetna Auto Supply, Inc.; $5000; P. Adelson, W. Wehl, M. Popper.

New York, N. Y.; Chauffeurs' Cab Co.; $50,000; taxi business; J. W. Snyder, F. Hall, B. F. Connolly, 307 East 46th street.

New York, N. Y.; Denecke-Fowler-Sherman Corporation; $6000; trucking business; J. Denecke, C. B. C. Fowler, J. Sherman, 1405 Eighth avenue.

New York, N. Y.; D. D. Auto Service Co.; $25,000; to conduct an express business; E. H. Demuria, J. Demartini, E. Dondero.

New York, N. Y.; Equitable Motor Truck Co., Inc.; $50,000; to conduct an automobile business; Max Monfired, E. M. Bernstein, J. C. Barron.

New York, N. Y.; Key-Homa Petroleum Corporation; $500,000; F. R. Hanzell, J. Vernon Pimm, E. M. MacFarland.

New York, N. Y.; Mahony Auto Trucking Corporation; $20,000; Thomas A. O'Brien, Maurice A. Taub, James E. Duross.

New York, N. Y.; North Shore Motor Sales, Inc.; $25,000; to conduct an automobile business; H. B. Colton, J. E. McKeon, J. W. McKeon.

New York, N. Y.; Thomas-American Motor Car Co.; $1250; Charles A. Collins, George G. Gates, Clark L. Jordan, Jr.

New York, N. Y.; New York Commercial Vehicle Co., Inc.; $15,000; to conduct an automobile business; Joseph Marks, Harry Middleberg, Louis Blazer.

New York, N. Y.; Victory Auto Truck Co., Inc.; $60,000; Henry Alexander, Herman J. Ries, Felix H. Moyse.

New York, N. Y.; The Universal Body Corporation; $200,000; to deal in motors, automobiles and mechanical appliances; W. M. Hall, H. N. Seelea, K. Lorenz.

North Tarrytown, N. Y.; The Post Road Automobile Co.; $10,000; taxi and trucking business; L. C. Brenan, Jr., J. J. Hughes, E. F. Hennessey.

Rochester, N. Y.; Rochester Automobile Equipment Corporation; $5000; George Clark, Wallace Miline, Lawrence Lewis.

Rochester, N. Y.; Cole Sales Co.; $35,000; to sell Cole automobiles; H. M. Christman, A. J. Rogers, F. J. Malbaum.

Whiteville, N. C.; Columbus Motor Co.; $25,000.

Akron, O.; The A. G. Wood Motor Co.; $50,000; Arthur E. Sutton.

Cleveland, O.; The Oberting Motors Co.; $300,000; G. C. Maul.

Cincinnati, O.; Bauer Auto Sales Co.; $45,000; J. W. Matthews.

Cincinnati, O.; Mercer Auto Sales Co.; $20,000; John F. Draper.

Cincinnati, O.; The McMicken Auto and Wagon Co.; $20,000; H. Ostholthoff, Sr., Henry Ostholthoff, Jr., W. A. Phil, Celia J. Hesselbrock, John O. Hesselbrock.

Columbus, O.; The Cole Motor Sales Co.; $100,000; C. F. Milliken, J. J. McNamara, Edward A. Neff, C. Edward Weis and E L. Weinland.

Lima, O.; Lima Buick Co.; $75,000; John W. Roby.

Janesville, O.; The M-S Auto Electric Co.; $10,000; W. A. Lorimer, George H. Wilking, Fred J. Offenbacher, P. H. Tannehil, E. E. Maud.

Albany, Ore.; Day Motor Co.; $15,000; Kenneth T. Carter, Earl B. Day, Clarence Collins.

Lewiston, Pa.; Miller Motor Co.; $500,000; Arthur J. Adria, Wilhelm Holger.

Wilkes-Barre, Pa.; United Auto Products Co.; $10,000; Edgar A. Conroy.

Johnston, S. C.; The Reliable Motor and Sales Co.; $2500; L. S. Maxwell.

Rapid City, S. D.; Black Hills Buick Co.; $50,000; Eugene Bangs, Ray S. Shepherd, Bart H. Kinger.

Sinuda, S. C.; The West Motor Co.; $5000; A. C. West.

Knoxville, Tenn.; Tate Motor Co.; $10,000; R. E. Tate, H. E. Bolton, J. W. Abenathy.

Memphis, Tenn.; The Chevrolet Motor Co. of Tennessee; $5000; to deal in all kinds of motor vehicles and all appliances connected with them; J. Harry Price, Mitchell Long, W. F. Black, Forrest Andrews, A. S. McDonald.

Norfolk, Va.; The General Tire and Accessory Co.; to conduct a general automobile, supply and repair business.

Wheeling, W. Va.; Wheeling Used Car Co.; $25,000; to deal in motor vehicles; William E. Eberle, Clarence McConnaghy, C. J Jones, J. H. Arnett, Thomas P. McKeever.

Milwaukee, Wis.; Milwaukee Cycle and Auto Supply Co.; to deal in automobiles and supplies; Robert A. Hess, H. Klatte, Ben Nishnefsky.

Youngstown, O.; Tri-State Motors Co.; $75,000.

Portland, Ore.; The Day Co.; $15,000; Clarence Collins, Kenneth Carter, Earl Day.

Deer Creek, Okla.; Motor Sales Co.; $20,000; J. S. Dester, A. M. Van Calkenburgh, J. C. Dester.

Oklahoma City, Okla.; Deighan Motor Co.; $100,000; John A. Deighan, W. R. McCluskey, Edwin W. Watts.

Oklahoma City, Okla.; Lloyd Motor Co.; $10,000; J. C. Lloyd, Charley Crum, M. L. Crum.

Tulsa, Okla.; Dow Automobile Co.; $30,000; Charles A. Durbin, Edward B. Orders, Adam Wroblewski.

Philadelphia, Pa.; Co-Operative Motor Co., Inc.; $20,000; P. B. Drew, H. E. Knox, C. L. Rimlinger.

Philadelphia, Pa.; Ford Dealers' Association; $5000; to establish an exchange system of Ford automobiles; E. M. MacFarland, J. Vernon Pimm, E. R. Hansel.

Wilkes-Barre, Pa.; Maccar Truck Sales Co.; $50,000; to carry on business of automobile agents; T. L. Croleau, H. E. Knox, S. E. Dill.

Pottsville, Pa.; Schuykill Motors Co.; $20,000; C. W. Sheafer.

Salt Lake City, Utah; Cullen Automobile Co.; $10,000; George A. Pearce, Mertha McQuarrie, Joe E. Rozzelle.

Pawhuska, Okla.; McPhail Motor Co.; $60,000; C. L. McPhail, L. L. Davis, Thomas E. Calvin.

Columbia, S. C.; Bagnal Rankin Motor Co.; $5000; M. R. Bagnal, C. B. Bagnal.

Jonesboro, Tenn.; Hanks-Morris Co.; $20,000; E. B. Hanks, R. J. Morris, T. H. Morris, J. R. Hagan, Flora E. Hanks.

Memphis, Tenn.; Mississippi Valley Motor Car Corporation; $50,000; R M Darnell, O. W. McClure, A. R. Orgill, Solon Hamer, S. T. Brown, F. M. Gilliland.

Dallas, Tex.; Gould Battery and Service Co.; $6000; William Tobain, H. Lange, W. B. Clayton.

Dallas, Tex.; Harvey Motors Co.; $20,000; H. A. Harvey, Howard Harvey, L. E. Harvey.

Dallas, Tex.; McMillan Motor Sales Co.; $20,000; J. E. McMillan, D. L. Harris, A. M. Bradley.

El Paso, Tex.; Motor Car Sales Co.; $25,000; John Fleming, B. F. Scholer, Avis Fleming.

Houston, Tex.; McDill-Elmer-Ransom Co.; $15,000; R. H. McDill, C. D. Elmer, R. J. Ransom.

Houston, Tex.; E. B. Smith Motor Co.; $16,000; Earl B. Smith, Ben Taub, A. Sander.

Marshall, Tex.; Triangle Motor Co.; $8000; George T. Bishop, M. R. Newnham, J. B. Bishop.

San Antonio, Tex.; Wallace Motor Co.; $15,000; W. H. Wallace, R. B. Westbrook, J. C. Wallace.

Waco, Tex.; Herring-Wright Co.; $16,000; auto transfer business; J. F. Wright, W. C. Herring, C. F. Dumas.

Dundas, Va.; The Star Motor Co.; $10,000; W. A. Daniel, A. W. Reames.

Milwaukee, Wis.; Auto Mutual Service Co.; $50,000; L. S. Dilweg, Louis R. Zarse, Maurice Geisenfeld.

GMC EARNINGS.

A reflection of the activity which prevailed in the automobile industry during the first six months of this year is found in the half yearly report of the General Motors Corporation. The net profits amounted to $48,900,800, or nearly double the amount reported for the corresponding period of last year.

After provision for Federal taxes there was a surplus available for dividends of $30,591,598 and a surplus available for common stock of $29,125,940, or the equivalent of $19.70 a share on the $147,647,700 common stock capitalization. In the six months ended June 30, 1918, there was a balance of $12,587,259 available for dividends, and that proportion applicable to the common was $11,717,480 on the 1,051,417 common shares then outstanding.

The balance sheet shows that the company on June 30 had cash on hand to the amount of $74,799,444 as compared with $31,186,737 on June 30, 1918. The company's holdings of Liberty bonds also show a big gain, the amount recorded this year being $21,709,030, or about $12,600,000 more than on June 30, 1918.

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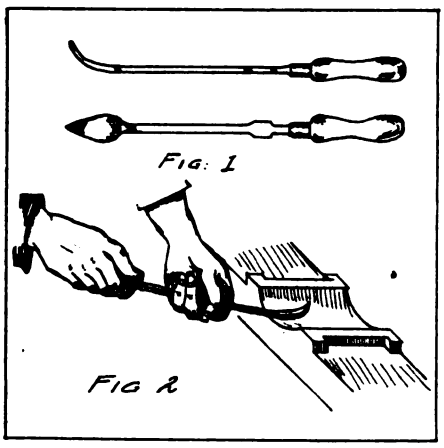
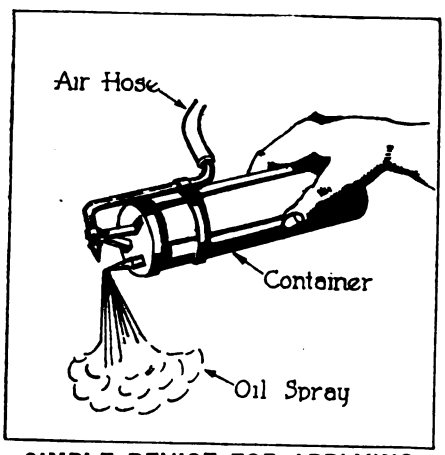
Mechanical Suggestions for Garage Men



HOME MADE BEARING SCRAPERS.

In fitting connecting rod or main bearings the repairer often finds it necessary to scrape the bearings to obtain a perfect fit. Scrapers may be purchased from supply houses, but a set may be made in a home garage that will be as serviceable as those purchased. Two 14-inch files are required. Heat the files in a forge and draw them down to about half their width. Heat the point of a file to a cherry red and while cooling hammer it to the shape shown in Fig. 1, drawing the edge to a cutting edge and slightly spoon shaped. Fig. 2 shows the scraper in use. It is found very handy in fitting engine bearings after they have been tested with Prussian blue and the high spots are shown. The scraper is used for removing the high spots.



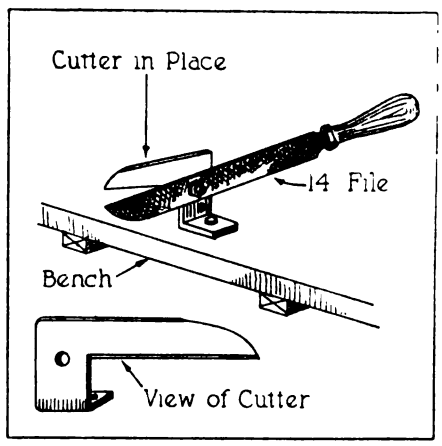
SIMPLE DEVICE FOR APPLYING POLISH.

A simple device for applying polish or paint to a car is made as follows: Obtain a long, round can and solder a short, tapered tube at one side of the cover as shown in the cut. A length of hose connected to the air system of a garage supplies the necessary air pressure through a small nozzle held in position by a brace soldered to the cover, the nozzle pointing at a right angle to the tube.

To make this device more substantial the container may be made of a section of 2½-inch pipe, having a cap screwed on at the bottom and a cap at the top with the brace and tube fastened to it. The tube is best fastened by drilling and tapping a hole and threading the tube into it. It is claimed that this device will effect quite a saving in the use of polish or paint against applying it with a cloth or brush.

HOME MADE METAL CUTTING SHEARS.

Bench shears for cutting sheet metal can be constructed by a machine, the stationary jaw that is fastened to the bench bearing formed from a section of wagon spring. Heat the section in the forge and bend to the shape shown in the cut. Drill a hole near the end to fasten the section to the bench and a second hole for attaching the cutting bar. Grind the cutting edge on a sharp bevel



so that it will retain its edge. The lever is made from a 14-inch file, the teeth of which are ground off on an emery wheel, and the cutting edge beveled. Clamp the two sections together with a bolt.

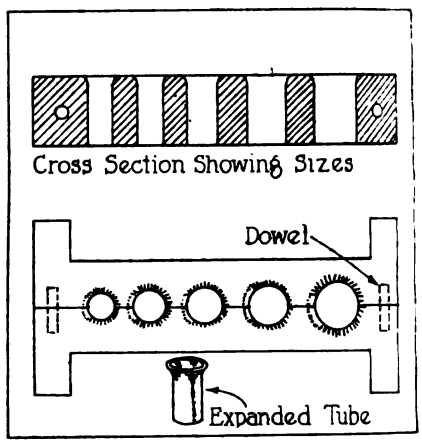
ANNEALING STEEL.

According to a recent patent granted to F. Bagliard of Milan, Italy, high-speed steel is annealed by heating it to 1000 degrees Fahrenheit, withdrawing it from the fire, allowing it to cool for a few seconds beneath cinders and then immediately quenching it in water or grease, or preferably in a mixture of 200 parts animal grease not containing stearin, 700 parts tallow and 100 parts of charcoal.

DRILLING SPRING STEEL.

When drilling holes in spring steel, or tapping threads in iron where the tap is a trifle small for the hole, by applying a small quantity of wood alcohol to the drill or tap the drill can be started and the work can be easily done. Without the alcohol the drill could not be started. The same result can be obtained when using the tap in iron.

Be extra careful about closing the clamps at the ends of the chains. If they come loose an expensive chain will be lost. It simply drops off unknown to the driver.



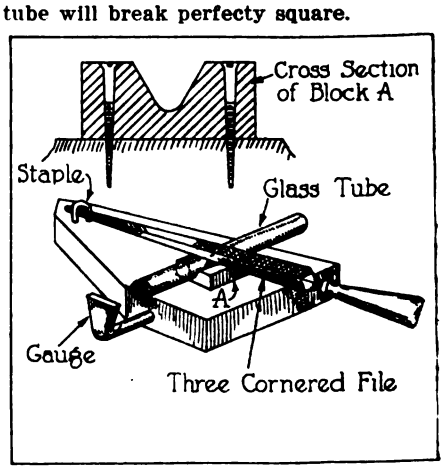
OIL PIPE FLANGING DEVICE.

Quite often in overhaul work the repairer finds it necessary to flange small copper oil or gasoline feed pipes. These will vary in size in different engines. To simplify the work and do a good job a flanging device will prove handy.

The device shown is in two sections, U shape, with set screws for clamping each to a vise jaw. The two sections are doweled together. In using the device the tubes are gripped in it and the ends flared as indicated.

GLASS TUBING CUTTER.

A simple, efficient device for cutting glass tubing, such as used for oil gauges, sight feed glasses, etc., may be made from a three-cornered file, a piece of board for the base, a wood vise block, a staple and a simple length gauge made of a piece of one-quarter inch rod, flattened at one end and bent to serve as a stop. The gauge is inserted in a hole bored in the base and adjusted by sliding in or out and secured by a wood screw. To use the device the V block is placed on the board and the glass tube is laid in the block. The stop is adjusted to the length of tube desired. The tip of the three-cornered file is inserted under the staple. Press down lightly on the file and roll the tubing, scoring it with the file. Remove the tube, light a match and heat the glass at the score, and plunge the glass tube in water. The tube will break perfecty square.



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Lawrence Process of Repairing Scored Cylinders

Large Business Has Been Developed and Much of the Work Is Done for Automobile Concerns Throughout the Country --- Successful Suits Against Infringers

IT IS well known that a great many cylinders of internal combustion engines are damaged by wear and very often they are scored by foreign matter getting into the cylinder or by parts of the apparatus becoming disarranged and scratching or gouging the interior of the cylinder so that there is no tight fit between the piston and the cylinder, and thus causes poor compression and the engine soon becomes useless. The scoring is very often caused by reason of a wrist pin coming loose and being carried along by the piston and scraping the interior wall of the cylinder so that it becomes channeled or scored.

It has heretofore been the practise to repair scored cylinders by grinding or reboring them. This is a very slow method and is expensive because of the time required for the purpose, and such manner of repairing necessitates the use of a new size piston and ring. Also each time a cylinder is reground it is weakened and the wall of the bore is made thinner.

Another method has been to weld the scored parts to the cylinder, but in subjecting the cylinder to a welding heat the same becomes warped, and, therefore, in the majority of instances, requires grinding or reboring, and again disturbing the contour of the inside of the cylinder wall.

L. Lawrence & Co., owner of the patents covering the process of repairing scored cylinders, with main offices in the Woolworth building, New York City, began business at Newark, N. J., in 1862, making copper work for manufacturers.

Pittsburgh Plant of L. Lawrence & Co., Owner of the Lawrence Patented Process for Repairing of Scored Cylinders. Main Offices of the Company Are Located in the Woolworth Building, New York City. In Addition to 12 Branch Plants, the Company Has Representatives in 76 Cities. Special Prices Are Made to Automotive Dealers. The Company Plans to Build Up a National Organization for the Sale of Automotive Accessories.

This company also is the owner of patents covering the repair of sand holes and blow holes in rough castings, and is doing a large volume of this work for well known automobile concerns and foundries throughout the states.

History of the Company.

The head of the firm invented the Lawrence patented process for repairing scored cylinders in 1915 and the business grew so fast that it was necessary to open a branch plant at Detroit, Mich., in May, 1916. Right after the Lawrence company exhibited in the 1916 automobile show at the Coliseum, Chicago, a branch was established in that city.

A branch plant was opened at Cleveland in 1917. On the Pacific coast the demand for the Lawrence service has required the concern to establish plants at both San Francisco and Los Angeles.

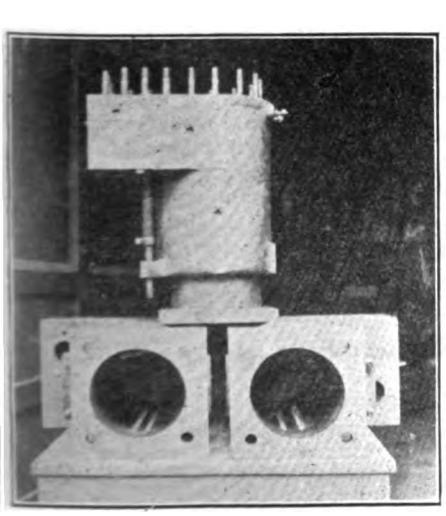
The Chicago plant has been getting so much work from the Wisconsin, Minnesota and Northern Michigan territory that plants have recently been opened at Milwaukee and Minneapolis. This was done to avoid the shipping delays getting cylinders in and out of Chicago. Every winter the Chicago plant has repaired a great many cracked water jackets and scored cylinders for dealers in Wisconsin, Minnesota and Northern Michigan, and the Milwaukee and Minneapolis plants will shorten the time required for repairing.

Suits brought by the company against infringers of its patents have been won in several states. The firm makes special prices to automotive dealers who send scored cylinders in to be repaired and this policy has been largely responsible for the rapid growth of the business.

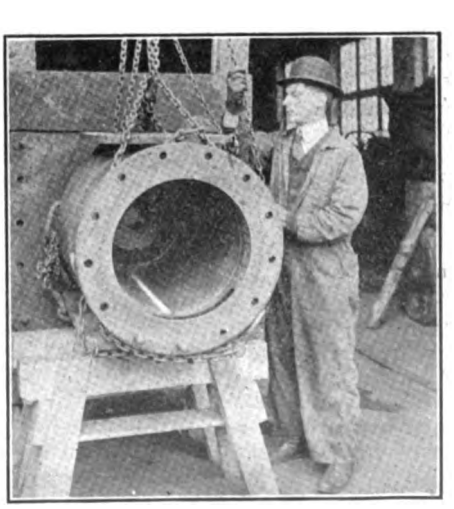
The greatest care is taken to finish all work so carefully that there are no "come backs" on the firm's policy of guaranteeing all work for the life of the motor. New mechanics who are learning the process are never permitted to finish a job alone until they have had sufficient experience and practise. The Lawrence officials realize that money spent in thoroughly training the mechanics saves both trouble and time later on.

The Lawrence company, outside of its 12 branch plants, is represented by responsible persons in 76 cities throughout the states, and before this year is over, with the aggressive campaign which is now in progress, will be represented in every city and town of any size throughout the country. At least this is the aim of the organization.

The Lawrence organization plans to build up a national organization for the sale of automotive accessories, and, with its branches and representatives throughout the country is in an excellent position to carry on this business in conjunction with their other work.



Cylinder Block Repaired at Newark Branch.



Steam Cylinder Repaired at Newark Branch.

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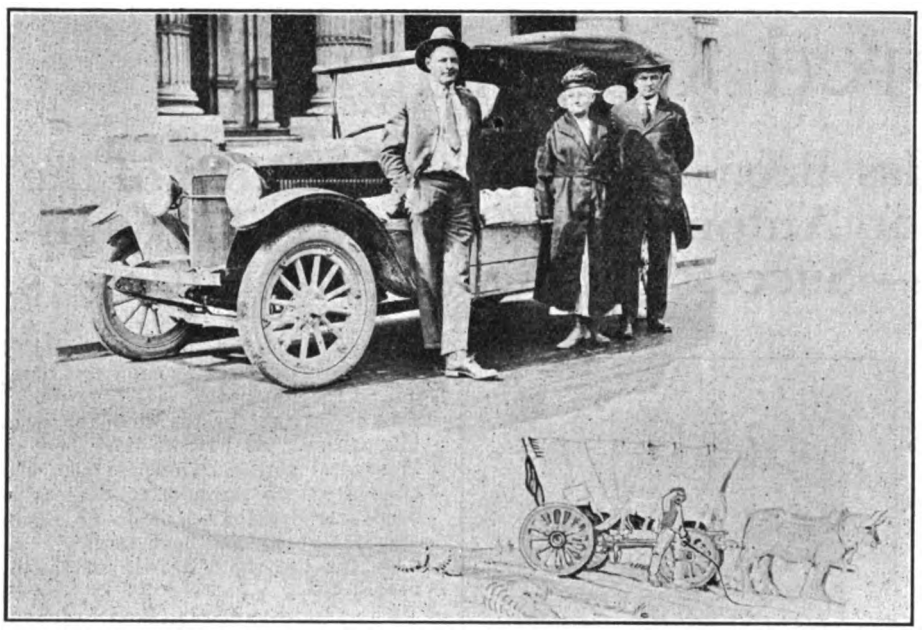
THIS TIME PIONERS CROSS CONTINENT IN AUTOMOBILE



Years Ago They Made the Trip in an Ox Team, but Their Recent Tour Was a Luxurious One in a Liberty Six.

AN AMBITION of a life time, conceived as they wended their way over the prairies in 1864, was fulfilled recently when E. J. Dunham and wife of New Hartford, Ia., arrived at Berkeley, Cal. Over the same 5000-mile trail the aged couple came, but this time, instead of consuming months of time and having to prod along a slow moving ox team, they drove luxuriously in a Liberty Six.

It was on May 22, 1864, that arrangements were first completed for the trip to what was then the "promised land." Several neighbors joined in the party, among whom were Charles E. Needham and family. At Carson City, Nev., a halt was called in order to allow the stork to transfer a new passenger. The arrival proved later to be Congressman J. C. Needham, who was born in the early morning as the pioneers were preparing breakfast.

The old prairie schooner was discarded after the trip ended, but pictures of it, made in the East, are still among the most prized possessions of the Dunham family. Later in years the party broke up and Dunham returned to the scene of his first endeavors. He accumulated wealth and today is reputed to be one of the leading men of the community.

Ambition Realized.

"I hope to live and see the day when I can go back over this trip in real style and enjoy the sights," Dunham had told his neighbors as they bumped along over the roadless prairies and mountains, avoiding the hostile redskins and sustaining themselves by the game that fell before their crude old muzzle loaders. And he did it.

"3 IN ONE SENSE" ISSUES SPLENDID SOUVENIR NUMBER.

The September issue of "3 in One Sense," the house organ of the 3 in One Oil Co., was made a special number in honor of the 25th anniversary of the company. The pages were amplified, and dressed up in birthday clothes. A copy, under full letter postage, was sent to nearly 80,000 retail dealers and jobbers all over the United States as a souvenir. For many years this pubication has been the only point of contact between the company and the 250,000 dealers who handle its product, distribution being entirely through jobbers. Much of the good will enjoyed by the company at the hands of retail dealers may be laid to the splendid work accomplished by this little house organ. In the anniversary number it told the story of the company's remarkable progress, in an easy, readable manner, and there have been included unusual features in picturing the growth of other industries, including the automotive industry, with which 3 in One Oil has grown up and which have broadened the field of this wonderful product.

LINES SALES MANAGER.

M. S. Lines, who for the last two years has been special sales representative in the eastern states for the Gordon Tire & Rubber Co., Canton, O., has become sales manager for the company, succeeding A. W. Senz, who resigned to go with the L. & M. Rubber Co. Mr. Lines was for seven years with the Michelin Tire Co. in the sales department.

TUCKER WITH LAFAYETTE.

Edward Tucker, Jr., formerly associated with Joseph A. Schulte in the Detroit retail branch of the Cadillac Motor Car Co., has accepted a position with E. C. Howard of the Lafayette Motors Co., Indianapolis.

PACKARD ELECTRIC EXHIBIT.

The Packard Electric Co., Warren, O., will display samples of its lighting, starting and ignition products at the Automotive Equipment Association show in Chicago. At the back of the booth will be three large display boards showing samples of cables, also samples of cable assemblies which the company makes for motor car manufacturers.

"While we do not sell assemblies to the jobber," the company states, "we still feel that the jobber is interested in seeing how these jobs are made up for original factory equipment on various cars, and for this reason we will display the cable assemblies as well as bulk cable."

The exhibit will also include the company's standard sample board, which is furnished to distributors, also the cable racks which are used for storing and displaying distributor stock of cable. Probably the most striking part of the exhibit will consist of a reproduction of the ignition system on an automobile.

There will be an Atwater Kent distributor driven by a small electric motor, and this exhibit will be connected up with six spark plugs by high-tension cables of the company's manufacture. Between the distributor head and the spark plugs these cables will run through an oil bath, the cables to be left in the oil bath continually throughout the show. This test will show that the cables will continue to function even under the most adverse conditions.

MOSSBERG EXHIBIT.

The Frank Mossberg Co., Attleboro, will display socket wrench sets, double end wrench sets, Ford necessities and its new line of all-steel indestructible socket wrenches in the speed brace offset and "T" handle types at the Chicago show of the Automotive Equipment Association. The company will feature display boards six feet in height, covering the new all-steel indestructible socket wrenches.

ALBERTSON ISSUES FORD BOOK.

Albertson & Co., Sioux City, Ia., has issued a new book, "The A-B-C of Ford Motor Repairing." The book instructs Ford owners in proper methods of grinding, refacing and reseating valves and valve seats. Instructions are given in a simple, non-technical manner. The outfit described for the work is designed for a Ford car or truck, and its retail price is $7.75. The tools are exact duplicates of the larger "Sioux" tools for all makes of cars, trucks and tractors.

MAIBOHM CAPITAL INCREASE.

More than $500.000 worth of treasury stock has been sold by the Maibohm Motors Co., Sandusky, O., increasing its working capital to more than $1.000.000. The 1920 production schedule calls for 7500 cars. Prior to this year the company had not entered the eastern market

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The Fisk Nine prove that good athletes make good workmen

FISK TIRES

The Fisk line is an unusual selling proposition—a *complete* line, no gaps, no fill-ins.

The Fisk Non-Skid, the Fisk Red-Top, the Fisk Cord. All good looking, all oversize, each to fill a particular place in the dealer's line.

Stand any one of these up alongside other tires of the same class and size and note the size, the care in every detail, the good looks of the Fisk Tires.

The ideal of the Fisk Rubber Company is to be the best concern in the world to work for and the squarest concern in existence to do business with.

Sold *direct* to dealers and manufacturers

There is a Fisk Branch within 24 hours of you

Time to Re-tire?
(Buy Fisk)

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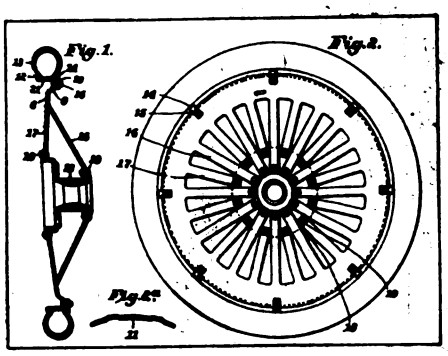
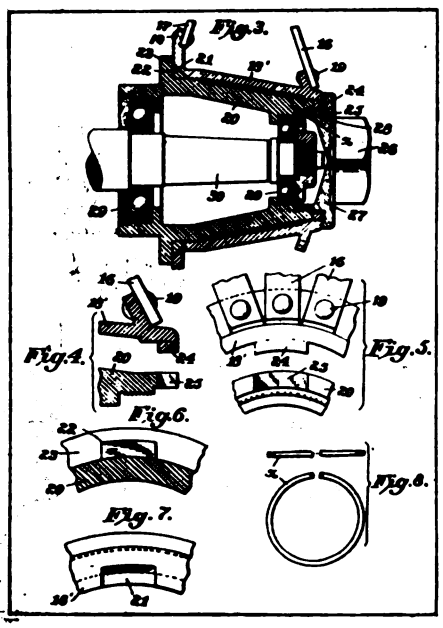
PRESSED STEEL WHEEL DESIGNED TO BE USED ON THE AUTOMOBILE

Exclusive of the Hub, It Is Made from a Single Disc of Metal —Said to Be Light in Weight and Resilient





The Foregoing Illustrations Show in Detail the Various Features of a Pressed Steel Automobile Wheel Designed by L. M. Ricketts. The Numerical References Are Explained in the Accompanying Text. Mr. Ricketts States That Definite Plans for Manufacturing Have Not Been Formulated, but Are Now Under Consideration.

L. M. RICKETTS, 3624 Roland avenue, Baltimore, Md., has invented a pressed steel automobile wheel, which, exclusive of the hub, is pressed from a single disc of metal. Mr. Ricketts states that it is strongly constructed, light in weight and resilient, and that, by means of projecting bosses on the outside of the rim, absolute concentricity is obtained. He says:

"The complete wheel can be changed or only the demountable rim and tire. This is both a demountable wheel and demountable rim. The cost of this wheel compares favorably with the wood wheel, and much cheaper than the wire wheel. The increasing shortage of suitable timber for manufacturing wood wheels puts the situation squarely up to the manufacturers of steel wheels. It is not the popularity of the wire wheel that is causing the increasing use thereof, but absolute necessity."

In the accompanying illustrations figure 1 is a section view of the wheel, figure 2 a side elevation of a portion of the wheel, figure 2A a detail, figure 3 a section view of the hub with a portion of the wheel in place thereon, figure 4 a portion of the wheel and a portion of the hub which interlocks therewith, figure 5 a face view looking at the parts of figure 4 from the right hand side thereof, figure 6 a detail view of a portion of the hub and figure 7 a detail view of a portion of the shell of the wheel. Figure 8 shows in two views a split locking washer.

In figure 1, 8 indicates the body of the wheel, which is formed of sheet metal, this body portion consisting of an annular portion arranged in a plane substantially at right angles to the axis of the wheel and a portion, 9, continuous with the portion 8, but extending at an angle laterally from the plane of the portion 8, this annular portion being curved at 10 and merging into an overhanging pin portion, 11, which is arranged substantially central over the annular body part, 8, and is provided with a flange, 12, at its terminal edge.

The edge of the rim, 11, opposite to the edge at which the flange is located is devoid of a flange and this enables a demountable rim and tire, 13, to be slipped in place and held by clips, 14, which are retained by bolts, 15, passing through the angular extension of the annular body. The body portion 8 is formed continuous with spokes 16 and 17. These spokes are cut from the body of the metal and one series, 16, extends to the right in figure 1 and the other series extends to the left. These spokes alternate with each other and their lower ends are connected with the right hand and left hand ends of the hub or shell, 18, by any suitable means such as by the rivets, 19.

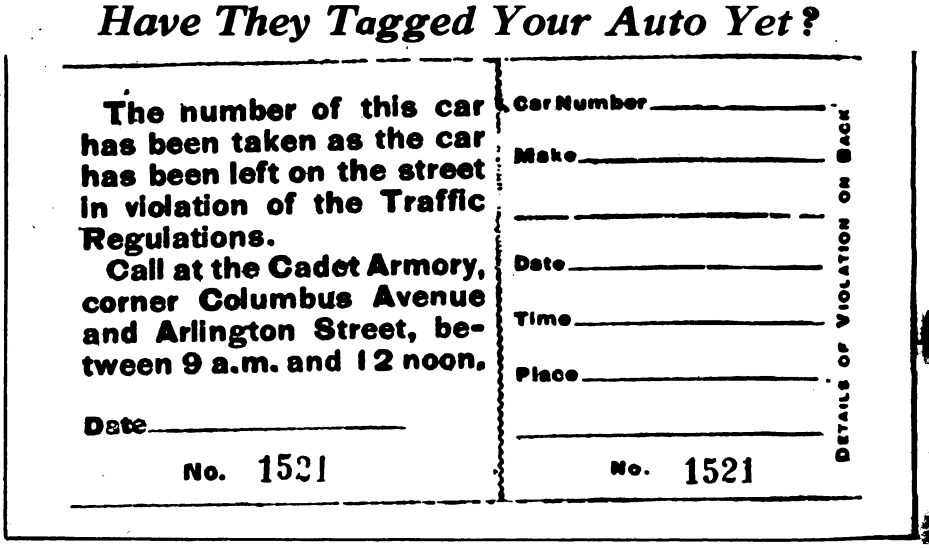
The arrangement is such that the rim of the wheel is substantially over the larger inner end of the hub. In figure 1 the spokes 17 are in plane substantially at right angles to the axis of the wheel, though these spokes may be inclined to a sharper degree than illustrated in figure 1.

In figure 3 is shown the wheel shell or center, 18, mounted on the hub, 20, so as to turn with said hub as one body therewith. For this purpose the shell is provided with a notch or cut out portion, 21, which fits over a fillet, 22, on the hub, adjacent the flange, 23. The outer end of the shell is provided with an inwardly extending projection, 24, which fits into a notch, 25, in the hub and thus the shell is held against circumferential movement in relation to the hub. The shell is held against axial displacement in relation to the hub by a nut, 26, which has a base or flange portion, 27, lying over the end of the shell and restraining it against axial displacement. The nut is screw threaded at 28 into the end of the hub. Roller bearings are provided at 29 between the hub and the axle.

In figure 3 is shown the wheel shell or center mounted on the hub so as to turn with the hub as one body therewith. For this purpose the shell is provided with a notch or cut out portion, 21, which fits over the fillet on the hub, adjacent the flange, 25.

The outer end of the shell is provided with an inwardly extending projection, 24, which fits into a notch in the hub and thus the shell is held against circumferential movement in relation to the hub. The shell is held against aerial displacement in relation to the hub by a nut, 26, which has a base or flange portion, 27, lying over the end of the shell and restraining it against aerial displacement. The nut is screw threaded at 28 into the end of the hub.

Have They Tagged Your Auto Yet?



When the Police in Many Cities Find an Automobile Left Standing in Violation of the Traffic Ordinances, They No Longer Wait for the Owner or Driver to Put in Appearance. They Simply Put a Tag Summons on the Car. Above Is a Likeness of the Tag Used by the Military Police in Boston.

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Every Branch and Authorized Distributor of United Motor Service Inc. performs a double function—the distribution of genuine service parts and the making of necessary repairs and adjustments.

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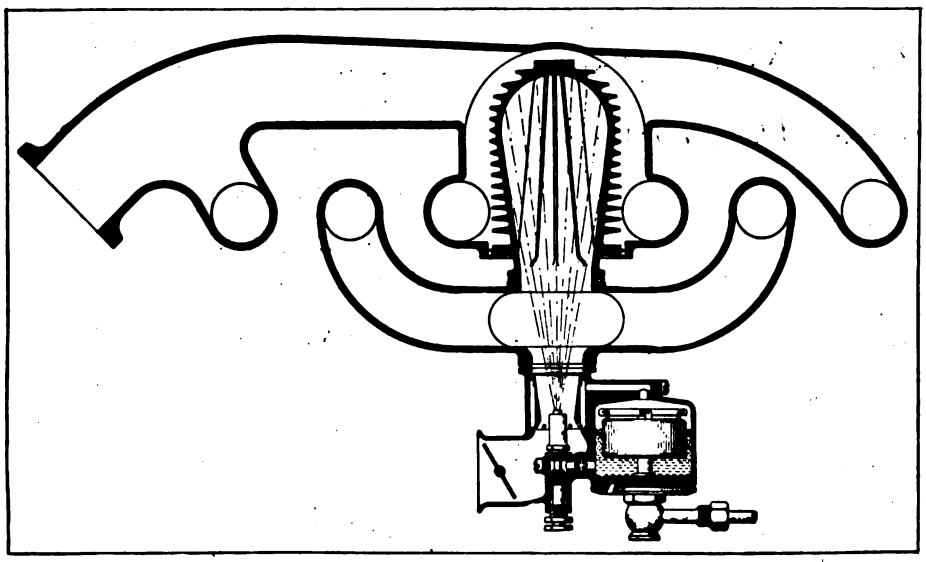
STEWART HEAVY OIL SYSTEM FOR TRACTOR ENGINES.

What is known as the Stewart Heavy Fuel System is about to be produced commercially by the carburetor division of the Stewart-Warner Speedometer Corporation, Chicago, and this is claimed to be a method of carbureting heavy oils that has been found to be extremely satisfactory.



Drawing Showing the Stewart Heavy Fuel System, Designed to Preheat and Vaporize Gasoline, Kerosene or Distillate.

The system is in effect the use of a heating chamber in combination with the fuel intake of an engine, and this combination is maintained to be adaptable to practically all engines. This chamber is combined with the exhaust manifold and it is directly above the spray jet of the carburetor, so that the fuel as carbureted is projected above the intake manifold into it. Claim is made that the fuel is accurately metered by the air flowing to the engine and is projected out of the air stream and into the vaporizing chamber, where it is completely vaporized. The vapor condenses upon coming into contact with the air in the manifold, forming a fog mixture at the lowest possible temperature consistent with a perfectly constituted fuel mixture.

Statement is made that exceptionally fine division by direct spraying at the carburetor nozzle is an expedient for securing uniform distribution of the fuel over the vaporized surface, to the end that its capacity may be high and its size as small as possible. Only the fuel enters the vaporizer. The vapor formed in the heated chamber flows out over the incoming fuel spray and gives up a portion of its heat directly to the liquid globules.

Economy of Operation.

In the fitting of the Stewart Heavy Fuel System, made to secure maximum economy of operation, the charge temperature has a constant value (within plus or minus three to four degrees Fahrenheit) under all conditions of operation, from idling to full load at highest speed. The only change in conditions that can alter the mixture temperature is modification of the ratio of fuel to air in the mixture. An enrichment causes a rise in charge temperature, since more heat is then given up to the air by the fuel vapor. The converse is equally true. This affords an inherent control, and as a consequence no regulation of the exhaust gas sweeping the vaporizing chamber is necessary.

The system is primarily intended for use with trucks and tractors and with kerosene, distillate and gasoline may be burned.

GUARANTY Motor Repair Arm

(Patent No. 1,289,100, Dec. 31, 1918)
Note the date

The GUARANTY REPAIR ARM is scientifically made in rights and lefts. It fits the Ford pleasure car, truck or unit without alteration. Extended prongs provide greatest possible bearing surface and reinforcement.

It is the most efficient, durable Arm produced by a house of integrity. It saves time and expense. Just a wrench and a few minutes anywhere—on the road, street or in the garage, make a permanent repair. Merely loosen 6 bolts. Tighten nuts. Don't disturb motor.

Price $1.50

GUARANTY MOTORS COMPANY

436-38 MASSACHUSETTS AVE., CAMBRIDGE, MASS.

Manufacturers of the Well-Known GUARANTY LINE

GUARANTY Internal Drive Units for converting pleasure cars into trucks, GUARANTY Power Hoists, Pliable-Drive and Extended Frames for Ford Worm-Drive Trucks, Repair Arms, etc.

Dealers: *Exclusive Territory now being assigned. Write or wire for liberal discounts on our entire line. Learn of our unfailing co-operation and publicity for your profit.*

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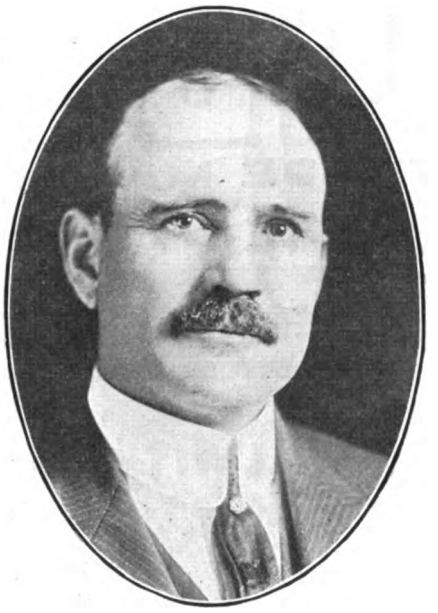
Lafayette Ready for Production

E. C. Howard.



Charles W. Nash.

D. McCall White.

THE Lafayette Motors Co., Indianapolis, recently incorporated for $6,000,000, expects to have a Lafayette car ready for the national shows in January. Officials of the company hope to be able to produce cars in quantity early next summer. The car was designed by D. McCall White. A plant in Indianapolis has been purchased.

Charles W. Nash, president of the Nash Motors Co., Kenosha, Wis., is president. Mr. White and E. C. Howard are vice presidents, in active charge. James J. Starrow of Boston will act as chairman of the board of directors.

Mr. Howard was formerly general sales manager of the Cadillac Motor Car Co. in Detroit. Mr. White is perhaps best known for his successes as designer of the English Daimler and Napier engines, and the Cadillac eight in this country. Until recently he was vice president of the Cadillac company.

Both Mr. White and Mr. Nash were prominent in the creation of the Liberty Motor, Mr. White as supervising designer and Mr. Nash as production manager. Mr. Nash will, of course, continue as active president of the Nash Motors Co. and it is understood that his association with the Lafayette company will be largely in an advisory capacity. Capable department heads have been engaged.

RAYFIELD THERMOSTAT MEANS PROFIT FOR DEALERS.

Every automobile dealer undoubtedly has noticed that with the approach of cold weather the troubles and annoyance of engine starting have caused a great deal of dissatisfaction among his customers, and consequently he has been forced to give a good deal of service in which there is no profit.

These dealers will be glad to know that there is now on the market a device which will enable them to turn these unprofitable calls into a source of good business. This device is the Rayfield thermostat, made by the Beneke & Kropf Manufacturing Co, manufacturer of Rayfield carburetors The latest model has several improvements which make this device simple in construction and automatic in operation. It is easily installed on any automobile, truck or tractor on the top water connection where there is no possibility of clogging. It ensures easy starting and does away with many of the troubles of a cold motor.

It enables the motor to warm up quickly by controlling the circulation of water through the radiator and motor block. Because the motor does warm up quickly, a minimum of unburned fuel escapes into the engine to dilute the oil in the crankcase and to form carbon in the cylinders and spark plugs. With this device on a car the spark plugs seldom, if ever, need cleaning.

Dealers everywhere have found that the Rayfield thermostat sells easily, for it has a universal appeal to all users of gas engines. In fact, many dealers make many of their sales over the telephone when the motorist calls up to get some one to start his car. The increased production made possible by the growing demand enables the company to put this thermostat on the market at a price within reach of every motorist, and at the same time allows the dealer a substantial margin of profit.

HERSCHELL-SPELLMAN EXPANDS.

The Herschell-Spellman Motor Co. plans to issue $75,000 additional preferred stock and a like amount of common stock, in order to increase capacity by plant extension, so that there will be a production of 100 four-cylinder and 100 six-cylinder motors daily.

DETROIT OFFICE FOR LANCASTER.

Frank N. Adgate, western sales manager of the Lancaster Steel Products Co., Lancaster, Pa., has appointed W. J. Lucas manager of the new Detroit sales office of the company.

BODY BUILDERS AND REPAIRERS STRIKE IN EW YORK.

Nearly all of the body builders and repairers in New York City are on strike. They are chiefly affiliated with the Air Craft and Body Builders' Union, 953 Third avenue. The union has about 1200 members, but its charter was revoked a year ago by the American Federation of Labor, and it has not been recognized as a union in dealing with employers. A 44-hour week with a 15 per cent. increase in wages for workers receiving $35 or less a week and 10 per cent. for those receiving more than $35 is asked. The strike affects nearly 100 automobile body builders, repairers, upholsterers and painters in Manhattan and Queens. The body workers in Brooklyn have not yet gone out. Charles E. Hawkes, secretary of the Auto Body Manufacturers and Applied Trades of New York City, says that the organization of employers will not treat with the union, but that members are willing to deal individually with their workers.

A device for the boring and grinding of engine cylinders at one operation, the invention of M. L. Williams and George W. Cole, is shortly to be put on the market by the Standard Tool and Engineering Co., South Bend, Ind.

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J&B PRODUCTS
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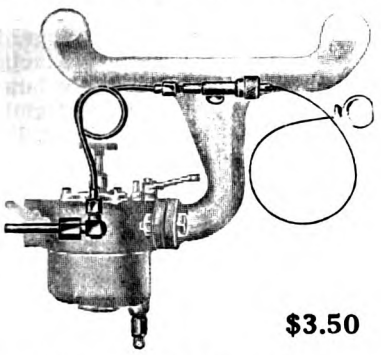
FORD CAR OWNERS BUY

J & B specialized trade marked products because they are guaranteed quality, known utility and long service life. They are designed to give the best possible service results. They are contructed of highest grade materials.

Exceptional facilities insure great production. Deliveries are made to schedule. J & B factory service is equal to the quality of the products.



$3.50

J & B Gasoline Injector

's a wonderfully efficient priming device that insures engine starting at any temperature. A rich mixture of gasoline, taken from the fuel supply pipe, is injected directly into the intake ports. Firing must be positive.

The carburetor is not drawn upon until the engine starts and cannot be flooded, nor can the cylinders be choked with too rich gas.

A positive operating device that any owner can install without special tools.

J & B Original Timer, Model T-1

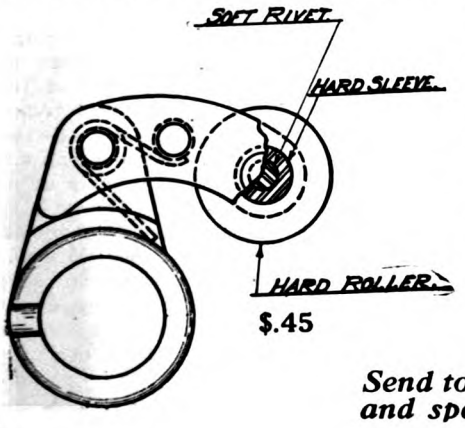
Will improve engine operation immeasurably. The design of the rotor is such that contact is positive and wear is negligible. The contacts are wiped clean with every revolution.

The oiler is large enough to take the spout of an oil can and is fitted with a spring cover, insuring against the timer becoming defective from dirt. It is the only thoroughly protected timer made.

$1.45

J & B Timer Rotor

Is to replace the brush of Ford timers. It is a hub with a flexible arm carrying a hardened roller that revolves on a hardened sleeve, retained by a soft rivet. The wear is on the pack hardened sleeve and roller. A torsion spring maintains a constant pressure of the roller against the fibre ring, insuring positive contact and firing.



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Let us advise if you do not now sell them. It is a proposition that means worth while profits.

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TIRE INDUSTRY AND TRADE

The A. J. Stephens Rubber Co., Kansas City, has increased its capitalization to $1,500,000 for the purpose of engaging in the manufacture of tires and tubes. The company has had rapid growth in the manufacture of tire accessories and fabric products. A. J. Stephens, founder of the business, becomes president and general manager of the corporation. He says that approximately six months will be required for the complete installation of tire making equipment, as equipment adapted for tire making already in the plant cannot be diverted from its present use. "We expect to produce a cord tire that will be as good as a good tire can be made," says Mr. Stephens. "We figure it is the only way we have a chance to compete with the larger companies. We will also manufacture a fabric tire and we are going to get away from the mileage guarantee just so far as possible. There is no question but what all of the better known tire factories will be selling their tires on a basis of no mileage guarantee with the provision that any defects in material or workmanship will be made good."

The Portage Rubber Co., Barberton, O., announces that at a recent directors' meeting it was ordered that the regular quarterly dividend of three per cent. on the common stock be paid Nov. 15 on all stock of record Nov. 5. The directors also ordered the immediate preparation of plans and specifications for a three-story addition to the factory, 80 by 200 feet, to be of reinforced concrete construction at an estimated cost of approximately $200,000 to provide greatly needed additional factory space.

The Stanwood Rubber Co. announces the appointment of J. J. Moriarty as general superintendent of its Newark-Elizabeth Hardman plants. For several years he has been efficiency expert and head of the compounding department of the Firestone Tire and Rubber Co.

The Pennsylvania Rubber Co. has arranged for a display and sales room on the Garden Pier, Atlantic City. Five rooms have been leased on the northeastern end of the pier. There will be writing and rest rooms. C. B. Williamson will be in charge. The opening will take place about Jan. 1.

The Pennsylvania Rubber Co. has opened branch offices in Cincinnati, O.; Charlotte, N. C., and Los Angeles. J. G. Smith, who recently returned from service overseas, will have charge of the Cincinnati branch. John D. Williamson, formerly North Carolina representative, will be in charge at Charlotte, while the Los Angeles branch will be in charge of Mr. Edelman, formerly connected with the Omaha branch.

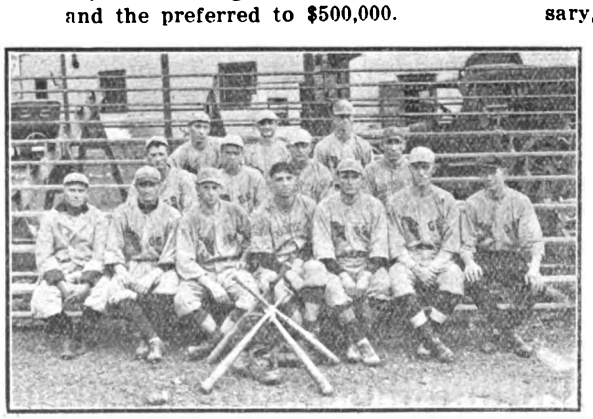
The J. & D. Tire Co., Charlotte, N. C., has changed its name to the McClaren Rubber Co., manufacturer of McClaren tires, with H. L. McClaren, former president and general manager of the Racine & Ajax Rubber companies, as president and treasurer. Manufacturing and sales policies will be broadened.

The Goodyear Tire and Rubber Co. takes pride in its "Silent Baseball Team." This odd organization is composed of deaf mutes in the employ of the company. The team has won 12 out of 16 games. The players have a strong following among their own people and receive much encouragement from the "silent" fans, who "root" in their own peculiar manner, by signs.

The Broadway Tire Exchange Co., Inc., Providence, has changed its name to Miller's, Inc., and has increased its capital stock from $10,000 to $100,000.

The Gates Rubber Co. has increased the guarantee on its Gates half-sole tires from 3500 to 5000 miles.

The Standard Tire Co., Willoughby, O., has declared a 50 per cent. stock dividend out of the surplus. The common capital is being increased to $1,000,000 and the preferred to $500,000.



Deaf Mutes on Goodyear Team.

The Middletown Rubber Co., Inc., has been organized with $1,000,000 capitalization by Chicago and Cleveland tire people and will erect a modern plant at Middletown, N. Y., to produce high grade "Middletown Cord" casings, inner tubes and all other rubber products. Myron J. Friedman, who operates large tire companies in Chicago and vicinity, is president. Associated with Mr. Friedman are William Rusnak, Chicago, owner of the Edison Tire and Rubber Co., as vice president; J. T. MacDonald, Cleveland, formerly with the Ideal Tire and Rubber Co., treasurer and general manager; S A. Thompson, Cleveland, formerly with the Firestone Co., secretary, and T. W. Decker, Cleveland, president Hardman Rubber Co., director. The company has opened offices in the Stewart building, 280 Broadway, New York City.

The Lee Tire and Rubber Co. directors have approved an increase in the capital stock from 100,000 shares to 150,000 shares. Hornblower & Weeks has underwritten 40,000 of the new shares at $30 a share and will offer them to stockholders at $33 a share. The sale of the stock will increase working capital, wipe out the indebtedness to banks and provide funds for expansion. The 10,000 shares remaining will be offered to employees on a profit-sharing plan, the stock being held in trust for three years and the employees having five years in which to pay for it.

The Goodyear Tire and Rubber Co. plans to offer $40,000,000 seven per cent. cumulative preferred stock. The proceeds will be used, as far as is necessary, to retire, by exchange or redemption, two outstanding issues of preferred stocks.

The Racine Rubber Co. will build 200 modern houses for the employees of its factories at Racine, Wis. The company recently purchased a 60-acre tract of land near the plant, and this will be used exclusively for employees' houses. The tract has been laid out in lots 40x100 feet and the houses will be built in double-detached style. The development will consist of 10 distinctive styles of houses. Employees are highly pleased over the plan and the houses will be occupied as fast as erected.

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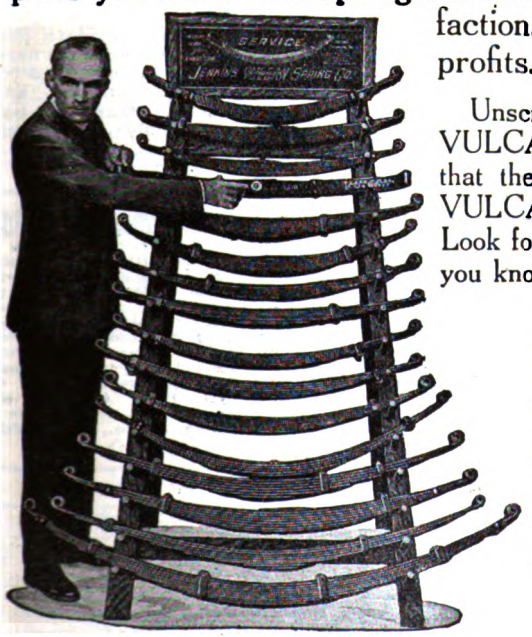
The VULCAN Name-plate
insures absolute protection to the dealer.

When you sell a replacement spring bearing the round VULCAN name-plate you know that spring has been made right and will give complete satisfaction. It protects your future business and your profits.



Unscrupulous jobbers have substituted inferior springs for VULCANS, in the past. We want every dealer to realize that the VULCAN name-plate is his assurance of real VULCAN quality and VULCAN profits, which are high. Look for the name-plate on every spring; when you find it you know you're right.

The VULCAN name-plate is a symbol of Protection and Profit to every dealer.

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MOTOR DRIVERS
WAKE UP
Investigate
PURITAN SERVICE.
Parts—Accessories—Supplies.
Try the Puritan Way—It Pays.
RIMS AND WHEELS.

We have an enormous stock of all makes and sizes of demountable rims and wheels—have them right in stock and can make immediate shipment. *Write for prices.*

RADIATORS.

Brand new Honey Comb Radiators for all makes of cars; guaranteed to be right. No matter what car you may need a radiator for, write us for prices.

SPRINGS.
New Springs for All Cars.
Write for Prices.

IGNITION MATERIAL.

6 volt Ward-Leonard Starting Motors, with Bendix drive	$15.00
6 volt Auto Lite Generators, model GH	15.00
6 volt Detroit Ward-Leonard Motor Generators for Saxons	32.50
6 volt Detroit Ward-Leonard Starting Motors with Bendix drive, for Saxons	25.00
6 volt Menominee Generators	15.00
6 volt type CC Atwater Kent Coils	5.50
6 volt type K2, K3 and CA Atwater Kent Distributors, 4 cyl.	10.50
6 volt type CD Ward-Leonard Controllers, for Saxons	10.50
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Model R Schebler Carburetor, 1 inch top intake	$12.50
1 inch Kingston Carburetors, top intake	5.00
18 inch Steering Wheels, for Fords	2.75
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ELECTRIC LIGHTING SYSTEM FOR FORDS.

Includes Generators, Battery, two Side Lamps, Tail Lamp, Wiring, Switches, etc. Price for complete system.....$17.50

ONE-MAN KHAKI TOPS.

Complete with Curtains and Dust Boot. Can fit any Maxwell models, either Roadster or Touring. Price, each, while they last.....$25.00

ALL PARTS FOR ALL CARS.

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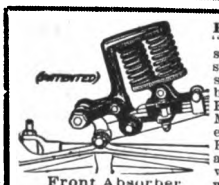
Motors,	$25.00 up	Presto Tanks,	$4.50 up
Magnetos,	4.00 up	New Spotlights,	2.00 up
Carburetors,	3.00 up	Generators,	10.00 up
Rear Axles,	15.00 up	Gears,	1.00 up
Front Axles,	5.00 up	Bearings,	1.00 up
Cylinders,	5.00 up	Radiators,	10.00 up

$12 Diamond Bumpers.....$5.50
Jobbers in Bankrupt Auto Supplies.

BRIGHTMAN AUTO EXCHANGE
321 Windsor Ave., Hartford, Conn.



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FOR FORD CARS. "Champion" Shock Absorbers. The perfect spring suspension. Absorbs all jar and rebound. Easy to attach. Fully guaranteed. Makes Fords ride as easy as any $5000 car. Ford dealers, agents and owners, this ad is worth $10 to you. Ask why. Write today.

Champion Shock Absorber Sales Co., Inc., Indianapolis, Ind., Mfs.

Send it to Detroit

MAGNETOS.

Bosch DU4 Variable spark	$30.00
Bosch DU-4 set spark	25.00
Bosch D4 and Dr4	25.00
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Splitdorf 4 cyl. Dixie, high tension	25.00
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National 4 cyl. low tension	8.00
Briggs 4 cyl. low tension	8.00
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GENERATORS.

Deaco 6 volt	$12.00
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COILS.

Splitdorf T S type	$10.00
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WE REPAIR any make magneto, coil, lighting generator or starter and give 24 hours service. Member Detroit Automobile Trade Association.

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GARDNER *thermostat*
CARBURETOR
SIMPLICITY, DURABILITY, EFFICIENCY, ECONOMY
WHY?
THE THERMOSTAT TELLS
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FORD MODEL $10.00 RETAIL
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50% to 90% Off List.
24 Hour Service. Unlimited Stock.
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Motors,	$20.00 up	E. Presto Tanks,	$4.00
Magnetos,	$3.50 up	B. Presto Tanks,	$4.75
Cylinders,	$3.00 up	Bearings,	50c up
Springs,	$1.00 up	Rims,	$1.00 up

1000 Other PARTS Bargains.
If you want any part not listed here, **Write Us—We Have It.**

Conn. Auto Parts Co., Inc.
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CHEMIST AMAZING DISCOVERY.
25 Miles on One Gallon Gas.
MOTOROL, 25 to 50% more miles per gal. 25 to 35% more power.
Means faster ignition, uniform combustion, no carbon deposits, less wear and tear on motor, higher test of gasoline. Agents Wanted. **One Dollar Postpaid.**
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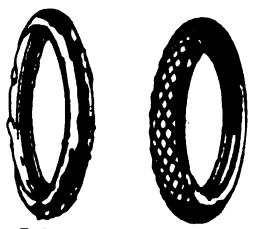
TRADE OUTLET

BOSTON RETREAD TIRE CO.



Before After

OUR METHOD OF RETREADING IS DIFFERENT FROM OTHERS.

We use all Goodyear first quality stock and retread bands and can absolutely guarantee from

3000 to 3500 Miles.

We will replace a new tire for every one that our work does not give satisfaction.

Tires called for and delivered. We pay express charges one way on all out-of-town orders.

Price List Mailed Upon Request.

BOSTON RETREAD TIRE CO.
70 Clarendon St., Boston, Mass.

TIRES

JOB LOTS

Obsolete, Surplus Stocks and Factory Seconds

WRITE—CALL

BROADWAY TIRE JOBBERS
250 West 54th Street **New York**

TIRES AND TUBES

Demonstrating and Factory Repaired.

Economy, Quality, Price. All Standard Makes.

Size	Tires	Tubes
30x3	$5.00	$1.35
30x3½	6.00	1.45
32x3½	6.50	1.50
31x4	7.25	1.65
32x4	8.00	1.60
33x4	8.75	1.70
34x4	8.75	1.70

No Junk. Satisfaction Guaranteed.

Size	Tires	Tubes
36x4	$9.00	$1.75
34x4½	9.25	1.75
35x4½	9.50	1.80
36x4½	9.75	1.85
35x5	10.50	2.00
37x5	11.00	2.20

Write for Prices on Odd Sized Tires. TERMS: $1.00 deposit with each tire ordered, balance C. O. D. subject to inspection. Specify style of rim to avoid delay. Although used tires are not guaranteed for any definite number of miles, we guarantee our tires to give the best service in proportion to the prices paid, or reasonable adjustments are made.

LIBERTY TIRE CO., 2119 So. Michigan Ave., Dept. I, Chicago, Ill.

Superior Parts and Brushes

FOR ALL

Ignition and Starting Lighting Systems

Used for Years by the Best Repair Shops Everywhere

"They Last Longer but Cost Less"

Write for Catalogue

Specialty Manufacturing Co.
637 Massachusetts Ave., Arlington, Mass.

Atwater-Kent Sales Co., of New England

883 BOYLSTON ST., BOSTON, MASS.

Official

SALES AND SERVICE

For New England.

Complete stock of parts always on hand.

Write for Price List.

Bargains **Bargains**

BOSCH and EISEMANN Magnetos

We specialize in rebuilt magnetos and guarantee them to be as good as new for all practical purposes.

Our stock of magnetos, coils, generators, starters and distributor systems is complete. We are headquarters for parts as well.

We give quick service and guarantee every item sold. We serve and save money for thousands of customers in all parts of America.

Write today for our monthly bargain catalogue. We can supply what you want and when you need it. We specialize in repair work.

We quote below a few of many exceptional Bosch Magneto bargains.

Independent Magneto Type	Description	Rebuilt	Independent Magneto Type	Description	Rebuilt
ZR 6	6 cyl.	$50.00	ZR 6	6 cyl.	$85.00
ZR 4	4 cyl.	45.00	ZR 4	4 cyl.	80.00
D 3	3 cyl.	25.00	D 6	6 cyl.	75.00
D 4½	2 cyl.	25.00	D 4	4 cyl.	70.00
DR 6	6 cyl.	22.50	D 3	3 cyl.	65.00
DR 4	4 cyl.	20.00	D 2	2 cyl.	65.00
DR 3	3 cyl.	20.00	DR 6	6 cyl.	70.00
DR 4½	2 cyl.	20.00	DR 4	4 cyl.	60.00
DR 8	8 cyl.	50.00	DR 3	3 cyl.	55.00

MEINERT MAGNETO SPECIALTY COMPANY.
1216 Prospect Avenue, Cleveland, Ohio.

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Hall Motor Co.

AUTHORIZED Ford AGENT
THE UNIVERSAL CAR

SERVICE AND PARTS

912-916 W. UTICA ST., Cor. BRAYTON
BUFFALO, N. Y. Bell. Tupper 4000

August 11, 1919.

The Stenman Electric Valve Grinder Co., Inc.,
43 Southbridge St.,
Worcester, Mass.

Gentlemen:-

Replying to your letter of August 9th, would say it affords us much pleasure to send you our check to cover the cost of the Electric Valve Grinder sent to us for trial a short time ago.

We have no hesitation in stating that we have tried three or four other different makes of grinders, and consider yours much superior to any of them. Its smooth, velvety action enables us to make a much nicer job than any other valve grinder we have tried.

HHH/FM Yours very truly,

HALL MOTOR COMPANY,
Per Harry H. Hall

The moral from the above letter, is that you insist on getting a "Stenman" and accept no other. "As good or better" has not yet been made. Your jobber can supply you—if not—write to —us. Circulars on request.

Made under U. S. Patents 876,449 1,313,490. Others pending.

"Will Pay 300%"

The Stenman Electric Valve Grinder will pay 300% yearly on the original cost where it is used to grind but one set of valves a week. If used more the returns will be proportionately greater.

"They Serve Best Who Are Best Equipped To Give Service"

The Stenman Electric Valve Grinder is the greatest time and labor saving tool that ever went into a repair shop. It is eight times quicker than hand work and does a better job. Thousands are already in use and you can depend on this wide use as a guarantee of its worth. Order one today from your jobber. It will have practically paid for itself before the bill is due.

Price $40.00—F. O. B. Factory

Stenman Electric Valve Grinder Co.
Makers of the Original Electric Valve Grinder
Worcester, Mass.

Copyright 1919 by Stenman Electric Valve Grinder Co.

UNIVERSAL BATTERIES

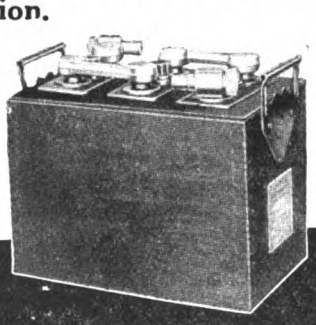
The Heart of any good starting and lighting system

UNIVERSAL BATTERIES are built to wear; to give long life and complete satisfaction.

UNIVERSAL BATTERY SERVICE is complete. It means prompt, efficient delivery of all batteries and repair parts.

There is a Universal Starting and Lighting Battery for every make of automobile, and there is a Universal repair part, plate, terminal, connector, separator, etc., for any make or size of battery.

Write for illustrated catalog.



Dealers, Garage Owners, Service Station and Supply Men; write for special agents' proposition.

Universal Battery Co.
3420 S. LaSalle St.

Universal Battery Co
Chicago

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GOGGLES FOR WELDERS.

Fitted with "Essentialite" Lenses.

THE FIBRE WELD.

Frame: Vulcanized fibre, non-conductor of heat and electricity, non-inflammable and infusible not affected by moisture, leather center, ventilated side pieces, adjustable elastic head band. We have demonstrated conclusively that with these lenses we vanquish the so called "fatigue-weariness" and headaches caused by Ultra Violet and Infra Red rays. Circulars and prices at request. Price each, prepaid, **$3 pr.**

Manufactured by

CHICAGO EYE-SHIELD COMPANY

2300 Warren Ave., Chicago, Ill.

SCAIFE COPPER-BRAZED AIR TANKS

are positively guaranteed to hold air indefinitely without loss of pressure.

(117 years old. Founded 1802)

WM. B. SCAIFE & SONS CO.

First Nat. Bank Bldg., Pittsburgh, Pa.
26 Cortlandt St., New York, N. Y.
38 So. Dearborn St., Chicago, Ill.

SCAIFE GASOLINE STORAGE OUTFITS

ARE IDEAL FOR PRIVATE GARAGES.

Send for catalogue.

CURTIS AIR FREE FROM OIL — MOTORISTS Have CONFIDENCE IN THIS SIGN

LET THEM FIND IT AT *YOUR* DOOR.

Curtis Air means more mileage, because Curtis is the only air compressor that can't flood cylinder with more oil than it can use. Oil is the enemy of rubber. It rots tires, causing blow-outs.

A Curtis Compressor Is Dependable

requires practically no attention, costs very little, quickly pays for itself, always delivers the kind of cool, clean air that makes tires last longer.

5 sizes and 125 combinations. Write for full particulars and let us tell you why the Curtis will prove to be your best investment. Ask your jobber for prices—but be sure and mention Curtis—the name is your protection against substitution

CURTIS PNEUMATIC MACH. CO. 1621A Klenlen Ave. St. Louis, Mo.
Branch Office: 531A Hudson Terminal, New York

For Ford and Metz Cars

Anderson Automatic Air Adjuster

It will add to mileage and greatly increase the power.

With a low throttle the engine will run strong and smoothly.

It will make a high grade efficient carburetor out of an old one.

In a few weeks it will save more in gas than what it costs.

List Price $6.50

DEALERS: This is a quick, sure seller, and the discounts are liberal. Write for facts.

ANDERSON & CO.

Waltham, Mass. *Manufacturers*

Arrow shows attachment on a Ford carburetor.

GENEROMETER

The new and practical generator testing instrument. It will locate shorts and grounds in generator armatures where most of the trouble is of a Lighting System. You will need this instrument if you want to be 100% efficient in your electrical repair work. Further particulars upon request.

PAUL G. NIEHOFF & CO., INC.

232 E. Ohio Street, Chicago, Ill.

Ni-hoff Laminated Magnetizer

This is the most scientific and practical Magnetizer ever constructed. It will magnetize any size magnet from a Ford to all the various other magnets used on the different cars today. Due to the fact that it generates an enormous amount of magnetism, with a pulling power of about 75 pounds, you can more quickly remagnetize a magnet, and, therefore save much current. All magnetizers are subject to considerable wear. The faces will wear down according to their use. The top pieces of our Magnetizer are especially hardened and also detachable so that when worn down they may be replaced at a very small expense. We have two types; one for 6 volt storage battery and another for 110 volt D. C. current. Write for further information.

PAUL G. NIEHOFF & CO., INC.

232 E. Ohio Street, Chicago, Ill.

The Automobile Journal

A magazine that is read by more than 20,000 car owners every issue.

It Will Interest You—

Send for sample copy. **Times Bldg., Pawt., R. I.**

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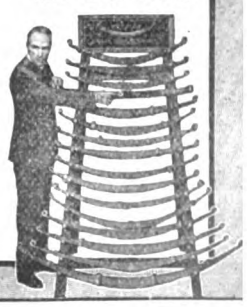
Strength
Stamina
Service

The New Departure Manufacturing Co., Bristol, Conn.
Conrad Patent Licensee

When Springs Break, put on

VULCAN
The Replacement Spring

This display rack FREE with first order.



Best known for
Best Quality—
Best Service—
Best Profits—

Jenkins Vulcan Spring Co.
Factory
RICHMOND, IND.

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UNIVERSAL BATTERY CLIPS

Made of steel – Lead coated

Note the Improvements!

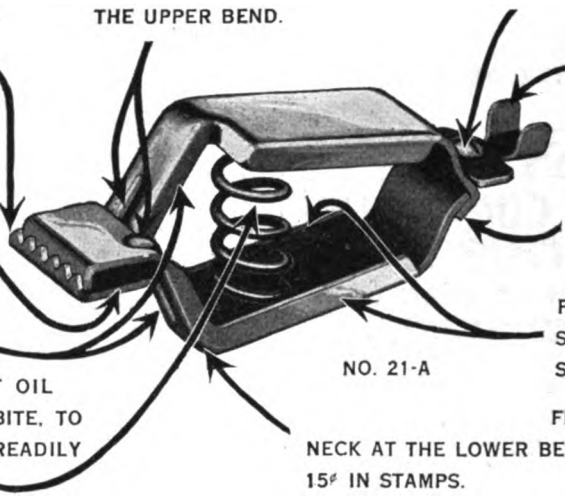
TEETH OF JAWS WHICH BITE THROUGH CORROSION ON DIRTY BATTERY TERMINALS AND MAKE A GOOD CONTACT.

HUMPS IN THE METAL TO REINFORCE THE NECK AT THE UPPER BEND.

CONTACT SCREW. WITH UNDER-CUT HEAD. TO HOLD THE LEAD OR JUMPER WIRE.

JAWS WHICH OPEN 1½ — AMPLE TO TAKE THE LARGEST BATTERY TERMINALS.

LIPS TO CLAMP DOWN ON THE INSULATION OF THE LEAD OR JUMPER WIRE TO RELIEVE THE CONDUCTOR OF STRAIN.



DOUBLE-LIPPED HINGE WHICH PREVENTS THE JAWS FROM OFF-SETTING.

CHANNELLED NECKS WITH U-SECTION OF GREAT STRENGTH.

FLANGES WHICH RE-INFORCE THE SIDE MEMBERS AND RETAIN THE SPRING IN PLACE.

NO. 21-A

LEAD COATED HELICAL SPRINGS OF OIL TEMPERED WIRE WITH AN 18 POUND BITE, TO HOLD JAWS ON BATTERY TERMINAL. READILY RENEWABLE.

FLANGE WHICH RE-INFORCES THE NECK AT THE LOWER BEND.

A SAMPLE. POST-PAID FOR 15¢ IN STAMPS.

R. S. Mueller & Co.
431 High Ave. Cleveland, Ohio.

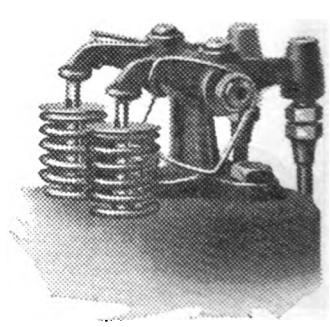
STOP THAT NOISE

Dealers Will Welcome This News!

WE are now making shipment of KHK Motor Silencers for Buick, Chevrolet, Oakland, Oldsmobile, and Scripps-Booth motors. Conditions which delayed production of Silencers for Oakland, Oldsmobile, and Scripps-Booth cars have been eliminated.

KHK Valve in Head **MOTOR SILENCERS**

are guaranteed to stop that noise caused by the action of push rods and rocker arms in valve-in-head motors. Dealers tell us that KHK Motor Silencers are the fastest selling accessory on the market. Let us tell you why and give you the details of our attractive selling and advertising plans.



KAY H. KAY CO.
967 WOODWARD AVE., DETROIT, MICHIGAN

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YOU CAN DO THIS WORK

DON'T send away a Ford or Fordson block when it comes in for main bearing replacements.

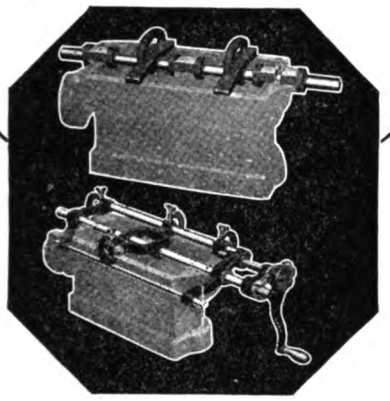
Have a Universal Main Bearing Replacement Equipment ready to do the job quickly and accurately in your own shop.

The job is easy to do—can be done quickly. The finished work is absolutely accurate and the profits are big, both in money to you and satisfaction to the customer.

See current issues of Auto Trade Directory and Chilton's Directory for list of jobbers carrying stock. Write for catalog.

The Universal Tool Company, Incorporated
435 Woodward Ave, Detroit, U. S. A.

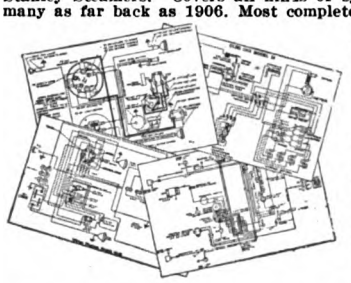
Manufacturers of Universal Cylinder Reboring Tools and Main Bearing Replacement Equipment for Fords and Fordsons



850 WIRING DIAGRAMS

In New Edition of Auto Electrician's Guide

Contains wiring diagrams for every car on the market, including the new 1919 Starting and Lighting Systems for Ford cars, also diagrams for Baker R & L and Detroit Electric and pipe connections for Stanley Steamers. Covers all kinds of systems from 1912 to 1919 and many as far back as 1906. Most complete diagram book on the market.



Highly Endorsed by Auto Manufacturers, Garages and Service Stations

No problem too puzzling if you have the Auto Electrician's Guide. ANY "OLD STICKER" QUICKLY SOLVED with the help of this book. Saves hours of time on both old and new jobs. Impossible for even experts to know all cars, but no car will "stick" you when you have this book.

A practical, easily understood "guide" that will simplify all auto-electric problems and make it possible for you to quickly overcome hundreds of starting, lighting and ignition troubles which otherwise would take hours to solve. Extensively used all over the country. Hundreds of auto experts and repair men depend on it to solve hardest problems. Dozens of letters received telling of its exceptional value.

A Loose Leaf Book

—easy to handle and easy to add new diagrams as issued. Convenient to slip into the coat or car pocket and invaluable as a constant companion to repairmen. Scores of trouble cases quickly and easily corrected with the help of this guide. Send today.

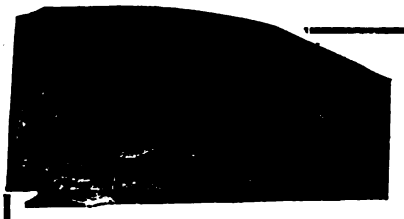
Price $7.50. Remit by Post Office money order or bank draft. Money refunded if not satisfactory.

MICHIGAN STATE AUTO SCHOOL
3270 Auto Bldg. 687-89-91 Woodward Ave., Detroit, Michigan

KEEP THE BODY OF YOUR CAR *SHINING* LIKE A MIRROR

No Grease to Catch Dust
Does Not Coat the Finish
Best Furniture Polish Made
Use With Spray if Desired

International Metal Polish Co.
INDIANAPOLIS, INDIANA



KENNEDY AUTO STORAGE COVERS

"Wrap Up" Your Cars When Not in Use

When you store your car for a season, don't let its polish be dimmed by dust, and its metal tarnished before it gets out of the garage. Cover it at once with a KENNEDY AUTO STORAGE COVER, and it will remain as clean and bright as washing makes it, until the cover is removed, next day or next season.

Protects the limousine all summer, or touring cars through the entire winter season. No cost but first cost. Never wear out if care is taken in handling. Insist that your garageman use them.

Popular for Use and Sale in Every Garage

Garagemen—Charge extra for storing with KENNEDY AUTO STORAGE COVERS. Service your patrons are glad to pay for. Many will demand it.

Made of strong, heavy paper, reinforced to prevent tearing. Protects a car against dirt, dust and moisture. Prevents polished portions from tarnishing and keeps finish from checking in cold weather, and also prolongs the life of the tires by excluding the light. Furnished for 5 and 7 passenger gasoline cars, electrics and Ford cars. Good profits in retail sales and service use. KENNEDY COVERS can be sold at a season when trade on other accessories is usually light.

Write for Free Illustrated Literature.

The Kennedy Car Liner & Bag Co., Shelbyville, Ind.

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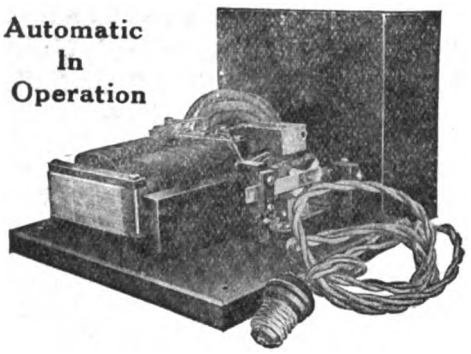
GARAGE AND HOME BATTERY CHARGING RECTIFIER

and

Holdford Brake for Ford Automobiles

Automatic In Operation



The Cambridge Rectifier charges any storage battery from any lamp socket in 10 to 12 hours at a cost of ten to fifteen cents, as simple as turning on a light.
It has no fragile parts and is reliable.

Price $22.00.

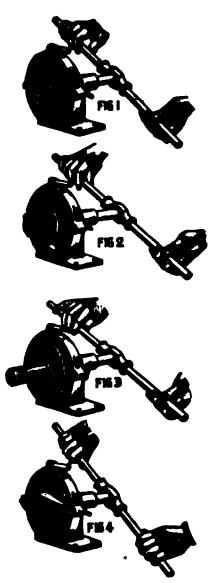
Write for bulletins and also of the **Holdford** Brake, an external brake, more powerful, more accessible, and operates over a larger friction surface than the weak internal brake furnished with the Ford car. The **Holdford** is lined with asbestos interwoven with copper wire, the strongest gripping surface known. List price, **$10.00 per pair.**

CLAPP-EASTHAM COMPANY

CAMBRIDGE, 127 Main Street **MASSACHUSETTS**

FORD REPAIR MEN

Cut Your Labor Costs to Just One-Third What They Now Cost You by Ordinary Methods and Do the Work Better Than the Best Job You Ever Sent Out.



This great saving of time means a big additional profit, but is now a loss. There is BIG MONEY in Ford repairing if you have efficient tools that save time and eliminate guesswork and experts. The two outfits listed here will save their cost on a very few jobs and enable you to render the quickest possible service to your trade.

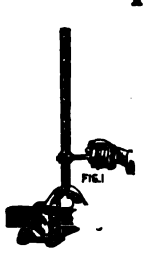
TRANSMISSION REAMING MACHINE reams every bushing in a Ford Transmission to a perfect fit and alignment, so the gears mesh perfectly on their pitch diameter and run without noise or excessive wear. Impossible with any other tool equipment ever offered. **30 Minutes to Completely Overhaul and Re-Bush a Transmission,** making it as good as new. Can you beat it.

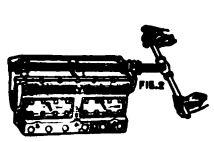
NET PRICE

$68.

as Shown Complete

Main Bearing and Connecting Rod Aligning Reamer





30 Minutes to Fit Perfectly All Main Bearings and Connecting Rods.

"A DAY'S JOB DONE IN HALF AN HOUR."

Pilots guide the reamer. No chance to make mistake. Far superior to any other known method. Motors put up this way can be started by hand. I have only a limited supply of this material on hand. Send your order promptly to avoid disappointment. One per cent discount if you mention this magazine. Send for catalogue of other special tools, reamers, etc.

Price $28.

I Make the BEST HONEYCOMB RADIATOR at any price.

K. R. WILSON

10-16 LOCK STREET **BUFFALO, N. Y.**

How About the Part of the Car That is Out of Grease

Dixon's Lubricant clings to gear teeth when they are not in motion as well as when they are moving.

Ordinary grease slides off the gears when the car is standing, leaving the metal surfaces unprotected when the car starts.

DIXON'S GRAPHITE Transmission and Differential LUBRICANT

protects your gears all the time.

Put Dixon's Lubricant in your customers' transmissions and differentials. They will feel the difference when driving and gear shifting.

Write for Booklet No. 49-G and prices.

Made in Jersey City, N. J., by the

Joseph Dixon Crucible Company

Established 1827.

"OHIO CARBON PRODUCTS"

"OHIO"

BRUSHES

GARAGEMEN TAKE NOTICE
Write for Our No. 6 Car List for Information on New Cars
FOR AUTOMOBILE STARTING MOTORS AND LIGHTING GENERATORS

THE OHIO CARBON COMPANY

1900 FULTON PLACE, **CLEVELAND, O.**

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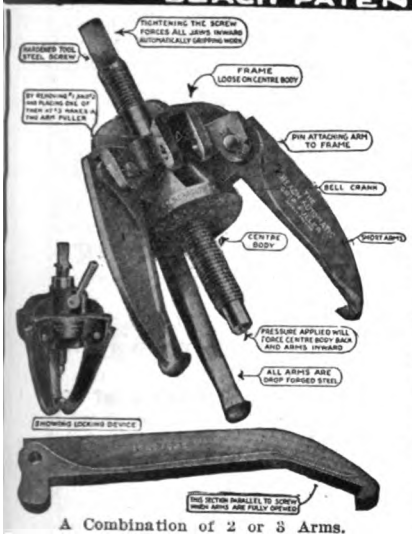
GREB AUTOMATIC GRIP PULLER

BEACH PATENT



A Combination of 2 or 3 Arms.

Gear Pulling Made Easy

The GREB AUTOMATIC GRIP AND GEAR PULLER gets a job done quick and without danger or damage. This means larger profits and quicker work.

Scientifically designed, well made, quick acting, strong, simple and trouble-proof. Adjusts itself instantly to work—locks in any desired position.

We also make the GREB RIM TOOL and GREB AUTO LOCK.

TWO SETS OF ARMS

Senior Size—Capacity 1" to 10" and 1" to 18"
Junior Size— " 1" to 4" and 1" to 7"

10 DAYS TRIAL

If your jobber does not have them, we will send you one. Try it ten days. If not satisfactory return it to us and we will refund your money.

THE GREB CO.

202 State Street, Boston, Mass.

THE GREB PRODUCTS BOSTON

JEFFERSON AUTOMOBILE IGNITION COILS

Small Stock For Fitting All Cars

Because of flexible caps, terminals and brackets these coils are adapted to all ignition systems. You are required to carry only a very small stock. Consequently, your investment is unusually small and at the same time you can fit all makes of cars.

JEFFERSON

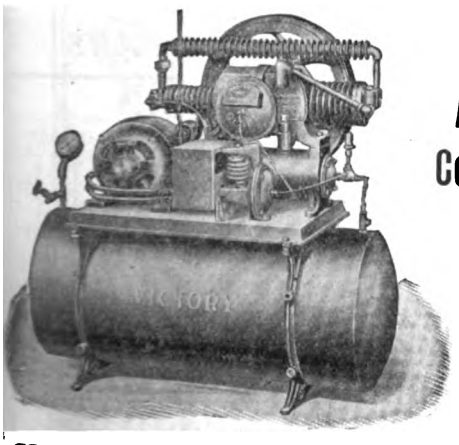
Coils are famous for their long life, dependability and uniformly high standard. Order your stock at once.

Send for Coil List

showing list of all cars that are Coil-Equipped and the types of Jefferson Coils and Brackets to be used as Replacements.

Jefferson Electric Mfg. Co.
429 S. Green Street
Chicago, Ill.

VICTORY



Complete Automatic Compressor Unit

A C E
O F
A C E S

GLOBE TYPE B—Original Two-Stage Garage Compressor. Saves power, time and money.

WONDERFUL new system of AUTOMATIC LUBRICATION insures Oil-Free Air, provides abundant and continuous lubrication and wastes NOT AN OUNCE of lubricant.

Automatic Pressure Unloader protects belts, fuses and motors.

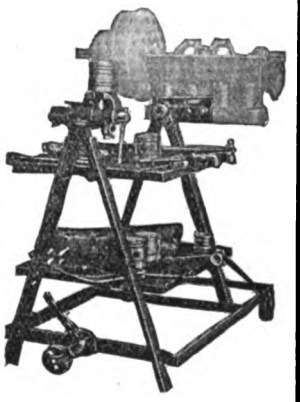
15 Sizes and Styles of LAST WORD Equipments from which to select.

Desk C.

Globe Manufacturing Co., Battle Creek, Mich., U.S.A.

EKERN'S PORTABLE WORK BENCH AND ENGINE STAND

An equipment specially designed for Ford repair shops, having the combination features of Ekern's Motor Stand and a work bench.



Has two trays, 22x24 inches, for tools, engine and axle parts. Is mounted on three four-inch diameter wheels; the rear caster can be raised by pulling the plunger jim and the stand placed on its legs. When the caster is kicked down it will lock automatically and the stand will be carried on its wheels.

The Ford engine block is secured to the stand by two cap screws that hold the water inlet connection, and the block can be revolved in the clamp and locked in any position with the clamp screw.

The bench is equipped with a machinist's vise having a three-inch jaw and four-inch opening, which will take any work for Ford car overhauling, or other work.

The equipment is 36 inches high and requires 27x42 inches floor space. The axle attachment can be used with this stand. Weight, 120 pounds.

List Price, with Axle Attachment.....$46
List Price, Without Axle Attachment.....$40

McPherson Co.

1410 South Michigan Boulevard, Chicago, Ill.

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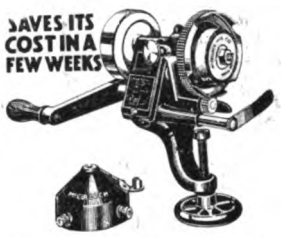
McCulloch Products For Fords

MADE IN A MACHINE AND TOOL SHOP BY ENGINEERS

Wipe Contacts.

Made to do away with the abnormal wear on the roller. It slides instead of rolls.

Timer Grinder.

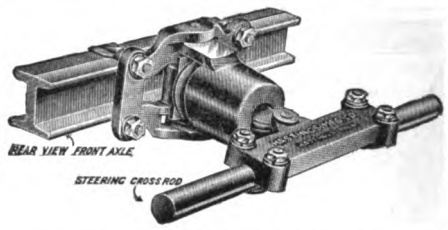


Will grind the worn out Timers in no time. Can be driven by hand or power.

Makers of the McCulloch Timers for Fords.

McCulloch Mfg. Co.
216 High Street
Boston, Mass.

The Hastings Stabilizer



For Safe and Steady Steering of FORD Cars

MAKES all the difference in the world in the "feel" of the car under you.

Takes up all the lost motion and looseness of the steering mechanism. Makes long drives seem short—no aching arms and fatigue. Permits full sweep of the wheels.

Adds no appreciable weight to the car.

Out of sight and out of the way.

Easily attached to front axle and steering rod by bolted clamps. Any garage man can attach in a few moments.

Fully guaranteed.

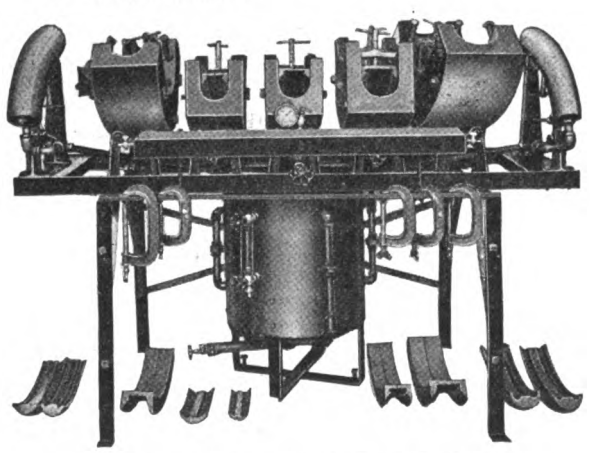
Send for descriptive folder and discounts to Ford and Accessory Dealers.

HASTINGS

MANUFACTURING CO.
Hastings, Mich.

Could You Handle $100 A Day?

REPAIR—REBUILD—RETREAD TIRES the VANDERPOOL WAY. Profits 100% or more. Small investment. Work easy to learn. We send you FREE TIRE REPAIRING MANUAL. Business pours in. If others have been successful, so can you be. We are the pioneers in the manufacture of vulcanizers that guarantee absolutely PERFECT work. Don't delay. Write today for FREE TIRE REPAIRING MANUAL and full particulars.



In answering Address, Dept. P-18

WM. VANDERPOOL CO., Springfield, Ohio

BUNTING BEARING BRONZE — **B.B.B. CO. No. 1**

Same quality as our finished bronze bushings and bearings used by manufacturers the country over. Your repair stock is not complete without it.

All leading jobbers Ask for catalog N

The Bunting Brass & Bronze Co.

727 SPENCER STREET
TOLEDO, OHIO.

CORED BARS

STOCK SIZES

PIECE NO.	Outside Diameter	Inside Diameter	Length	Approx. Weight
A	1	½	12	2
B	1¼	½	12	3½
C	1½	¾	12	5
D	1¾	¾	12	7
E	2	1	12	8½
F	2¼	1¼	12	10
G	2½	1½	12	11½
H	2¾	1¾	12	12¾
I	3	2	12	13¾
J	3¼	2¼	12	15½
K	3½	2½	12	17
L	4	3	12	21
M	4¼	3¼	12	20

WELDERS!

There's economy in using the best fluxes you can find for particular welding jobs. Insure better and stronger welds, more easily and more rapidly made, by using

ANTI-BORAX COMPOUNDS

For Aceteylene. Gas and Electric Welding

Best on the market for all grades of iron and steel. Weld at lower heat. Leave no scale. They cleanse the molten metal, assist fusion and improve the quality and appearance of your work. Guaranteed to give perfect satisfaction or your money refunded.

Write for sample and price list.

ANTI-BORAX COMPOUND CO.
FORT WAYNE, INDIANA

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NEW YORK
AUTOMOBILE REPLACEMENT
IGNITION COILS

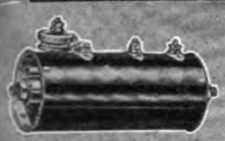
New York Automobile Replacement
IGNITION COILS

New York Automobile Replacement Ignition Coils have actually put hundreds of the smaller Garages and Service Stations in business—and are today the most treasured line of the largest Service Stations throughout the U. S. The explanation is simple. Most drivers have learned that the best car and engine fitted with the highest grade carburetor and workmanship cannot deliver its full power, smoothness or service unless the Ignition Coil delivers more than "just a spark."

Weak, partly broken down coils spoil owners' pleasure and temper, also your reputation, and the car's utility. A special New York Coil engineered to suit the exact requirements of each car manufactured—that will fire the poorest gas—that positively will not "miss" at highest engine speeds and rival magneto ignition is available.

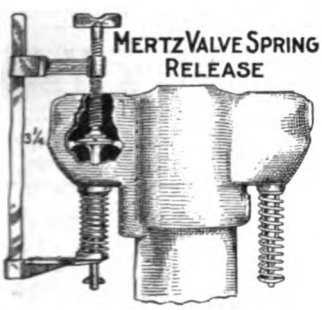
They are installed with no trouble in ten minutes, as they positively fit each car. Fifteen years of successful coil building experienced by an organization of Ignition Specialists, is the reason a car owner always agrees when told he needs a New York Coil.

More real profit, less come backs and easier made sales than any article you ever handled.



NEW YORK COIL COMPANY

338-340 Pearl Street **New York, N.Y.**



Adapted to any engine. Leaves both hands free to remove the key or pin.

MERTZ VALVE SPRING RELEASE

The Mertz is no ordinary make shift tool. There are no chains, notches, levers or springs. It is special tool equipment made for a distinct use and a guaranteed high quality product. The Mertz is easy and simple to operate. It locks automatically to any length. It will not bend the valve stems. It will easily compress the strongest valve spring made. It is unbreakable, very light and occupies but a small space in the tool chest or box. For emergency service it can be used as a clamp in general work and when tires or tubes are being repaired.

IT SAVES TIME, LABOR AND EFFORT. A TOOL FOR SHOP AND CAR.

To operate, place the Fork of the Release straddle of the Valve Stem under the spring. The self-centering gauge at the top of the Fork makes it adjustable to any valve spring seat. The hand screw is then turned and the arm becomes instantly locked. The valve head is positively held down in place while the spring rises. All other operations are as positive.

Mertz products are a good line for any dealer to sell. Utility tools that serve and save and are sold at the right price and afford the trade the right profit.

List Price, $2.00. Jobbers and Dealers Discounts at Request.

H. B. MERTZ CO.

1408 Rutherford Ave., Pittsburgh, Pa.

BE-BE-CO. Motor Specialties

Made to a quality that affords superior results.

Leather Top Dressing	Tire Paint
Mohair Top Dressing	Rim Paint
Cushion Dressing	Patching Cement
Top Lining Dye	Gasket Cement
Seat and Slip Cover Cleaner	Carbon Remover
Body Polish	Tar Remover
"Red Fox" Motor Car Soap	Nickel Polish
0-So Easy Hand Soap	Brass Polish
	Vulcanizing Cement

Sold in varying sized container or bulk with unconditional guarantee of replacement if in any way defective.

Catalogue and discount sheets at request.

BOSTON BLACKING CO.

EAST CAMBRIDGE Third Street MASS.

For all Ford's $25.
BARRETT
SELF STARTER AND PRIMER
5 YEARS GUARANTEE
IF YOUR DEALER DOES NOT HANDLE THEM WRITE US – 1777 BROADWAY NEW YORK

(When Writing to Advertisers, Please Mention the Accessory and Garage Journal.)

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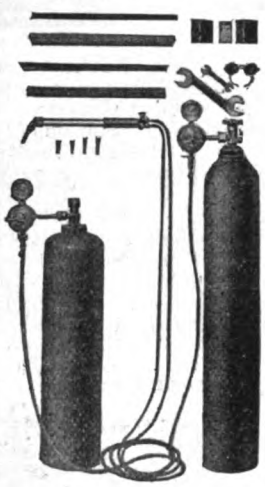
GET A WATERHOUSE WELDING OUTFIT AND WATCH YOUR BUSINESS GROW



Boost your profits—Swing the big profitable welding business to your shop. Thousands of repairers are doing it and most of them use a Waterhouse outfit.

Time is money and a Waterhouse Welding Outfit saves the time as well as labor. It affords utility great enough to meet any shop requirement, yet no shop is too small to own one.

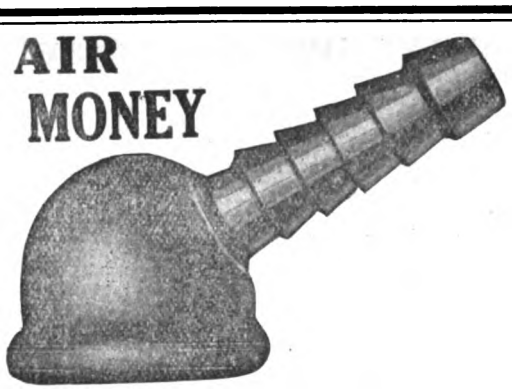
The great difference in welding outfits is all in favor of the Waterhouse. That means quality, utility, long service life, simplicity, dependability, low first cost and the best and most complete welding apparatus ever offered to the trade.

Write for descriptive catalogue, or better still, tell us your requirements. Do it today. We can supply the exact outfit for your needs.

All Waterhouse outfits are guaranteed.

WATERHOUSE WELDING COMPANY, 3 PELHAM STREET, BOSTON, - MASS.

FREE AIR COSTS MONEY



when the customers for whose convenience you provide an air station forget to turn off the flow after they have filled their tires.

Guard against this waste by attaching a

Schrader Universal Inflating Valve

to your air hose.

Thanks to this appliance your bottled air locks itself into the tank the minute it is taken off the tire-valve. You turn on the air by pressing the nozzle of the inflating valve against the tire-valve and you turn it off by removing the device from the tire-valve.

Made to fit any diameter of hose from ¼ in. to ⅝ in.

PRICE $1.50 in U. S. A.

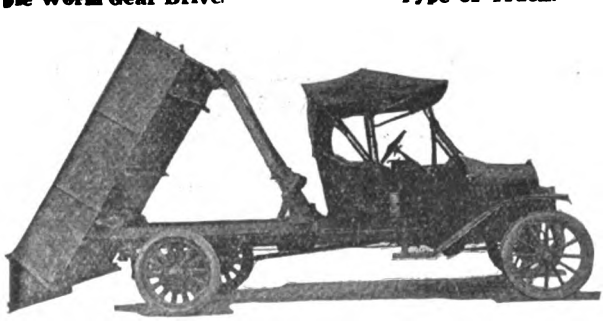
Manufactured by **A. SCHRADER'S SON, Inc.**
800 Atlantic Avenue, Brooklyn, N. Y.

Schrader products were awarded a Grand Prize and two Gold Medals at the Panama Pacific International Exposition. "There's a Reason."

THE PEERLESS HAND HOIST

Single Cable Quadruple Worm Gear Drive.

For Any Make or Type of Truck.



A wonder in efficiency and speed. It will fit any chassis and body. Weighs but 200 pounds. Simple, fool proof, wholly dependable and will last for years in the hardest service.

Any one that can drive a truck can hoist the heaviest load to 30 or 50 degrees in the longest body in less than two minutes. The smaller the body and load the quicker the action.

But two gears are used, quadruple worm and gear (both machine cut) and housed to protect from dirt and dust. The single cable makes an even pull. Compact and can be installed without drilling holes in chassis frame. The body hitch is also furnished.

We specialize in building all-steel bodies for any need.

Write for complete information.

THE AUGLAIZE MOTOR CAR CO.

NEW BREMEN **OHIO**

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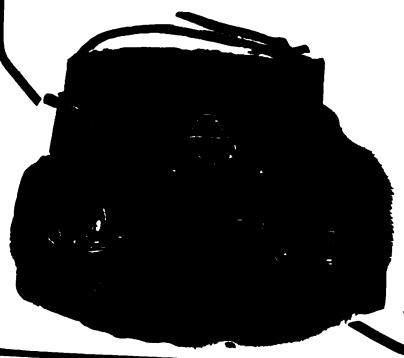
Which Garage Man Gets The Money?

If you can repair and adjust Electrical Equipment, you will get the cream of the garage business. With the increasing demand for service of this sort, you must equip to handle the business, or lose it to your more enterprising competitor.



Weston

Model 280
GARAGE TESTING INSTRUMENT

is your one great and urgent necessity to enable you to locate electrical troubles quickly and apply the proper treatment to remedy them. Its possession will place you a long way ahead of your competitor not so equipped.

This instrument is extremely accurate, durable and serviceable. It is the most practical electrical equipment you can install.

The Weston Company is pre-eminent throughout the world in the production of highest grade Electrical Precision Instruments.

Prompt Shipments from Stock—Order Now!

WESTON ELECTRICAL INSTRUMENT CO., 103 Weston Ave., Newark, N. J.

Branch Offices in the Larger Cities.

FAWSCO

Fawsco American Standard
IGNITION CABLE
Lighting Wires and Lamp Cords

We carry in stock 40 Numbers and can make shipment the day your order is received

Ask for Circular

27 WARREN ST. **J. H. FAW, Inc.** NEW YORK CITY

SATISFACTION ■ INTEGRITY ■ GROWTH

Shock Absorbers
Any Type of Ford Car or Light Delivery Truck.
"Make Every Road a Boulevard"

VAN BRIGGLE
CARBURETORS *And* SHOCK ABSORBERS

Carburetors
Airplane Principle
for Dodge Maxwell and Ford
Guaranteed for Satisfaction

VAN BRIGGLE MOTOR DEVICE COMPANY
INDIANAPOLIS, U. S. A.

Pat. 3-10-'16.

It Finds Ignition Troubles

Attached to Any Plug
eps All Spark Plug Trouble

Universal and Marvel Spark Plug Intensifiers

The spark is always visible. It will make a plug fouled with grease or carbon or with broken porcelain fire perfectly.

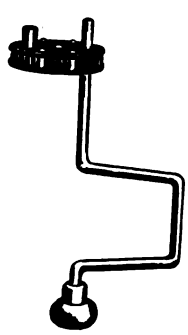
When the magneto is not working, a wire short circuited or broken, or the battery out of order, the Intensifier will prove it at a glance. It can be adjusted to overcome almost any ignition weakness. It increases the voltage and spark and makes starting easy. Saves in oil and gas. Adds to power, eliminates carbon and preserves plugs.

Instantly attached to any screw terminal plug and will last as long as the car.

JOBBERS AND DEALERS—This is a wonder worker and sells at a glance. Sold on a money back guarantee. Liberal discounts and prompt deliveries.

Send for full information.

UNIVERSAL MFG. and SALES COMPANY
554 West Harrison St. Chicago, Illinois



UNIVERSAL Offset Speed WRENCH

Pat. Pend.

Removes the FORD FOURTH CONNECTING ROD NUT in three minutes. Made strong—all steel, 3-inch offset. Send prepaid for $5. Ask your jobber. If he can't supply you, write us.

Sawyer Sales Company
581 Terminal Building
LINCOLN, NEBRASKA

(When Writing to Advertisers, Please Mention the Accessory and Garage Journal.)

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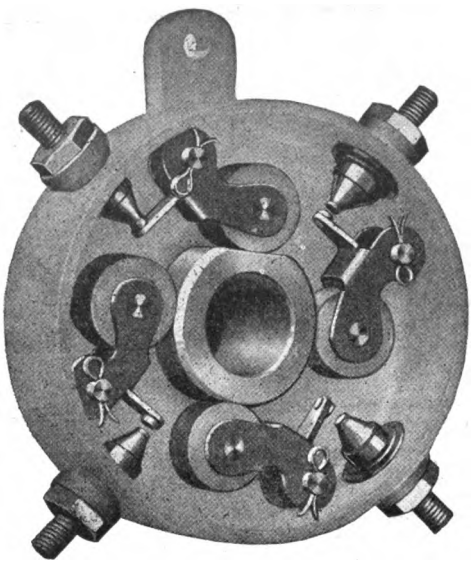


DUNTLEY
MAGNETO BREAK
TIMER

FOR ALL FORD CARS

Guaranteed to Deliver 50,000 Miles of Efficient Service

The Duntley Magneto Break Timer Eliminates Ignition Troubles and Insures Maximum Motor Efficiency and Economy.

Perfect ignition can be attained only through positive contact and a clean break. In the Duntley, the electrical current is closed by Tungsten points in positive contact, not through a greasy roller jumping and skipping across a metal segment.

The only parts in motion sufficient to cause wear are the rollers riding on the operating cam and they are made of a special fine grain, hard pressed fiber that is oil and water proof and practically everlasting.

FOR FORDSON TRACTORS

The following letter from a satisfied user shows how the Duntley delivers 100% on the Fordson.

"The timer you sent . . . . is all you claim for it. It certainly gives the tractor twice the power it had before and also is a saver of fuel." Name on request.

SOLD ON AN ABSOLUTE MONEY BACK GUARANTEE

DEALERS: To any reputable dealer who writes, mentioning the name of his jobber, we will send a Duntley for a 10 day trial.

J. W. DUNTLEY

1004-B Michigan Ave. **CHICAGO, U. S.**

Security Auto Lock

Affords every protection to Ford car owners that a perfectly designed and extremely well made lock can give. While neat and attractive it is built very strong. In operation it is positive and the car can be left with a feeling of confidence that no one but the owner can use it.

It is the original loose wheel lock for Fords.

It is approved by underwriters.

It will reduce insurance premiums 15%.

When locked the car cannot be towed.

List Price, $6.00

It makes the Ford thief-proof

Anyone can easily install the Security in ten minutes. No drilling, filing, sawing or chiseling necessary. It is made of solid brass. Nickel plated finish.

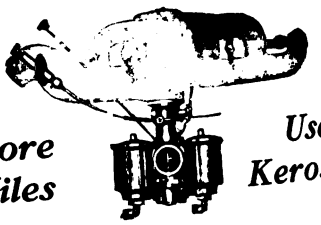
TO DISTRIBUTORS

When this lock is shown no other will satisfy Ford car owners. It sells at sight. Our trade discounts are liberal and our proposition will interest any one that can sell high grade car protection at a moderate price. ***Write for details today.***

Security Auto Lock Co.

414 N. PAULINA ST., **CHICAGO, ILL.**

WESTERN
DUAL FUEL CARBURETOR



More Miles *Uses Kerosene*

DEALERS:—Thousands in use.

80% of our orders are repeat orders.

You make big profits selling this wonderful carburetor.

Guaranteed to satisfy or money refunded.

Write for descriptive circular and prices.

Western Carburetor Company

Alma, Michigan

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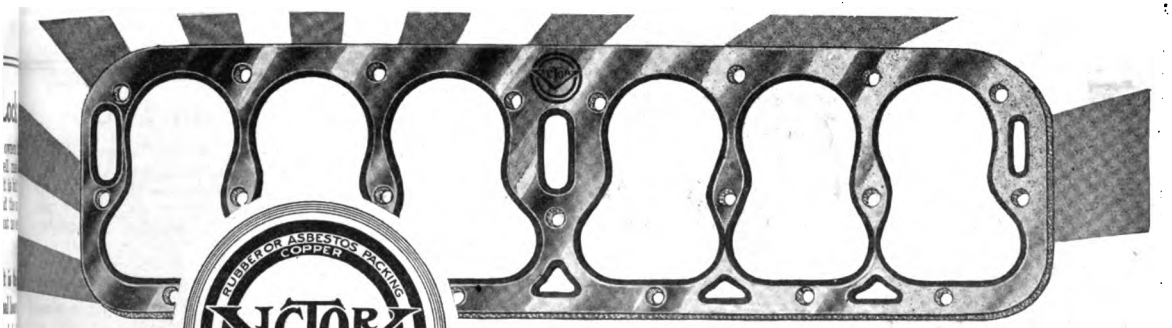


RUBBER OR ASBESTOS PACKING COPPER
VICTOR
GASKETS
TRADE MARK REG. U.S. PAT. OFF.

Victor Gaskets Set a Standard in Quality & Service that Counts

Dealers, Garage and Repair Men

For repair and replacement work, to be sure of a dependable, durable job that will save your customer money and annoyance, use Victor Gaskets. Made from pure Lake Superior Copper and highest quality asbestos. Absolute insurance against leaks and blowouts. Used in almost every make of automotive vehicle. We can ship gaskets for new and obsolete model engines at a moment's notice, because our big, modern plant carries complete stocks. Order Victor Gaskets through your jobber.

VICTOR MFG. AND GASKET COMPANY

World's Largest Gasket Manufacturers **TROY AND TWENTY-FIRST STREETS, CHICAGO, ILL.**

Allied Industries, Inc., 279 Minna Street, San Francisco, California, Coast Representative

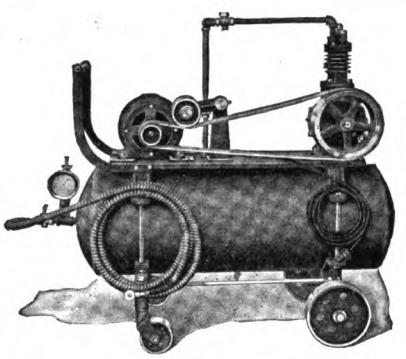
GARDNER AIR PUMPS

Result of 50 years manufacturing experience.

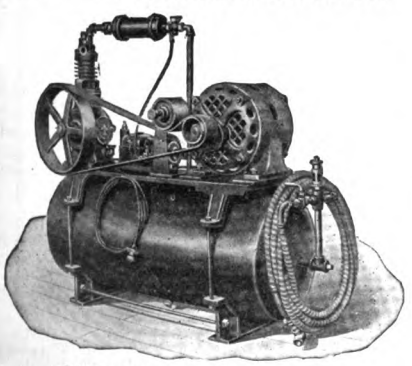
An inefficient air pump makes your air service expensive.
It hurts the quality of your service.
Makes a customer dissatisfied and hurts your business generally.

Install a GARDNER

It will pay for itself in a short time.
It is simple, rugged and efficient.
The fact that many filler stations supplying hundreds of car owners daily use the Gardner air pump is proof that experience had demonstrated it is economical.



GARDNER AIR WAGON



GARDNER AUTOMATIC UNIT

Made in Single and Two Stage Types

Variety of sizes *Prompt shipment*

There is a Gardner Air Pump to meet the demands of every garage no matter how large or small.

Ask your jobber for prices.

THE GARDNER GOVERNOR COMPANY

138 Williamson Street, Quincy, Ill.

Garage Department

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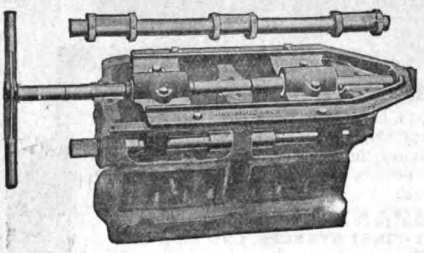
STORM TOOLS

Bridge you over the Winter lull.

They solve the "Closed Season" problem and make every month in the year profitable. Equip now and start the rebuilding season rightly.



SIMPLE, STURDY, ACCURATE

These do a regular factory job.

Perfect alignment.

Proper gear position.

Rebabbitts and bores a set of perfect bearings in less than twenty minutes.

YOU NEED THESE TOOLS.

Main Bearing Babbitting and Boring tool for Fords - - - - $70.00
Main Bearing Babbitting and Boring tool for Fordson - - - $95.00

The Storm Cylinder Reboring Machine. The most simple and practical machines of their kind on the market. They are portable, can be operated by hand or power, are speedy, accurate and reliable. Each machine equipped with six duplex spiral cutters, all universally adjusted by a simple adjuster, are provided with upper and lower bearings and have positive feed.
Range of adjustment 2⅝ up to 6 1/16 in.

Price $55.00 to $150.00

At All Leading Jobbers.
Ask for Bulletin P 42.

STORM MFG CO

406 6th Ave. So.
Minneapolis, Minn. U.S.A.

Prices Reduced

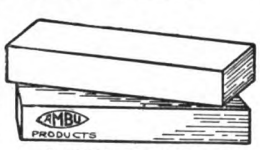
The great demand for these three battery shop labor savers has resulted in greatly increased production. Because of this condition we have been able to reduce our manufacturing costs materially—and we are passing this saving to our customers in lowered prices—a novelty in this day of rising costs.

AMBU *BURNING LEAD MOLD*

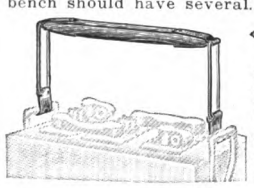
A simple handy mold to put all scrap lead and shavings into usable form. Makes burning lead easy to handle. Pays for itself in saved metal in a few weeks. Used in pairs—one cools while the other is filled. Large shops can use several. Single $1.50. Pair $2.50.

AMBU *BATTERY TURN TABLE*

A roller bearing turn table of hard-wood that makes it easy to get at every side of a battery. Not only speeds up work but saves lifting and turning the heavy battery when burning in plates, sealing or repairing battery
Only $2.50 and pays for itself in a week—Every bench should have several.



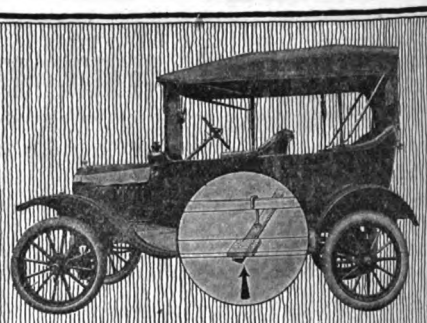
BATTERY TURN TABLE



AMBU *BATTERY CARRIER*

Carry a battery like a suitcase. One man easily carries two batteries. Ideal for lifting batteries from car or replacing.
Price only $1.50 each; per pair $2.50.
Order from your jobber or direct.

American Bureau of Engineering
109 E. 16th St. *APPLIANCE DIVISION* **Chicago**
Makers of the Famous AMBU Trouble Shooter



Dow Auto Body Brace
For Ford Cars

A real seller with the jobber and dealer.
Worth its weight in gold to the Ford owner.
Quantity sales with large profits.
Write for quotations and our Agency.

Dow Wire and Iron Works, Incorporated
Louisville Kentucky

DOW LOUISVILLE

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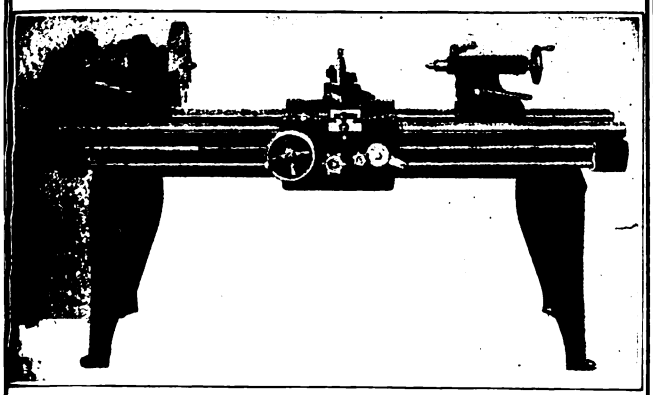


UNION LATHES

MANUFACTURED BY

UNION LATHE WORKS, York, Pa., U. S. A.

This lathe is especially designed for garage and machine shop work. It is well constructed and can be obtained at a moderate price.

Obtainable in various sizes with equipment of large and small face plate, follow rest, tool post, center, double friction counter shaft (see cut) rod and screw feed and all necessary change gears, wrenches, etc.

Write for complete descriptive literature and prices.

THE UNION LATHE WORKS

York, Pa., U. S. A.

Ford Type $12.50 Maxwell Briscoe and Dort $13.00 (Including War Tax)

SCOE

Formerly "Dave Buick" Carburetor

Puts "Pep" In Your Ford. Saves Its Cost In 60 Days.

Try This Carburetor Before You Sell It

THOUSANDS of dealers all over the country are building up a remarkable business with the Scoe Carburetor. The fact that the Scoe Carburetor does give greater gasoline mileage, more speed, quicker pick-up, perfect slow running, easy starting, and cleaner cylinders and spark plugs, makes it a ready seller.

We know that there is just one way to convince you these facts, and that is by seeing them for yourself—your own business.

Dealers' 30 Day Trial Plan

want every automobile dealer and service station to w the Scoe—for to know it, is to sell it. There is a al discount to the trade.

the trial order coupon and we will ship you a cartor for thirty days' trial. Half the net you pay, bale in thirty days if satisfied. If not, return the cartor and we will refund your payment without a ques-. Here is your opportunity to see the remarkable g features of the Scoe at our expense.

BRISCOE DEVICES COMPANY

Successors to JACKSON CARBURETOR COMPANY

PONTIAC, MICHIGAN.

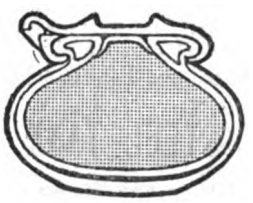
.....

.....

trial carburetor for——— car. I will pay $4.25 D.—balance of dealers price in 30 days if satisfac-. If not satisfactory, I will return and you will re-nd my $4.25.

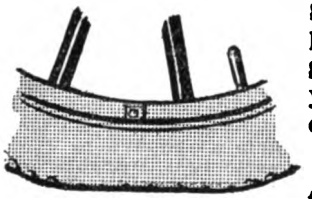
(3)

Proper Inflation is Tire Salvation

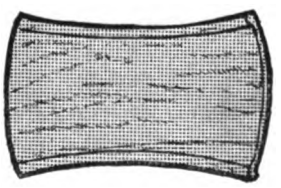


Under-inflated tire. Note the strain on the bead and side walls. Rim cutting and broken down side walls are bound to result from this abuse.

Loosened tread—another example of under-inflation.



Almost flat—imagine the injury to your car, the cost in fuel and oil—carbon accumulation and general discomfort every time you go over a rough place.



Look at the cracks. No wonder the best tires are only guaranteed for 6,000 miles. If you kept Whistlers on them, you'd get nearer 9,000.

Look at these examples of tire-misery caused by under-inflation. Nearly all blowouts are caused by over-inflation.

Why don't you put a stop to tire trouble? Put the

Whistler

TRADE MARK

"IT WHISTLES WHEN ITS HAD ENOUGH"

on all your tires. You can't make a mistake, for a cheery little *whistle* says when—and the valve automatically closes.

You'll save 50% to 75% on tires—20% gasoline—66⅔% pumping time (no gauge nuisance) and you have a better car with less repairs.

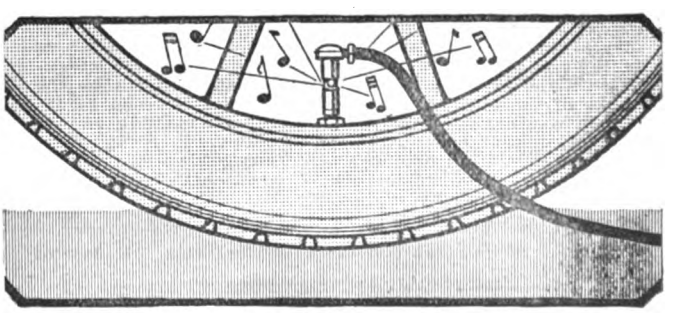
That's the story that's selling Whistlers. And they *are* selling with a boom! Repeat orders coming in show better than any words how the Whistler has made good with jobber, dealer and consumer.

Here it is —Screw it on

Ask your jobber or write us

THE AUTOMATIC SAFETY TIRE VALVE CORPORATION

1765 Broadway, New York City



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PITTSBURGH, PA.

The Automobile Journal

A QUALITY MAGAZINE, WITH PRESTIGE AND CIRCULATION THAT BRINGS RESULTS TO ADVERTISERS

TIMES BUILDING :: PAWTUCKET, R. I.

STATEMENT OF THE OWNERSHIP, MANAGEMENT, CIRCULATION, ETC., REQUIRED BY THE ACT OF CONGRESS OF AUG. 24, 1912, OF

THE ACCESSORY AND GARAGE JOURNAL,

PUBLISHED MONTHLY AT PAWTUCKET, R. I.

For Oct. 1, 1919.

State of Rhode Island, County of Providence.

Before me, a Notary Public, in and for the state and county aforesaid, personally appeared William H. Black, who, having been duly sworn according to law, deposes and says that he is one of the owners of the Accessory and Garage Journal, and that the following is, to the best of his knowledge and belief, a true statement of the ownership, management, etc., of the aforesaid publication for the date shown in the above caption, required by the act of Aug. 24, 1912, embodied in section 443, Postal Laws and Regulations, printed on the reverse of this form, to wit:

1. That the names and addresses of the publisher, editor, managing editor and business manager are:

PUBLISHER, WM. H. & D. O. BLACK....Pawtucket, R. I.
EDITOR, E. B. NORTON.....Providence, R. I.
MANAGING EDITOR, FRED E. BLACK..Pawtucket, R. I.
BUSINESS MANAGER, WM. H. BLACK..Pawtucket, R. I.

2. That the owners are:

WM. H. BLACK.....Pawtucket, R. I.
D. O. BLACK.....Pawtucket, R. I.

3. That the known bondholders, mortgagees and other security holders owning or holding one per cent. or more of total amount of bonds, mortgages or other securities are:

M. J. BLACK, Mortgagee.....Pawtucket, R. I.

4. That the two paragraphs next above, giving the names of the owners, stockholders and security holders, if any, contain not only the list of stockholders and security holders as they appear upon the books of the company, but also, in cases where the stockholder or security holder appears upon the books of the company as trustee or in any other fiduciary relation, the name of the person or corporation for whom such trustee is acting, is given; also that the said two paragraphs contain statements embracing affiant's full knowledge and belief as to the circumstances and conditions under which stockholders and security holders who do not appear upon the books of the company as trustees, hold stock and securities in a capacity other than that of a bona fide owner; and this affiant has no reason to believe that any other person, association or corporation has any interest direct or indirect in the said stock, bonds or other securities than as so stated by him.

(Signed) WILLIAM H. BLACK, Co-Partner.

Sworn to and subscribed before me this 7th day of October, 1919.

(Signed) CHARLES McALEVY, Notary Public.
[Seal] (My commission expires June 30, 1920.)

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SHALER 5 MINUTE VULCANIZER

The Easy Way to Mend Tubes

The Shaler makes perfect tube repairs in 5 minutes. Works automatically—without fail. Burns non-flaming chemical fuel. Makes a permanent "feather-edge" repair, stronger than any "stuck on" patch. Cannot injure tubes. Fits tool box. Saves tubes—saves repair bills.

Complete Outfit $1.50—at All Dealers. Price slightly higher west of the Rockies and in Canada. The outfit includes—the vulcanizer, 12 patch and heat units, 6 round for punctures and 6 oblong for cuts. Extra patch and heat units—round or oblong, 75 cents a dozen.

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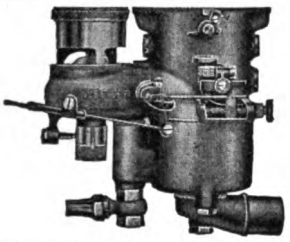

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Get him to try it for 15 days. Satisfaction guaranteed.

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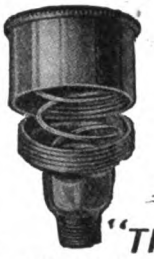

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"THEY STAND THE GAFF"

(Patented)

ROUGH and uneven roads test the efficiency of grease cups. The rattling and jars will loosen the tops of ordinary grease cups and allow sand and grit to enter the grease. The result is worn bearings.

Equip your Trucks and Pleasure Cars with the reliable "M & E" Ratchet Locked Grease Cups. The tops will not work off from vibration, which assures clean, free flowing grease.

The FWD military trucks are equipped with "M & E" Grease Cups.

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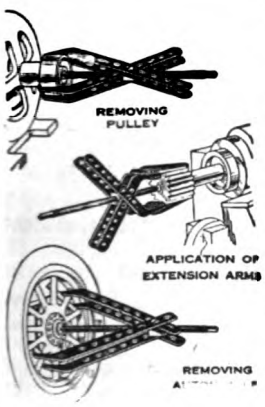

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Pulls any gear, wheel or pulley anywhere in a jiffy. Built on the only correct principle. Produces maximum efficiency with minimum effort. Can't twist off or let go. THE HARDER THE PULL—THE TIGHTER THE GRIP. Reduces operating cost and increases the earning capacity of any Repair Shop. Made from best grade drop forge steel. Almost unbreakable. Adjustable up to 13 inches diameter. Satisfaction guaranteed or money refunded. Order or write for details today. Price complete with extension arms, $11.00.

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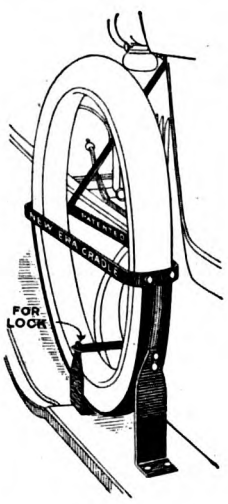
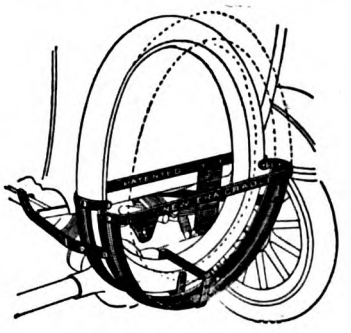
3811 Ravenswood Ave. Chicago, U. S. A.

Popular Priced

New Era Cradle Tire Carrier





This popular priced Tire Carrier takes 30x3½ inch tires, plain or non-skid, and rigidly fastens to the side or rear of all Ford models—will not rattle—and holds the tire snugly in place.

It takes but a moment to unfasten the NEW ERA Cradle Lock and lift out the tire.

You should stock up with this popular carrier

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The tough fabric takes all strains

TRIPLEXD
XXX GASOLINE HOSE XXX

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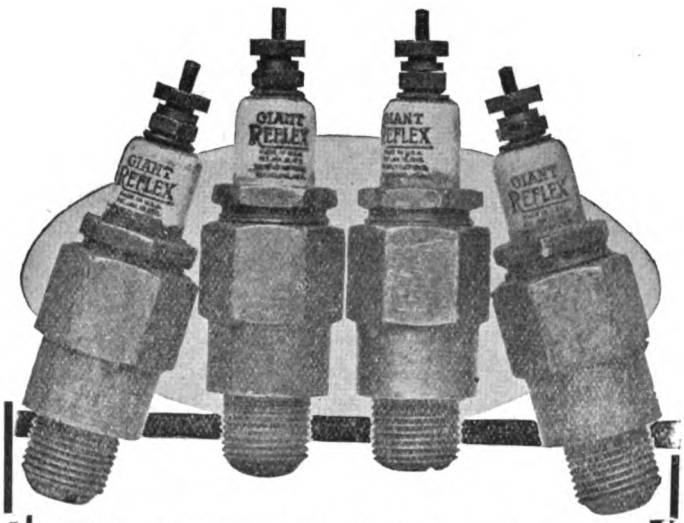

This SET of Reflex Spark Plugs fired for FIVE YEARS without CLEANING

Not once during this long life, in a car used practically every day, was there an interruption of hot, sharp sparks essential for steady power. At no time was there oil to be wiped or carbon to be cleaned from the points of these plugs to **maintain** that full efficient operation of the motor.

To quote from the letter of this Reflex user *, "This is the fifth year that I have used the **same set** of Reflex Spark Plugs in my (name of car) without cleaning and they are **still in good condition.**"

The fact that a SET of Reflex Plugs performed this—not a certain ONE—is further evidence of the consistent performance Reflex dealers sell to their customers when Reflex plugs are recommended.

It is additional proof that the exclusive Reflex construction of cromite war service porcelain and non-pit electrodes actually produces, without attention, the unfailing ignition your customers must get before they can expect snappy, trouble-free, engine operation. You can build up the same good business on the record of Reflex past performance that other Reflex dealers have done. Remember, every plug of the complete Reflex line comes to you guaranteed.

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(*Name on request.)

The Reflex Ignition Co.
New factory 1352 West 106th St.
Cleveland, U. S. A.

REFLEX SPARK PLUGS
KEEP THE CAR ON THE GO!

The Accessory and Garage Journal
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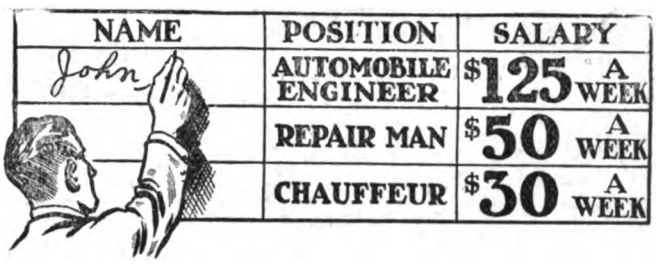

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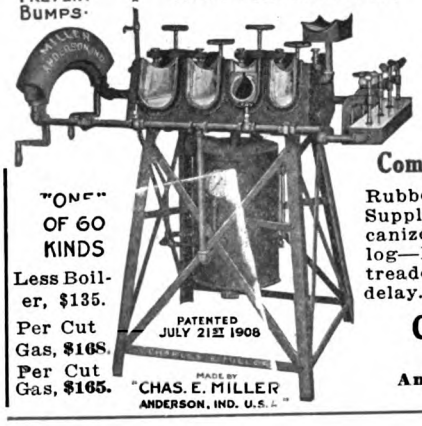

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60 kinds.

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PREVENTS ACCIDENTS

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INSIST UPON THE "RED CLOTH"

Which is guaranteed to give continuous use for one year or money refunded. Made only by

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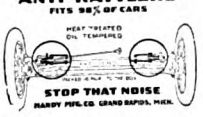
HANDY STEERING-ARM SHOCK-ABSORBER AND ANTI-RATTLERS

HANDY LINE OF ANTI-RATTLERS

HANDY TIE-ROD ANTI-RATTLERS FITS 98% OF CARS



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All Leading Jobbers have them.

If your jobber or dealer cannot supply you promptly write direct.

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KNOWLSON SPRING SPREADERS

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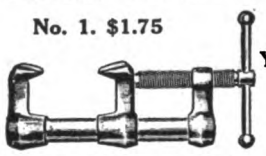

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Your Money Back if You Want It.

They Fit Any Spring. Easy to Operate. Both Drop Forged.

Nickel-plated and polished.

100% EASIER RIDING.

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Spring Breakages Eliminated.

Use a Heavy Grease (not oil) for real results.

DON'T RUIN YOUR SPRINGS BY NEGLECTING THEM!

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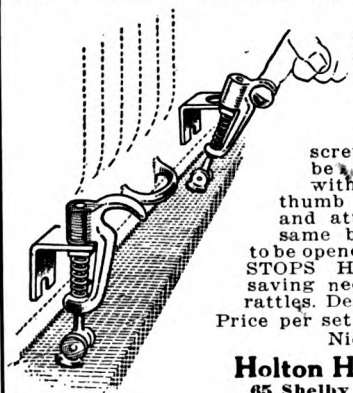
NEED A SET OF
Holton Hood Clips



This is a spring clip that takes the place of those slow, troublesome thumb screws on engine hood. Can be installed in one minute without tools by removing thumb screw from swing bolt and attaching HOLTON clips to same bolts. Enabling the hood to be opened and closed in one second. STOPS HOOD RATTLES, a time saving necessity, never slips, never rattles. Dealers write for proposition.

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Nickel Plated.....$2.75

Holton Hood Clip Company
65 Shelby Street, Detroit, Mich.

QUALITY SNAP RINGS

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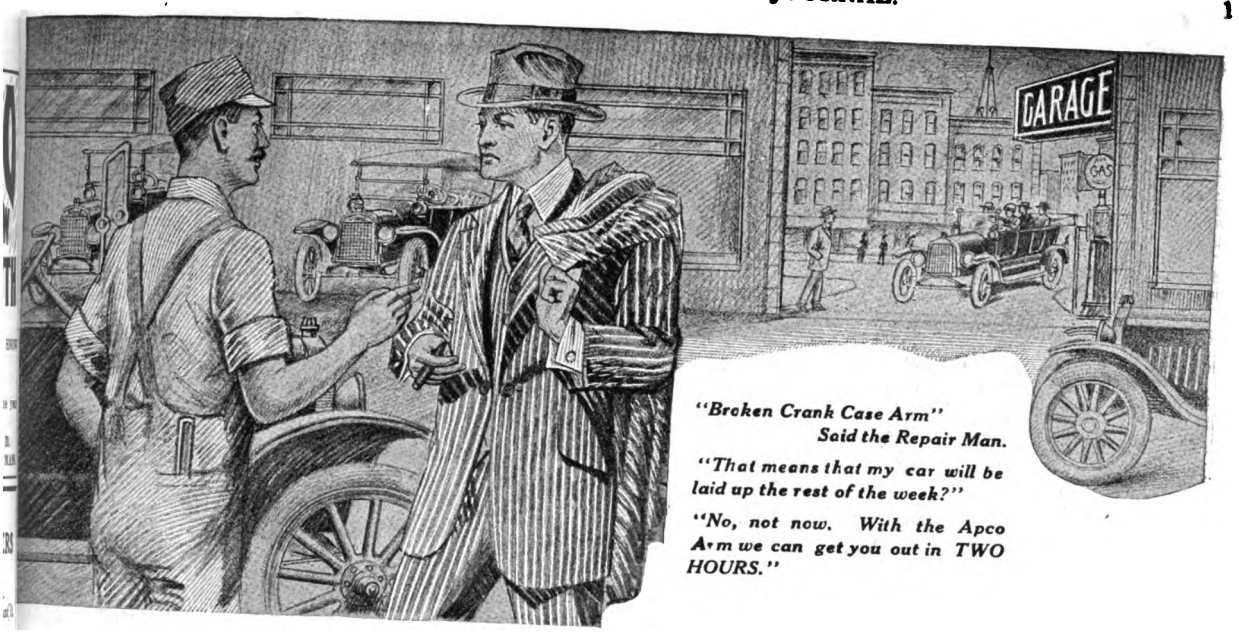


"Broken Crank Case Arm"
Said the Repair Man.

"That means that my car will be laid up the rest of the week?"

"No, not now. With the Apco Arm we can get you out in TWO HOURS."

Dealers—Double Your Money

by selling the fastest selling repair part for Ford cars on the market.

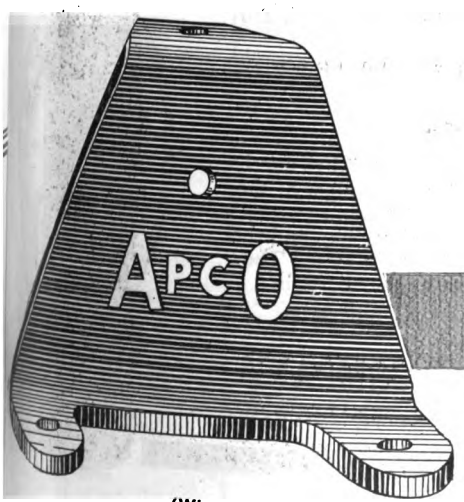
ALLWAYS TRADE APCO MARK RIGHT

Apco Steel Crank Case Arm

gives your customers a twenty dollar, twenty hour repair job for a dollar and a half plus an hours labor.

Cast Iron Axles

are not used and for that same reason cast arms should be avoided. The Apco Arm is made from quarter inch Boiler Plate Steel, accurately drilled and finished in black enamel.



List $1.50, Dealer $9.00 Dozen

Sold by jobbers in 126 cities. Order from your jobber and if he cannot or will not supply you, send the order direct.

APCO MFG. CO. Providence, R. I.

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ATSCO PORTABLE AIR TANKS

MAKE YOUR EMERGENCY CAR A PAYING SERVICE CAR

For Road Repairs

It Saves All Wasted Time and Labor

For every road job on tires. A turn of a valve and the tire is almost instantly inflated. It's a 100 per cent. efficiency equipment, inflation is positively to standard with a pressure gauge, and 99 per cent. of the time and labor necessary with a hand pump is economized.

The job is worth more to the owner, because it is perfectly done.

The Atsco tank is equally as useful and economical in the service station.

It is the only equipment for pneumatic tired trucks, for it saves valuable vehicle time should there be need of a tire change. Carry a tank in the machine at all times.
Atsco tanks can be filled at any compressor system. They are light, 36 inches long and 10 inches diameter, and are constructed with genuine copper brazed seams. Good for 250 pounds working pressure or 500 pounds test pressure.
The equipment includes an eight-foot hose, a standard tire filling valve, and a protection valve for filling with a compressor system.

List Price $24.50, f. o. b. Pittsburgh, Pa.

We specialize construction of garage pressure tanks, and have in stock or build to specification tanks of any size or pressure requirements. Our tanks are used by most of the producers of compressor and air storage systems.
These tanks are genuine copper brazed construction and the seams and joints are far stronger than the stock metal. They will not crystallize or crack and are guaranteed air tight.
We make pumps and pressure tanks for all purposes.

TANK MAKERS FOR NEARLY THIRTY YEARS

Produced only by

AIR TIGHT STEEL TANK COMPANY

OFFICE AND WORKS

PITTSBURGH, PENNSYLVANIA

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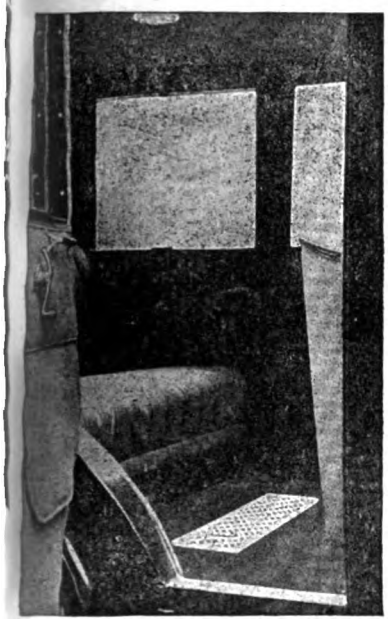
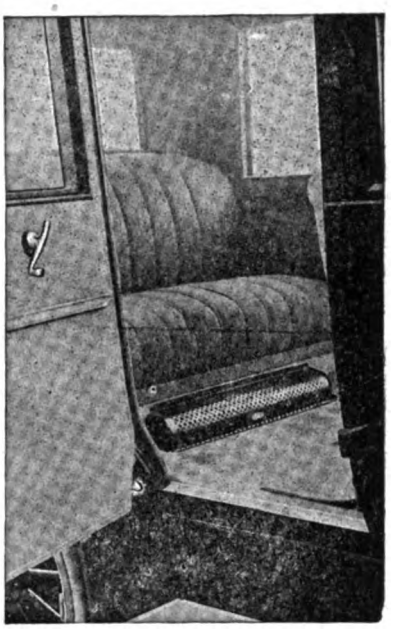
Type "G" Heater installed in Sedan



Type "A" Heater installed in Coupe

Type "DW" Heater installed in Sedan



Cars Using Perfection Motor Car Heaters as Standard Equipment on One or More Models:

Allen
Case
Cole Aero-Eight (all models)
Crow-Elkhart
Grant
Haynes
Hudson
King
Kissel
[illegible]
Motors
[illegible]truck cabs)
[illegible]
[illegible]
[illegible]ooth
[illegible] Salient Six
[illegible]
[illegible]aight
[illegible] Taxicabs of Chicago

Dealers Like Perfection Motor Car Heaters

With the great increase in winter driving there is a big consumer demand for Perfection Motor Car Heaters both in open and closed cars. The ease of installation and efficiency of service opens for dealers a wide market among cars not originally equipped with Perfection Heaters.

It is both to the dealers' and manufacturers' interests that cars be used twelve months in the year. Every car equipped with a Perfection Motor Car Heater is used throughout the year.

Attractive territory is open to distributors and dealers and we can now take care of all needs of car manufacturers. Production in our new factory is over 600 Perfection Motor Car Heaters per day.

Write immediately for descriptive literature and terms.

THE PERFECTION HEATER & MANUFACTURING CO.

6545 Carnegie Ave., Cleveland, Ohio

PERFECTION MOTOR CAR HEATERS
PATENTED

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WHO'S BOSS-

THESE COLD DAYS?

DON'T "ARGUE" WITH YOUR CAR ABOUT STARTING

A COPLEY PRIMER

Settles it for all time — when you say "go"---you GO!!

That is what sells them and it is the whole story. It is the only selling talk needed or necessary.

There is always a regular demand for Copley Primers, but the call in winter months makes it a wonder line wherever sold.

It has won it's way to owners **AND CAR** BUILDERS through proven superior utility, dependability and service. The qualities and merits of this equipment have created a demand that yields big and constant returns to all Copley Primer dealers.

It Will Start Any Motor Instantly Any Time

With a Copley Primer heat or cold cannot effect the starting of the engine. It is not a make shift attachment, affording guess work results—but regular standard, highly developed car equipment of the highest order, which guarantees added engine efficiency, service and economy.

The Copley is Standard Equipment on Mitchell and Templar Cars

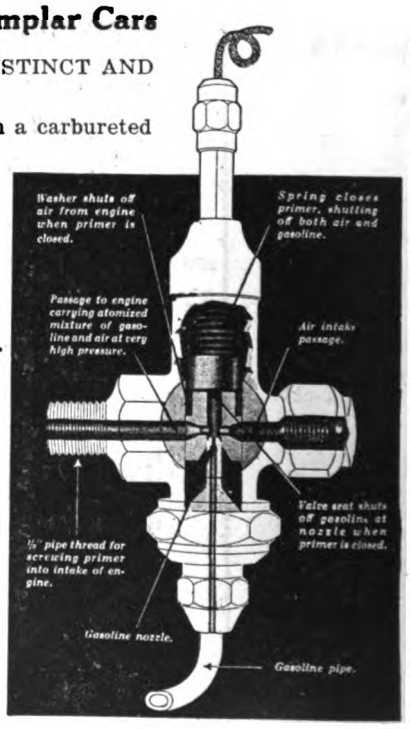
NO OTHER PRIMER IS TO BE COMPARED with the Copley. IT IS DISTINCT AND IN A CLASS BY ITSELF.

The Copley Primer positively and continuously supplies the cylinders with a carbureted spray of fuel perfectly mixed with air. The Venturi nozzle used makes this possible and certain. With the Copley the explosive mixture is delivered into the manifold—at the right place—near the engine valves.

The illustration shows how a small flow of gasoline can be injected into a stream of air moving at extremely high velocity. The liquid being thoroughly atomized by the air which produces a perfect charge. The Copley Primer is so perfected that any engine can be operated without a carburetor and with any grade of gasoline.

It will afford every degree of efficiency on any motor. That is why every user is a booster and why every sale brings new customers. The Copley is easily and quickly attached and the service life is good for years.

If you do not sell Copley Primers it is because you do not have them in stock. You lose because the demand is constant and urgent. Why merchandise slow money lines when you can sell necessary equipment that is conceded to be the winner of the year?



List Price with all fittings $6.00
(Including War Tax)

BAY STATE PUMP COMPANY

KING TERMINAL **BOSTON, MASS.**

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BRUNNER

Remember When

the future of the garage business was very uncertain and the proprietor could put his garage equipment in a hand bag? The little machinery bought was usually on a price basis. The cheapest that would do the work. Permanence, durability and economy was little considered. Everything was cheap in those days, so operating costs were not seriously thought of.

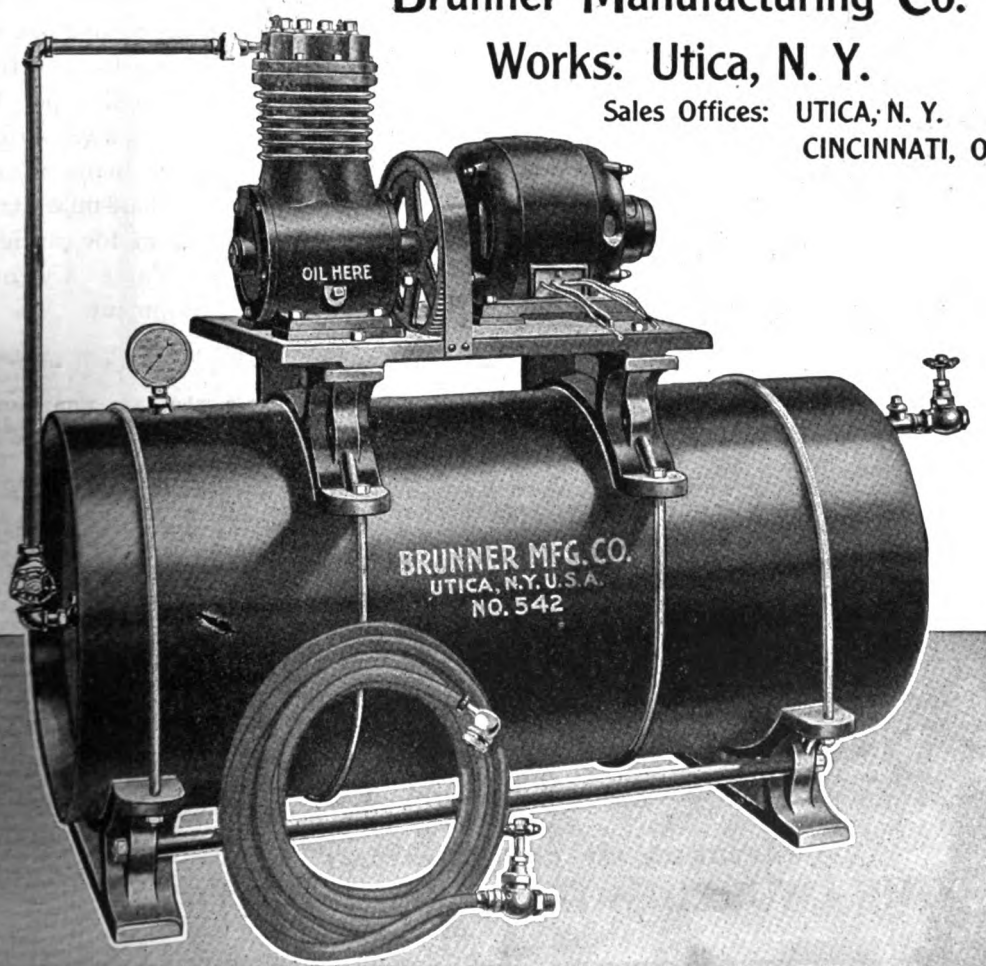
The permanence, progress and prosperity of the garage business has put old time equipment, methods and ideas in the morgue ever to remain. To-day scientific methods, approved practices and the best machinery money can buy is the rule everywhere.

Brunner Air Compressors more than fulfill the present day demand.

Brunner Manufacturing Co.

Works: Utica, N. Y.

Sales Offices: UTICA, N. Y.
CINCINNATI, O.



(When Writing to Advertisers, Please Mention the Accessory and Garage Journal.)

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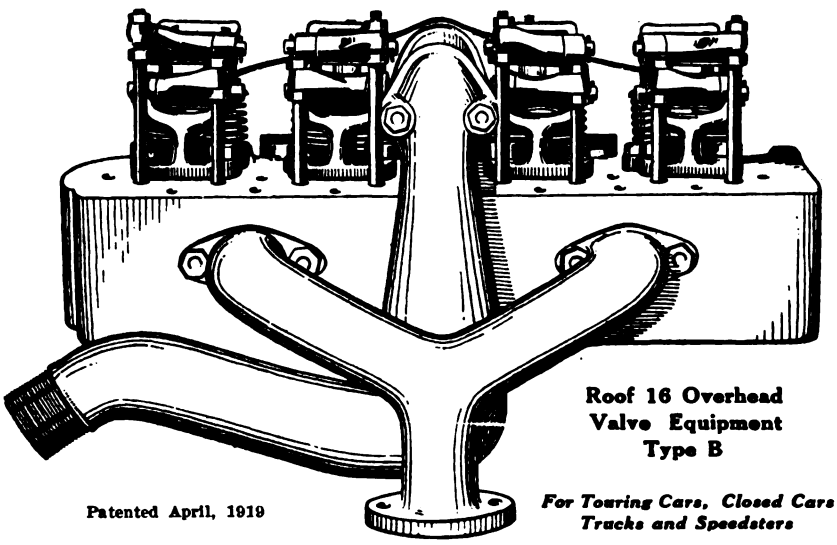
POWER and SPEED ROOF 16 OVERHEAD VALVE EQUIPMENT for FORD MOTORS



Roof 16 Overhead Valve Equipment Type B

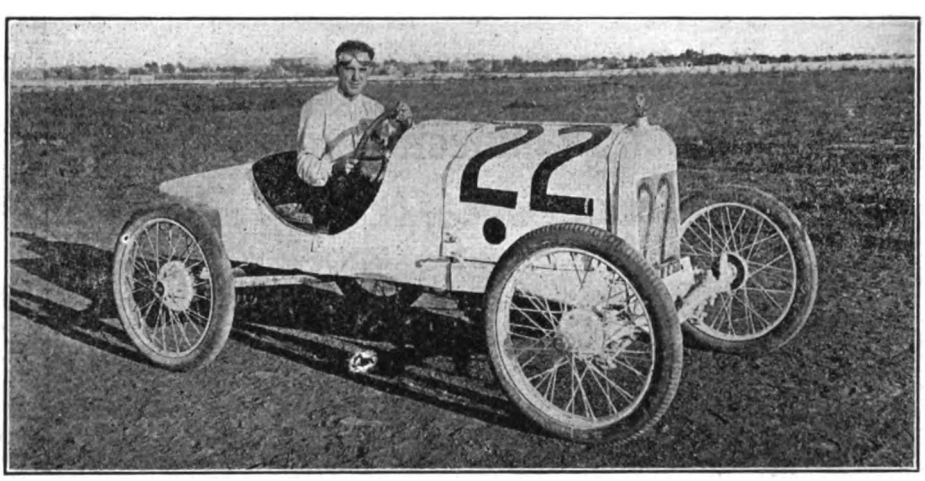
For Touring Cars, Closed Cars Trucks and Speedsters

Patented April, 1919

The Most Remarkable Power Device, Even in This Inventive Age

Hill climbing for touring cars—pulling power through sand and mud—doubles the hauling capacity of converted Ford truck-speed for mile and half-mile tracks to rival the fastest cars built. Ford racing cars with our Cylinder Head Equipment and special racing parts have attained speeds from 80 to 100 miles per hour. Hill climbing and pulling power for touring cars, closed cars and trucks. Price, complete, $115.00 f. o. b. factory. Nothing extra to buy. Cylinder head equipment all ready for installation. It takes the place of the regular Ford Cylinder Head. Any mechanic can easily and quickly install it.

Comparison Brake Horse Power Tests at the United States Bureau of Standards gave Standard Ford motor with regulation carburetor 18.7 Horse Power. The same motor with 16 Valve Head and regulation carburetor 22.4 Horse Power. The same motor with 16 Valve Head and Special carburetor 29.7 Horse Power. Recent tests at Bureau of Standards with Type B gave 32 Horse Power. We are Manufacturers and Distributors of speed and other specialties for Ford cars; 3 to 1 gears, high speed camshafts, aluminite, light grey iron pistons, lynite pistons, aluminite connecting rods, racing spark plugs, racing carburetors, roller bearings, counterbalances, wire wheels, multiple speed transmission, high tension magnetos, special oiling system, special worm and gear, steering gear, racing tires, racing bodies, hood and radiator, parts for underslinging chassis. Tell us what you want. We can supply it. Racing quality. Lowest prices. Send for our Complete Literature on how to build fast cars and double the value of your converted Ford Truck and descriptive circular on Speed and other Specialties for Fords.



MR. KIRBY HORTON,
CLEBURN, TEXAS,

a great driver and mechanic in his record breaking Ford. Mr. Horton obtained a speed of 80 miles per hour on a straight away and is a winner of many races on mile and half-mile tracks. His Ford motor carries the Roof 16 Valve Cylinder Head Equipment.

Ford Racing Car Speed Kings

From the hundreds of fast Ford car drivers we mention the names of a few of those who have won laurels through the use of our equipment and some with speed records approaching that of the highest priced racing cars in the world, ranging from 70 to 97 miles per hour, and who on mile and half-mile tracks have closely approached the world's record with their speed cars:

Loren Darst.....Eureka, Ill.
Haines Bros.....Ft. Benton, Mont.
Ben Lawell.....Columbus, Ohio
W. L. Frazier....Washington, D. C.
Herbert Black....Webster City, Iowa
John Proctor.....Washington, D. C.
Rolly Blair.....Shelby, Neb.
Joseph C. Hayes..San Francisco, Cal.
Paul M. Boozer.....Windber, Penn.
Hugo Goedthe.....Milwaukee, Wis.
W. C. Phalgrafh....Cheyenne, Wyo.
Milner Motor Car Co....Monroe, La.
C. F. Goltry.....Roann, Ind.
Fred Dawson.....Springfield, Ill.
W. C. Norris Motor Car Co.....
.....Oklahoma City, Okla.
Alvin A. Pfeiffer.....Clatonia, Neb.
J. Ross Castendyck.....La Salle, Ill.
Fred Hank.....Cheyenne, Wyo.
L. E. Kerbs.....Otis, Kan.
Phil M. Kepley....New Albany, Ind.
A. Malby.....Daytona, Fla.

Don Husted.....Marshall, Okla.
L. S. Stewart.....Cincinnati, Ohio
Irving Donohoe....Washington. D. C.
Taylor Bros.....Lafayette, Ind.
Robert Cusick.....Cleburne, Texas
Bozanni Bros.....Los Angeles, Cal.
J. Marshall Yeats....Champaign, Ill.
Kirby Horton.....Cleburne, Texas.
N. H. Steele.....Racine, Wis.
John G. Banzhaf..Greenwich, Conn.
Richard O. Fay.....Xenia, Ohio.
R. C. Wheeler....Chattanooga, Tenn.
W. J. Meagher.....Medford, Ore.
Gilbert Sartain.....Tahlequah, Okla.
Bert Wellington.....Casper, Wyo.
N. C. Burdett.....Stuart, Ia.
Perry La Merte....Kalamazoo, Mich.
Albert Willshaw.....
.....Ft. Wadsworth, N. Y.
Willard Brothers..Ponca City, Okla.
Roy A. Tolen.....Carlow, Mo.
W. H. Hooker..Bay Side, L. I., N. Y.

Cliff Duhme.....Cincinnati, Ohio
Brinker & Sheffer..Gibsonburg, Ohio
Roscoe J. Whitney.Leominster, Mass.
Frank Richardson....Segourney, Ia.
Roy A. Scofield....Council Bluffs, Ia.
Rister Garage....New Harmony, Ind.
Dennis Auto Co.....Ottawa, Kan.
Tunica Motor Co.....Tunica, Miss.
Treacy G. Mohney...Harrisburg, Pa.
Speedster Shop.....Los Angeles, Cal.
William Erwin.....Corcoran, Cal.
Packard Engineering Co.....
.....Cleveland, Ohio
Charles N. Davis....Piedmont, Mont.
Antone Bertoglio.....
.....Twin Bridges, Mont.
D. E. Snider.....Middletown, Ohio
Roy M. Barzem.....
.....Thief River Falls, Minn.
Bay View Auto Co.....Cheriton, Va.
A. Jackson.....Bloomington, Ill.

WRITE FOR OUR AGENCY TERMS TODAY

THE LAUREL MOTORS CORPORATION

ANDERSON, IND.

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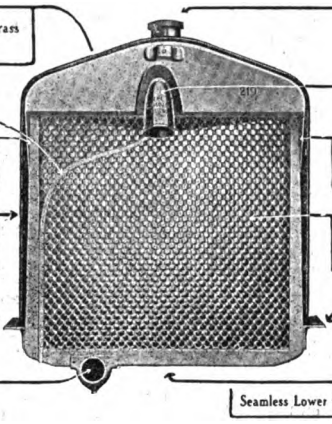
PEERLESS

They Cost No More Than The Other Kind

DEALERS
Prepare for Winter Business.
Peerless Radiator is Quick Selling.
Ask Your Jobber.

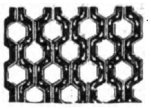
Guaranteed Radiator for Ford Cars



400% more efficient than regular Tubular type radiator

PEERLESS CORE ← WHY? → TUBULAR CORE

5600 inches of cooling surface	Only 1211 inches of cooling surface
Only 1/16 in. flat stream very easily cooled	Large round 3/16 in. stream hard to cool
174 cubic inches of water in channels of PEERLESS CORE	Only 44 cubic inches of water in TUBULAR CORE



Cross Section of PEERLESS Honeycomb Core. Arrows Indicate Flow of Water through Core

Flexibility of Core Eliminates Damage from Freezing.

MANUFACTURED BY

THE CORCORAN MFG. CO.
CINCINNATI, OHIO.

DEALERS---

LINK YOUR NAME TO PEERLESS PRODUCTS.
GET YOUR SHARE OF THE BUSINESS.
WRITE YOUR JOBBER.

ADDRESS DEPT. 5 FOR ALL PARTICULARS.

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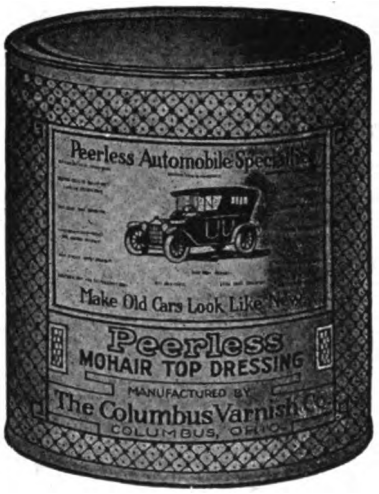

PEERLESS AUTOMOBILE SPECIALTIES

MAKE OLD CARS LOOK LIKE NEW

The attractive package is a big selling point. Can has friction top so that the lid can be pried off and sealed again if desired. This style of can permits the goods to be used direct from original package, preventing any waste by emptying into another container.

PEERLESS MOHAIR TOP DRESSING.

A dressing that not only waterproofs, but dyes a mohair top with one application, making top look like new.

PEERLESS LEATHER TOP DRESSING.

An oil preparation which renews and softens the leather, rubber, pantasote and their imitations. Dries with a bright finish and wears indefinitely.

PEERLESS JET BLACK FENDER JAPAN.

A finishing for fenders, which will cover solid with one coat, making a jet black gloss enamel finish similar to a baked job.

PEERLESS CARBON REMOVER.

Will remove carbon from cylinders of automobile motors and keep them always active and full of life. Will eliminate the carbon knock and make driving a pleasure.

PEERLESS MIRROROID.

Not a polish, but similar to a regular varnish, which will give a surface of a car where used a finish like a newly varnished job.

PEERLESS BATTERY BOX BLACK.

An acid-resisting enamel which will protect wood or metal parts of battery boxes, cases and racks which come in constant contact with acid from batteries from decay.

PEERLESS EXTRA FINE BLACK JAPAN.

A fine product for all around use on wood, metal and old enameled parts of an automobile. Will cover solid on any surface which is free from grease or dirt.

PEERLESS GASKET SHELLAC.

A high grade product cut in pure alcohol for gaskets, corks, carburetor floats and such parts of an automobile. Heavy bodied so that it makes a perfect seal on worn gaskets as well as new ones.

PEERLESS CYLINDER ENAMEL.

When cylinders and all metal parts of an automobile underneath the hood of an automobile are coated with this enamel they can always be kept clean and there is no danger from rusting. Made in Black and Gray.

PEERLESS TOUCH-UP BLACK.

A quick drying product for all around use in touching up all metal and wooden parts of an automobile, where finish is worn.

PEERLESS CUSHION DRESSING.

A dressing that can be relied upon to be perfectly safe to use as it does not wash or rub off and renews the appearance of old leather seats and cushions.

PEERLESS RIM PAINT.

Rims coated with this paint will not rust, thus preventing tires from sticking, which injures the casings. May be used on rubber mats as well as casings.

PEERLESS FORD TOP DRESSING.

Will restore original finish to leather material used on Ford cars. Where mohair is used on Ford cars use Peerless Mohair Top Dressing.

PEERLESS LAMP ENAMEL.

A gloss enamel which will stick on nickel, brass, iron or old enameled parts and is not affected by heat of gas lamps. Made in Gloss and Dull.

PEERLESS LIQUID WAX.

A hard drying Polish which is easy to apply with a light even coat, as it comes in liquid form. It is waterproof and will stand washings without dulling the finish.

PEERLESS TIRE PAINT.

A waterproof coating for tires to protect rubber from exposure to air, thereby saving rubber from deterioration and keeps tires looking like new. Made in Black, White and Gray.

PEERLESS AUTO BODY POLISH.

It is practically an oil varnish food, containing the necessary products that are needed by varnished surfaces that have become dull through service. Easily applied and ready for use at once.

PEERLESS LINING DYE.

A dye that will make all water-stained, grease spotted and faded linings of an automobile top a dark black uniform black color. Will not wash or rub off, neither will it stiffen or harden the cloth.

Prices on these PEERLESS AUTOMOBILE SPECIALTIES are as follows:

1 gal., $6.00. ½ gal., $3.15. Quart, $1.65. Pint, 90c. ½ pint, 50c.

PEERLESS COLOR FINISHINGS.

A line of eight colors so that an owner can select any combination of colors for wheels, chassis and body of his car. High grade colors made with a finishing varnish so that it is not necessary to finish over these colors. Made in following colors: RED, BLACK, WHITE, BLUE, GREEN, YELLOW, STRAW COLOR and GRAY.

1 gal., $7.00. ½ gal., $3.65. Quart, $1.90. Pint, $1.00. ½ pint, 55c.

PEERLESS AUTOMOBILE SPECIALTIES produce durable and lasting results that please every owner, giving dealers repeat orders and a good profit on each can sold.

Used by over 8,000 automobile painters because of their high qualities.

Dealers order these Peerless Automobile Specialties through your jobber, also get catalogs, window displays, inserts and other advertising matter. If his stock has not arrived, write us direct and we will see that you are supplied.

Made Only by

THE COLUMBUS VARNISH COMPANY

COLUMBUS, OHIO, U. S. A.

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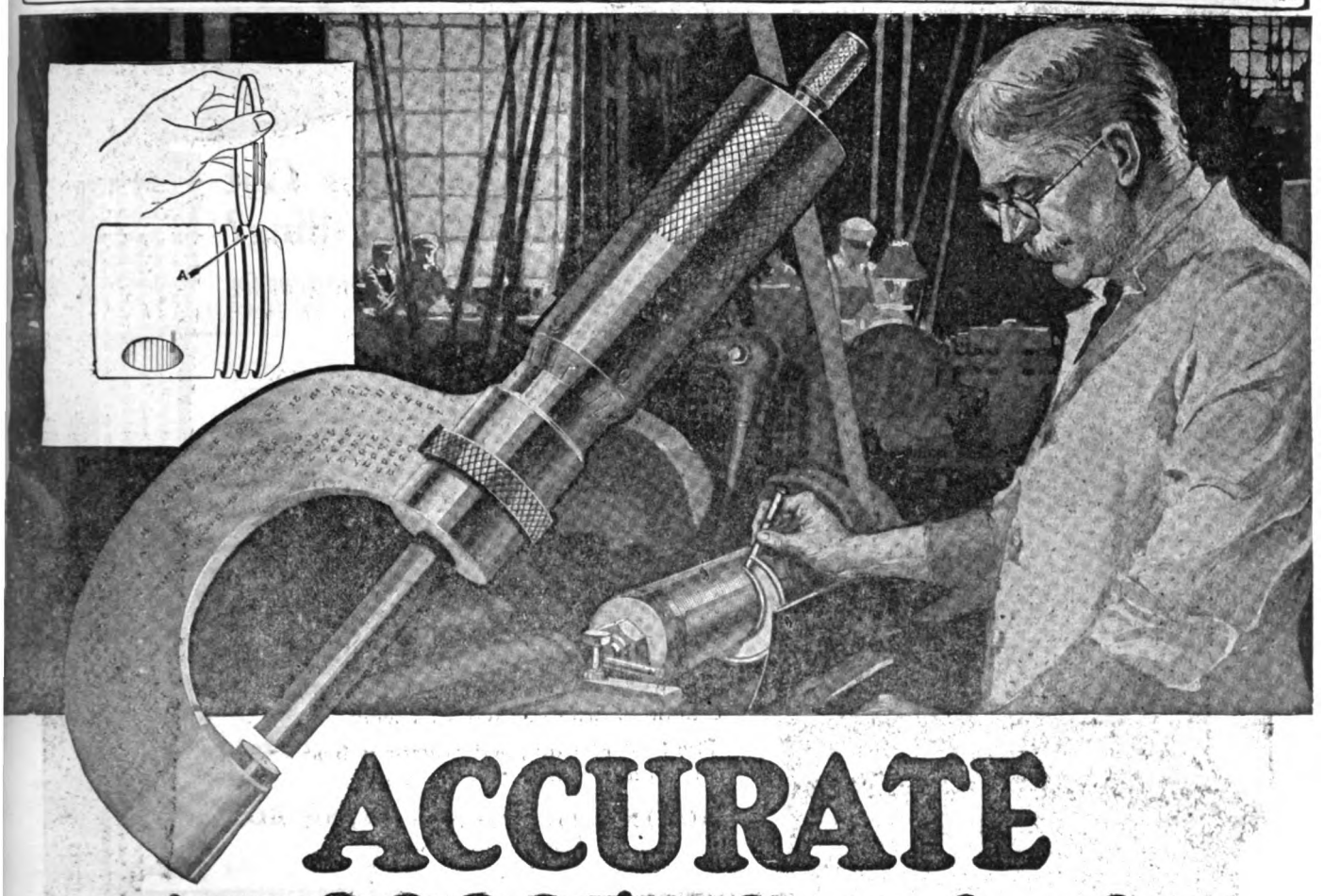

ACCURATE
to .00025 of an inch by Micrometer Test

Every mechanic knows—that if the opening in a piston ring can be closed positively so that it cannot leak—and at the same time provision is made for the necessary contraction and expansion—the ideal piston ring would be obtained.

The simple Burd Automatic Coupler does just that. It closes the gap effectively against leaks, and as the opening increases—automatically adjusts itself to cylinder wear—insuring gas and oil tight, high compression.

Burd Piston Rings are easy to install—fit accurately to .00025 of an inch—and require no filing or fitting. They are guaranteed against flaws and breakage.

Every Burd High Compression Ring is warranted to produce higher compression—develop more power, and use less gasoline and lubricating oil (when installed in cylinders that are not scored or warped), than any other piston ring made—and we will gladly refund the full purchase price—after thirty days' use—if they do not stand this rigid test.

Ask Your Jobber's Salesman—or Write Now

for a copy of 1920 Burd Piston Ring Directory of Sizes, price list and information about our Sales Helps for Garages and Repair Shops. Your jobber carries a complete stock of all sizes—and oversizes—to fill rush orders quickly.

BURD HIGH COMPRESSION RING CO., *Rockford, Illinois, U. S. A.*

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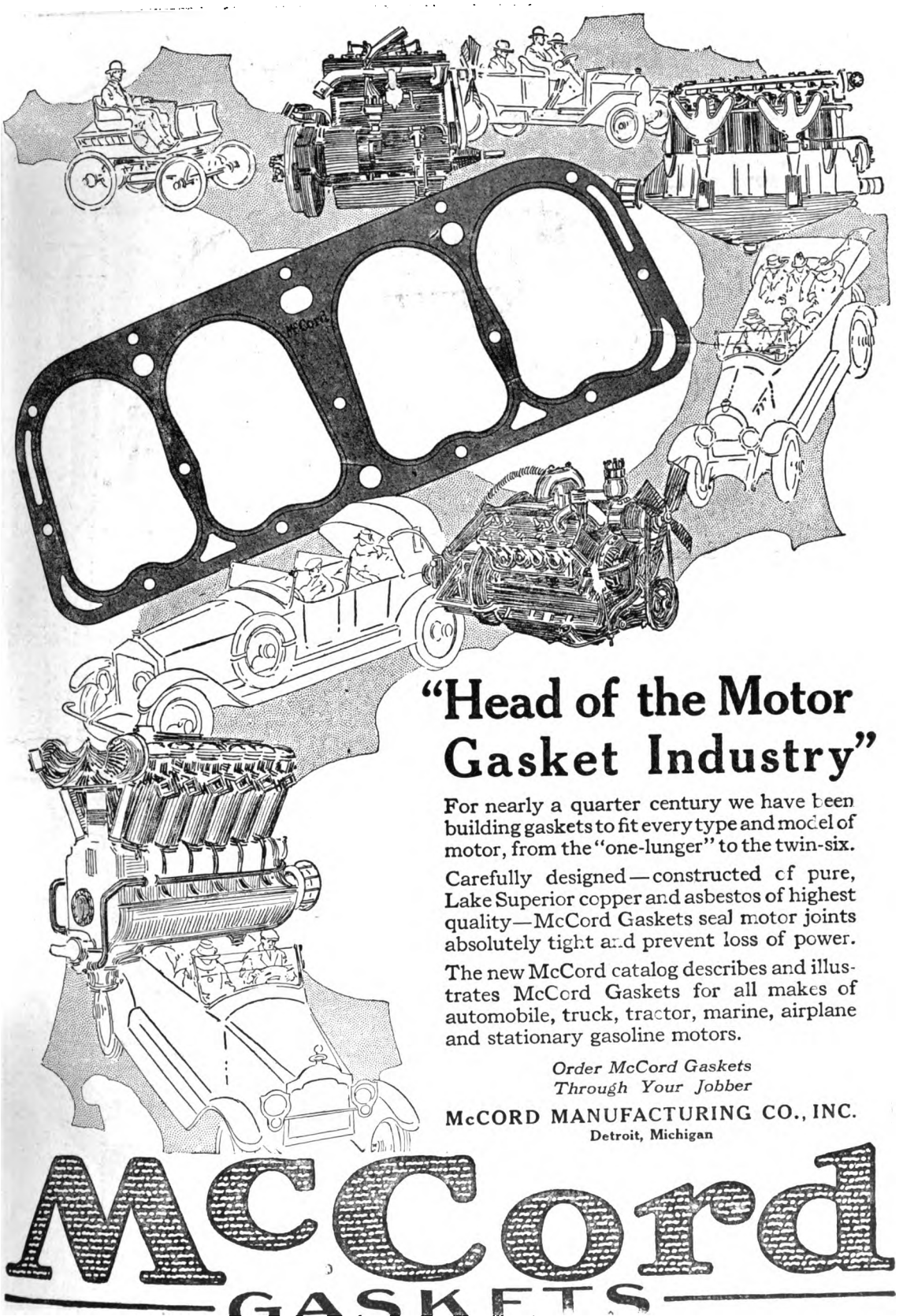

"Head of the Motor Gasket Industry"

For nearly a quarter century we have been building gaskets to fit every type and model of motor, from the "one-lunger" to the twin-six.

Carefully designed—constructed of pure, Lake Superior copper and asbestos of highest quality—McCord Gaskets seal motor joints absolutely tight and prevent loss of power.

The new McCord catalog describes and illustrates McCord Gaskets for all makes of automobile, truck, tractor, marine, airplane and stationary gasoline motors.

Order McCord Gaskets
Through Your Jobber

McCORD MANUFACTURING CO., INC.
Detroit, Michigan

McCord
GASKETS

(When Writing to Advertisers, Please Mention the Accessory and Garage Journal.)

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MR. FORD OWNER

THERE'S Your Trouble- "Leaky" Wires

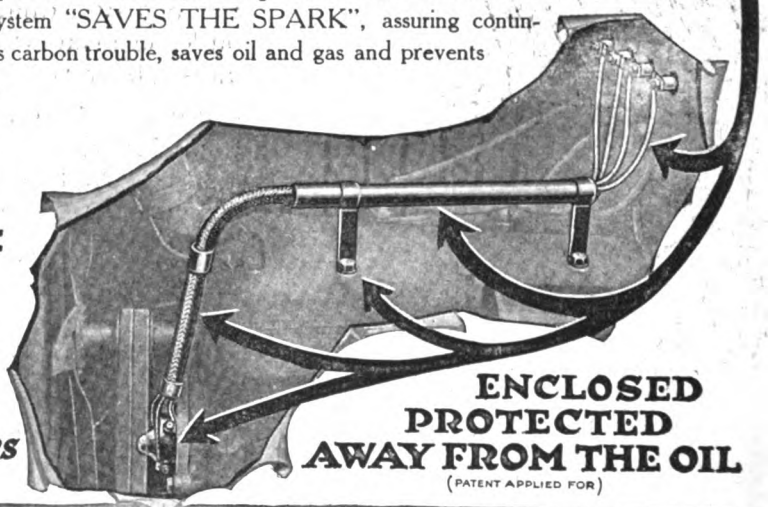
HERE'S Your Cure

Brown's Timer Wiring System for FORD CARS

is a direct overhead connection between the coil box and the commutator and positively saves the usual 40% spark waste, delivering to the motor the FULL INTENSE HOT SPARK. Regular Ford Wiring becomes oil and water soaked, the insulation frays, the wires become exposed and broken, causing "leaks" and short circuits. Brown's Timer Wiring System "SAVES THE SPARK", assuring continuous combustion, eliminates carbon trouble, saves oil and gas and prevents rippling of the commutator.

$2.50 COMPLETE
Including War Tax

And you put it on in less than twenty minutes



ENCLOSED PROTECTED AWAY FROM THE OIL
(PATENT APPLIED FOR)

CRAMER AND CRAMER
Manufacturers & Distributors
406 ANDREWS BLDG. CINCINNATI, O.

Write for the name of your nearest jobber or dealer. If he cannot supply you send us $2.50 and we will mail you one parcel post prepaid.

***Dealers and Jobbers*—The Trade Discounts are Liberal.**

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GILL

The Perfect One Piece Piston Ring

"Here Is the Piston Ring I Recommend"

The garage man says this with an accent of pride when he holds out a Gill Piston Ring towards the customer. He knows the Gill Ring only has to be shown to convince that it is the "perfect one piece piston ring." There is no argument necessary, one look at the double step interlocking joint and anyone with even the slightest mechanical knowledge can see that it is head and shoulders above any other ring on the market.

Just think for a moment. The Gill Piston Ring allows an expansion of from $1/8$" to $3/16$" without any loss of compression and at the same time has all the advantages of a one piece ring. Made from single piece castings of the finest gray iron and machined to absolute accuracy. The easiest ring on the market to install, the easiest ring on the market to sell.

Send for the new Gill Piston Ring Size Directory, complete, convenient, and full of just the information you need. It is free to the trade.

Dealers—Ask your jobbers about them
Jobbers—Write to us for information

The Gill Manufacturing Company
351 West 59th Street, Chicago, Illinois

Sole Foreign Agents:
AUTOMOTIVE PRODUCTS CORPORATION
Woolworth Building, New York, N. Y.

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Keeps out an

You now can have real

Filtered Air

NOT A particle of dust—not a bit of dirt—not a drop of oil—in the air that goes into the tire from the No. 7 Filtered Air Outfit. This means a protection for tires—a protection that the motorist will appreciate—that is worth dollars to him. He will come to your place of business for this air service, enabling you to make many sales of your goods and to render "pay" service on his car.

This new No. 7 AU-TO AIR COMPRESSOR is a great business builder. You have something to offer that the motorist wants. You will find it a profitable investment right from the start—bringing you customers from all classes of motorists.

Only 3 Moving Parts

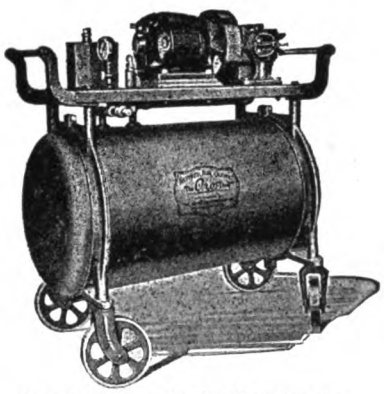
Consider this for simplicity—only 3 moving parts in the compressor mechanism proper. There is nothing to cause trouble, nothing to watch. The outfit is complete in itself. It will maintain a good supply of air day and night. When the pressure goes down the power switches on automatically; when the pressure goes up the power switches off. There is a gauge, an automatic unloader, and a perfect lubrication system that eliminates any possibility of oiling trouble. Only ½ h. p. motor. Sufficient pressure to handle the largest pneumatic truck tires.

Get the "Filtered Air" Outfit if you want to be up to date. This equipment is making a wonderful hit wherever it is being used. You should be the first in your community to have it. *Ask your jobber, or write us if he doesn't have it, sending his name.*

THE AU-TO COMPRESSOR CO.

303 S. Mulberry Street WILMINGTON, OHIO

Capacity over 4 Cubic Feet of Air A Minute



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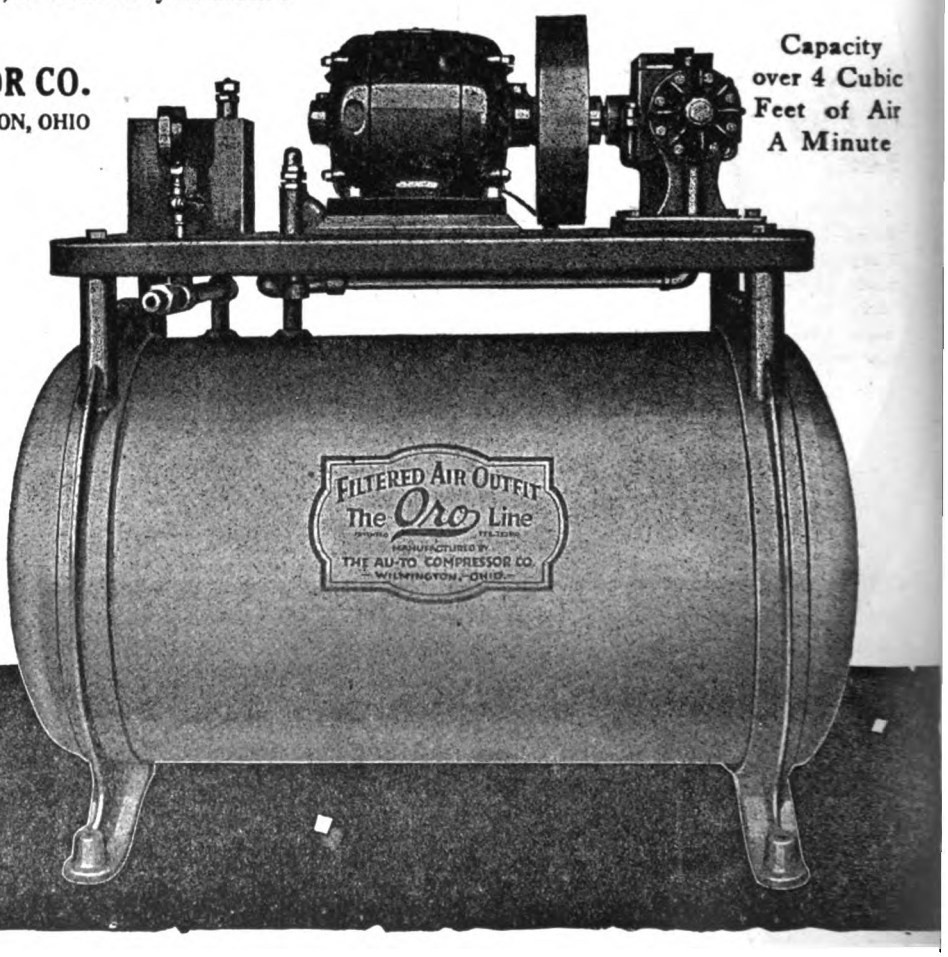

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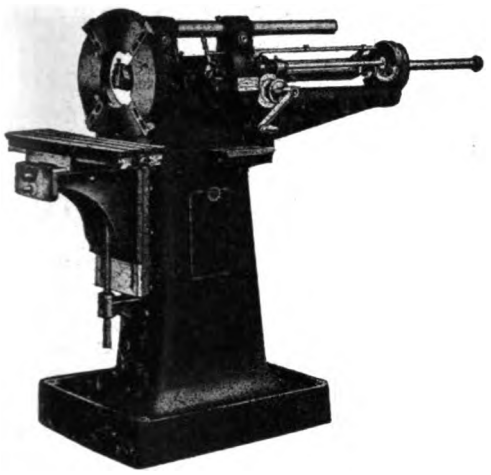

A complete machine for cylinder reboring, milling, drilling, boring and gear cutting with the advantages of three expensive outfits all assembled in one simplified, inexpensive machine. Will handle unlimited range of jobs accurately, rapidly and economically.

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Wonderful simplicity and compactness allow all changes of operation to be made with rapidity and ease. Fills a long felt want in tool rooms in making dies, jigs, fixtures and all similar work requiring accuracy and speed.

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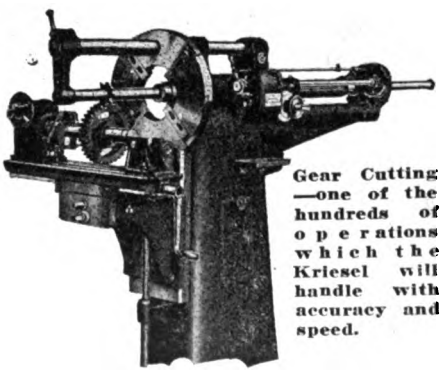

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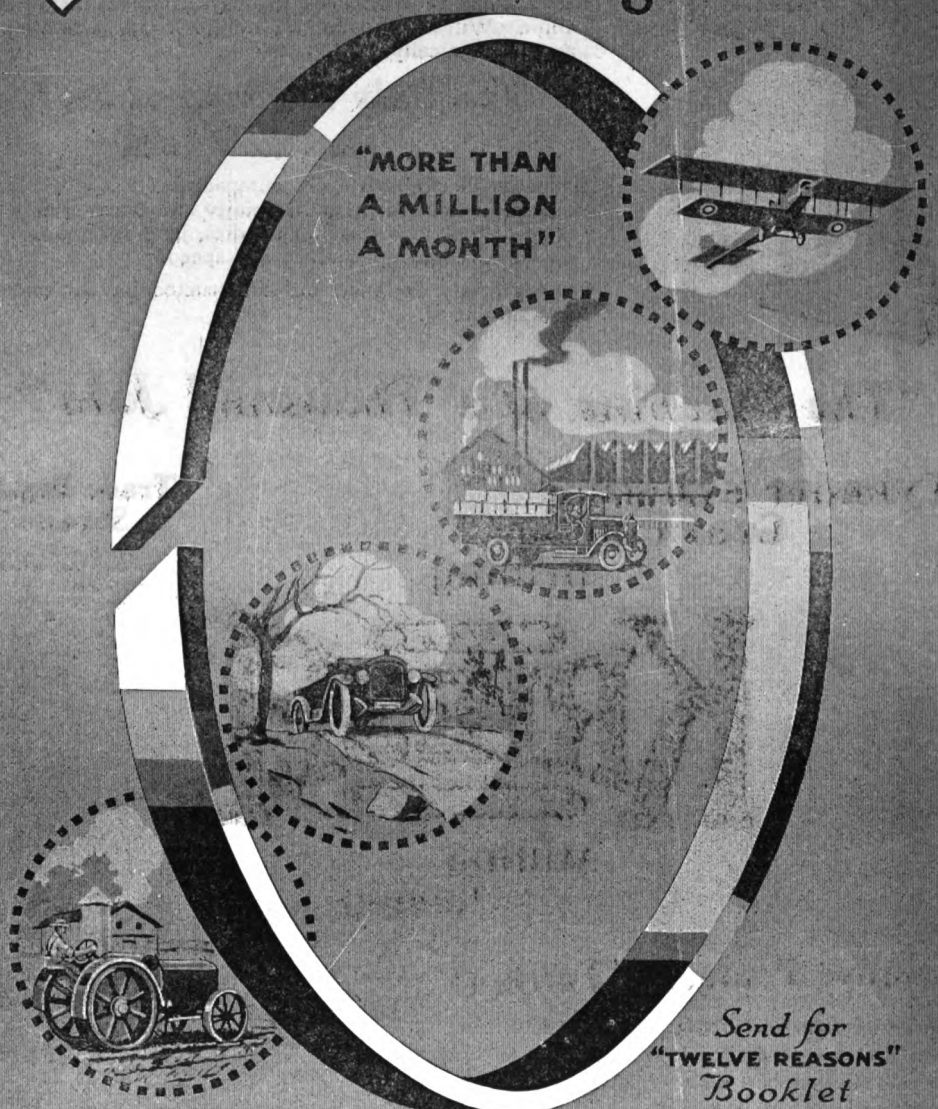

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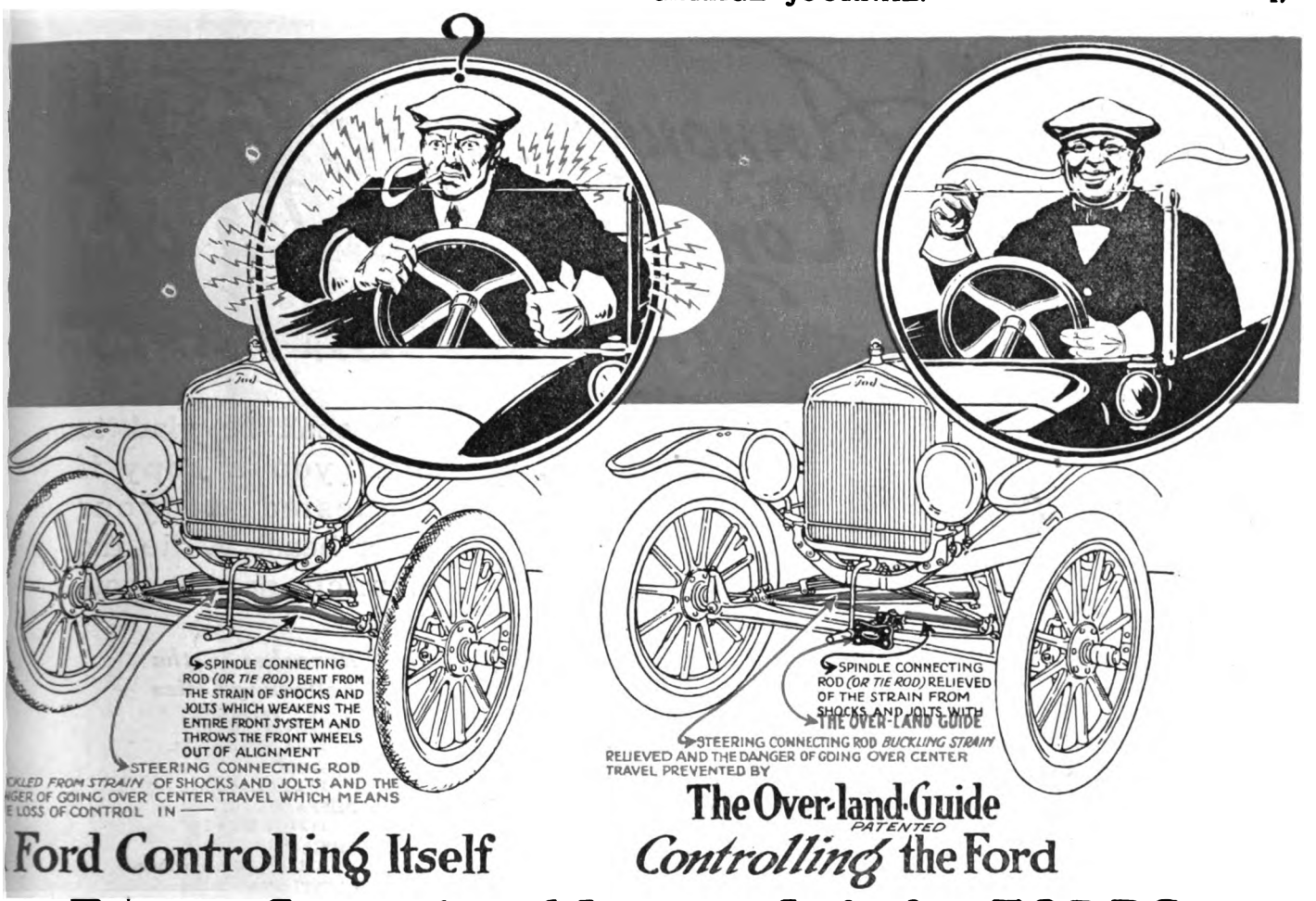

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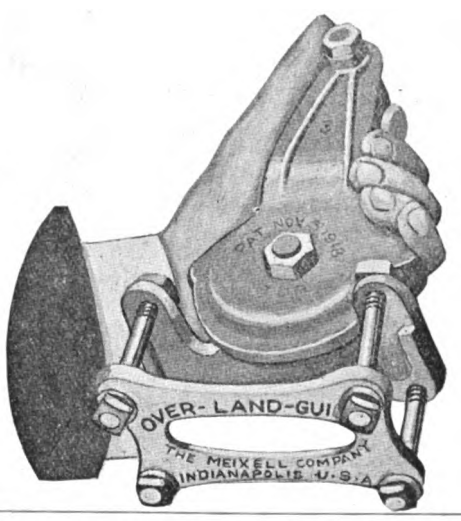

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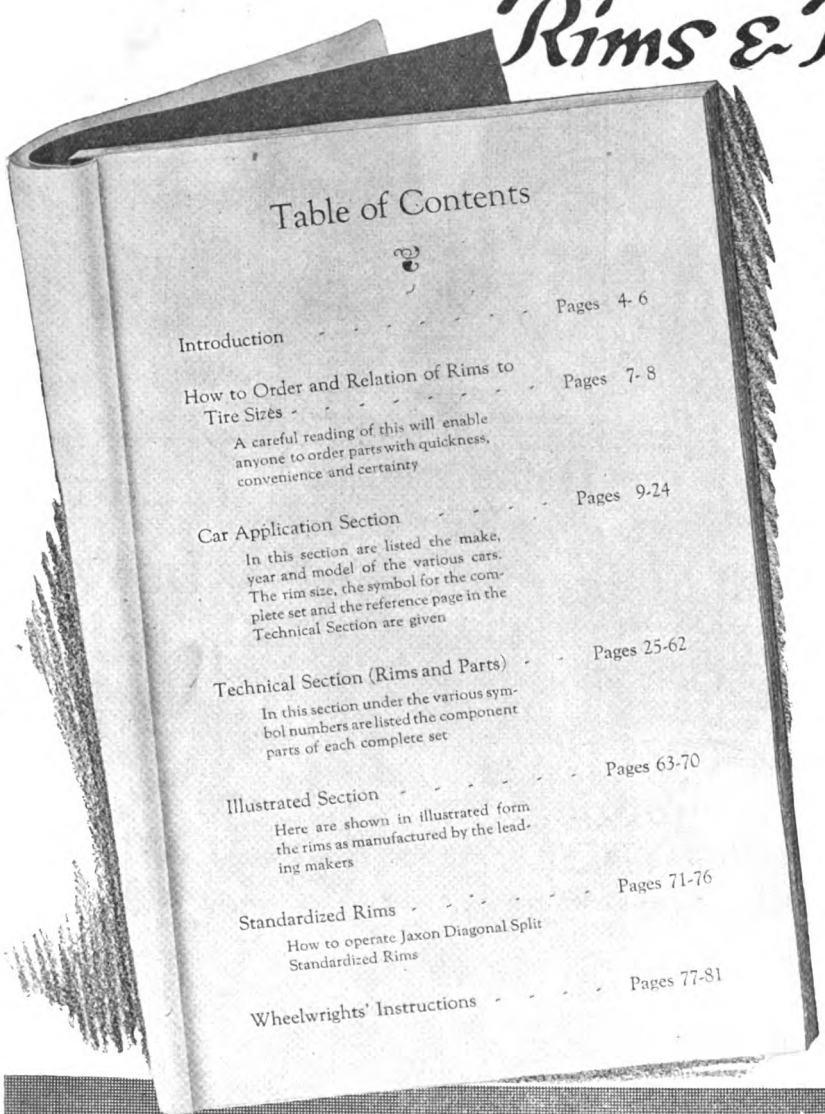

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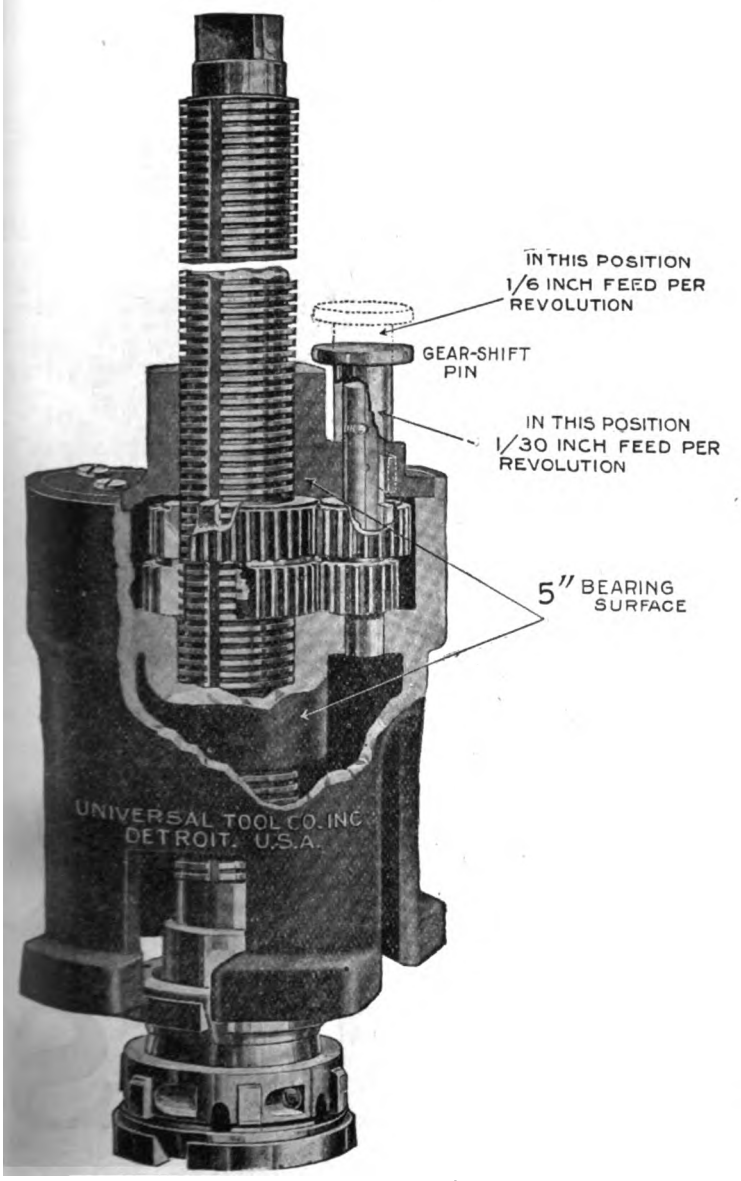

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Victor Manufacturing & Gasket Company
The World's Largest Gasket Manufacturers
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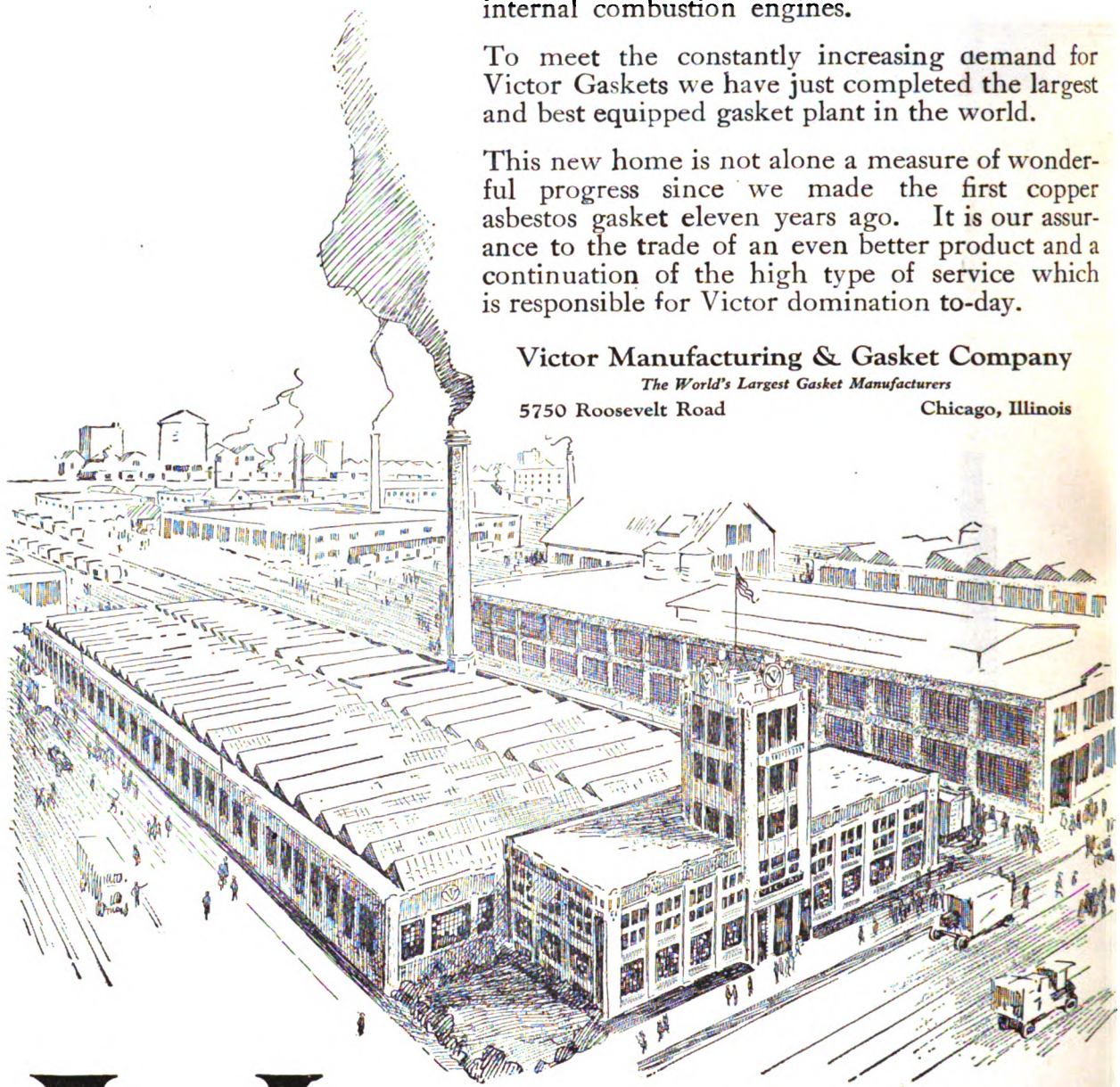

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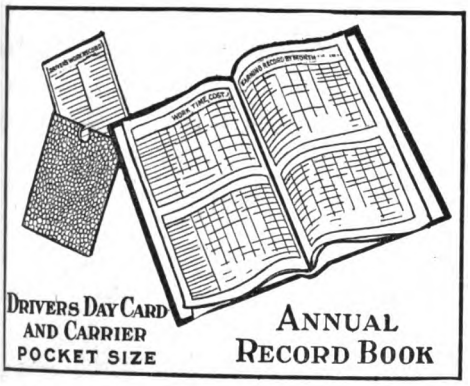

The system includes an annual record book, 350 drivers' day cards, a day card carrier and full instructions.

Any owner can start this system at any time with an old or new truck of any make or type.

Any boy or girl clerk can maintain all records for one or a hundred trucks.

Each system is good for one year, nothing more is needed or necessary.

The records show at a glance any and all items entering into the earnings and cost of operation.

It is extremely simple. 100% complete and full working instructions are supplied with each system.

It is almost self-operating.

Price $10 — Delivered

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MOTOR TRUCK

Pawtucket, Rhode Island.

THE ACCESSORY AND GARAGE JOURNAL
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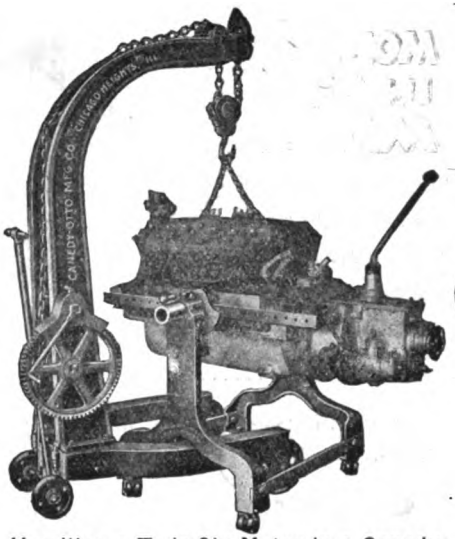

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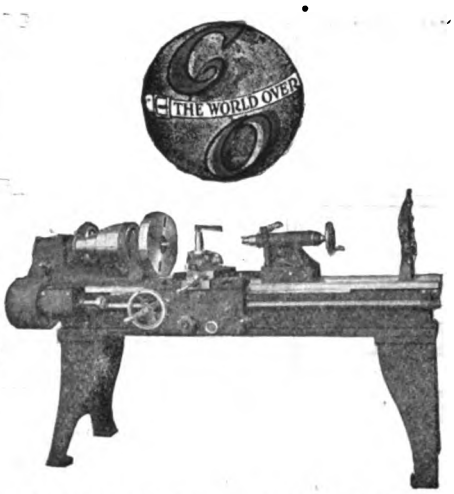
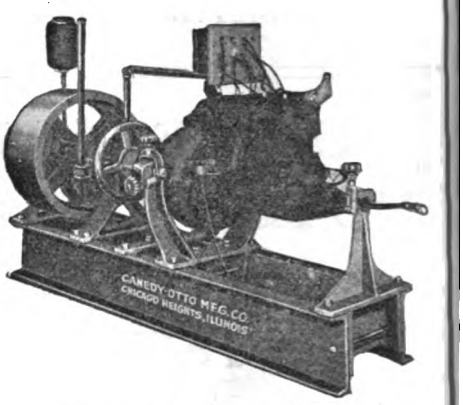


Canedy-Otto Screw Cutting Engine Lathe.



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Maximum production efficiency demands absolutely dependable equipment.

For the Garage Repair Shop and Service Station

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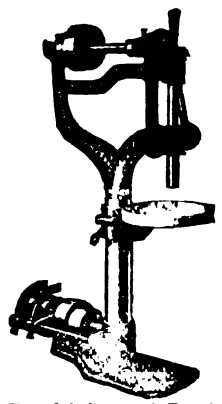

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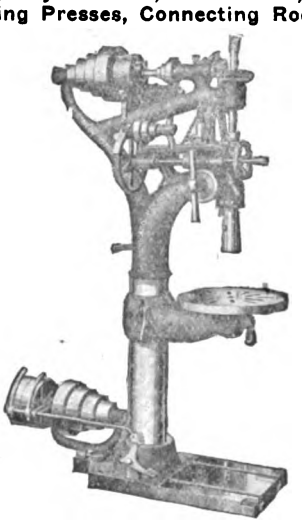

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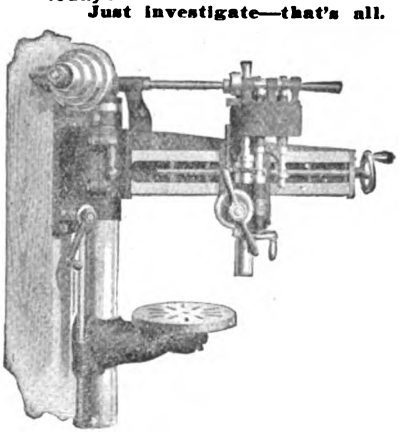

Model No. 51.
No. 51 has Power Feed and Automatic Stop.

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General Offices and Factory

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"GASTINE" is GUARANTEED to give you 30% more mileage, preventing formation of carbon and assuring easier hill climbing ability, faster ignition and greater power.

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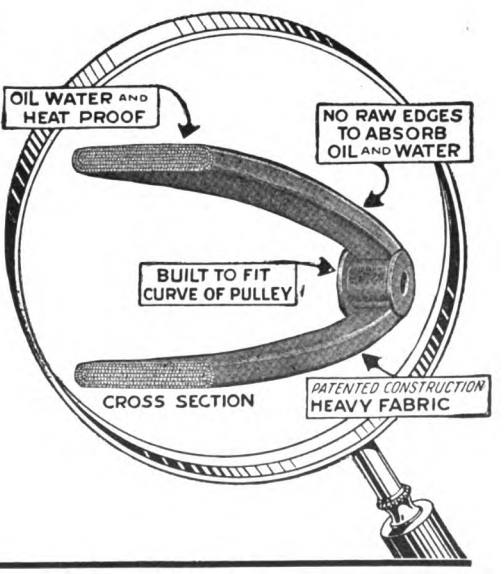

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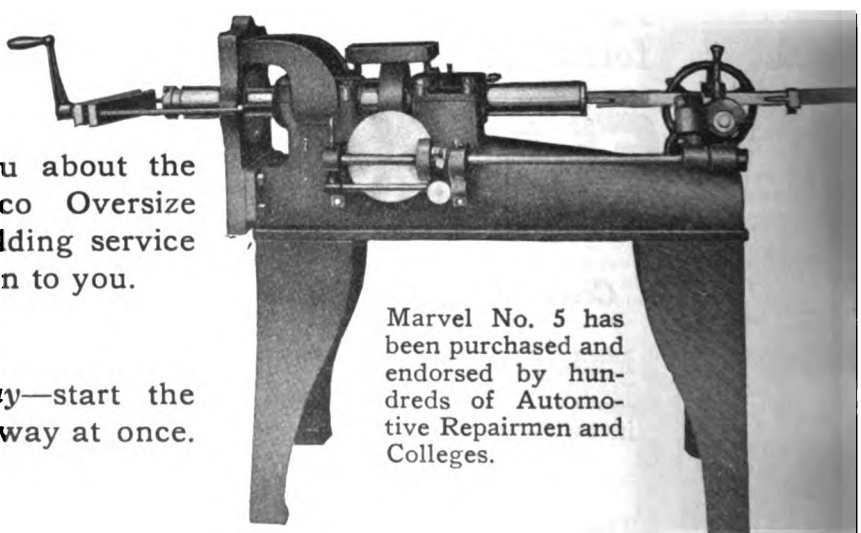
It is the most practical, convenient, substantial and accurate machine ever invented.

It has proven best by every test. It has speed and capacity. It is power driven and with its automatic feed release permits of a man doing other work while re-boring. It may be used for boring pulleys, gears, drive wheels and put to a hundred other uses.

Our co-operative Business Building Advertising helps you get the business—our Marcon Piston service helps you hold it.

You cannot go wrong with the Marvel—write at once for our proposition—we will gladly tell you about the Marvel No. 5—our Marco Oversize Pistons—our Business Building service and explain what they mean to you.



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Write today—start the profits your way at once.

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516 Loan & Trust Bldg., Minneapolis, Mi

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The ACCESSORY and GARAGE JOURNAL

OL. IX. PAWTUCKET, R. I., NOVEMBER, 1919 No. 7

Big Business Brought by Equipment Show

nnual Convention and Exhibit of Automotive Association at Chicago Most Important Event in History of Industry—New Constitution and By-Laws Adopted

HE big success from all points of view of the annual convention and first annual exhibit of the Automotive Equipment association, held in Medinah Temple, Chicago, Nov. 3-8, speaks no uncertain terms of the era of prosperity that is at hand for the automotive industries of America. The exhibit feature, which the association has never before attempted in connection with its annual convention, was a particularly successful departure, and will unquestionably become a regular concomitant of the annual meetings of the association in the future.

Manufacturers and exhibitors, without an exception, expressed themselves surprised and gratified at the volume of business transacted; in fact it is stated that never before was such buying power expressed in the automobile accessory trade in the same length of time as was manifested at this exhibit. Jobbers, dealers and buyers were present from all over the country in numbers never before seen at a show of this character, and they were all evidently present for the purpose of gaining valuable information, and in many cases were prepared to give orders to supply their needs in the expectation of a good run of business for the coming season. As the attendance was made up entirely of members of the trade and industry, the general public not being invited, exhibitors could be sure of not wasting energy on mere curiosity

General View of the First Annual Exhibit of the Automotive Equipment Association Held in Medinah Temple, Chicago.

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View Down One of the Aisles, Showing Attractive General Arrangement of Booths.

seekers, but could talk on a business basis with all visitors from the outset.

The sessions of the convention were productive in bringing the various interests of the industry, manufacturing, jobbing and selling, into greater harmony, thus promoting the mutual welfare of each, and many perplexing questions were discussed and settled in a satisfactory way.

The building in which the convention and exhibit were held was well suited in arrangement and size for an event of this nature, although the management could have filled much more than the available space, as the number of applicants far exceeded all expectations. The greater number of the displays were on the lower floor, but overflow exhibits were located on the main and upper floors and some were on the stage, while the big auditorium was ideal for the sessions of the convention. The decorations, which were designed by Campbell Brothers of Boston, compared most favorably with those of the big national shows. The color scheme consisted of a Florentine setting embodying the high lights of the Italian school, which were contrasted with the deep green background which effectively offset the lighter coloring.

IMPORTANT BUSINESS TRANSACTED.

New Constitution and By-Laws Adopted.

National Budget System Favored.

Restoration of Railroads and Carrying Systems Favored.

Board of Governors Made Clearing House for All Questionable Advertising.

New Plan of Procedure Formulated by Standardization Committee.

Publication of Hand Book Authorized.

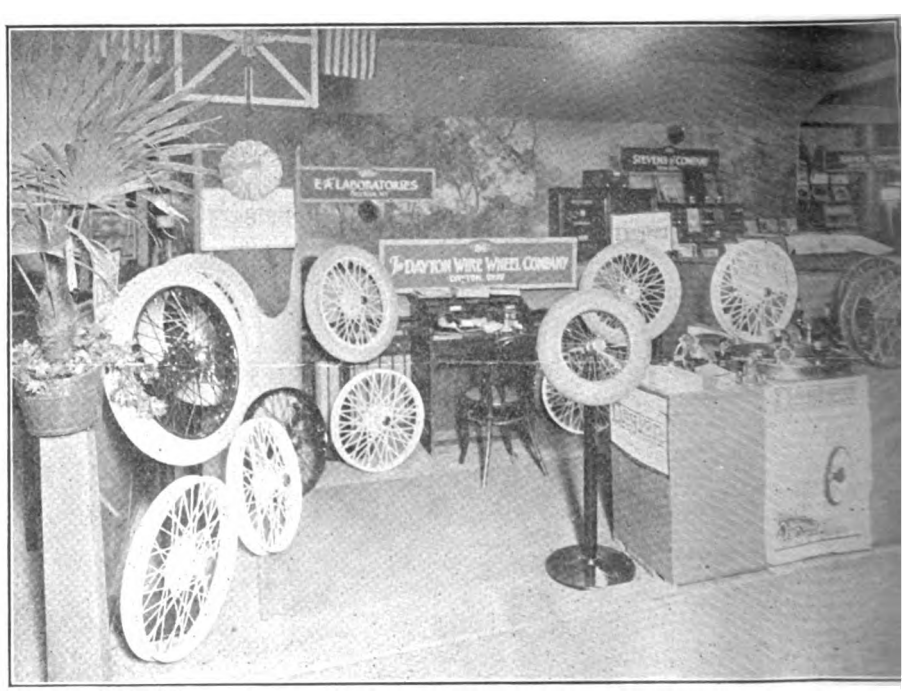
Classification of All Members of Association.

While both the convention and exhibits were open to members of the automotive trade and industry, no invitation to the general public having been extended, many of the matters discussed and action taken were of universal interest. Each session of the convention was opened by the playing of the national anthem, and invocation by the Reverends John Gibson and Rufus A. White, and each afternoon informal organ recitals were given by Professor Kurzenknabe on the fine organ installed in Medinah Temple, which is said to be one of the largest in the United States. This was a feature greatly enjoyed by many of the visiting members.

Mayor William Hale Thompson, who was on the programme to give the address of welcome, could not be present on account of unforeseen circumstances, but the city of Chicago was well represented by Harry B. Miller, the prosecuting attorney. After dwelling upon the progress and the spirit of good fellowship manifested in his city, he spoke of the great danger which has harassed the nation for some time and urged every member of the association to do his best individually to stem the tide of foreign influence of spreading Bolshevistic propaganda. He painted a picture of the reconstruction days that followed the Civil War in this country and by the way of contrast stated that the period of reconstruction through which the United States is now passing is of far greater moment than the former because of the very danger in which the life of this nation is put through the teachings of ill-advised professional agitators, who are trying to undermine the institutions upon which this nation has been built.

Wheeler Made Stirring Address.

Harry A Wheeler, formerly president of the National Chamber of Commerce of the United States, spoke of the activities of that body and also of the efforts made by the industrial conference summoned by President Wilson, of which the speaker was a member, in so trying to work out the problems submitted to them that capital and labor would both get a square deal, and expressed his regret that the conference was broken up because of the determination of a few of the board to stand by Americanism and nationalism, that the foundations of the institutions for which the forefathers bled and died should not be permitted to be sapped. He also suggested the need of financial support for the building of the home of the Chamber of Commerce of the United States at Washington, and for which purpose a suitable location has been selected and purchased, and the association, which is a member of the National Chamber, voted to take the matter under consideration.



Dayton Wire Wheel Co., Dayton, O., Had Its Products Effectively Displayed.

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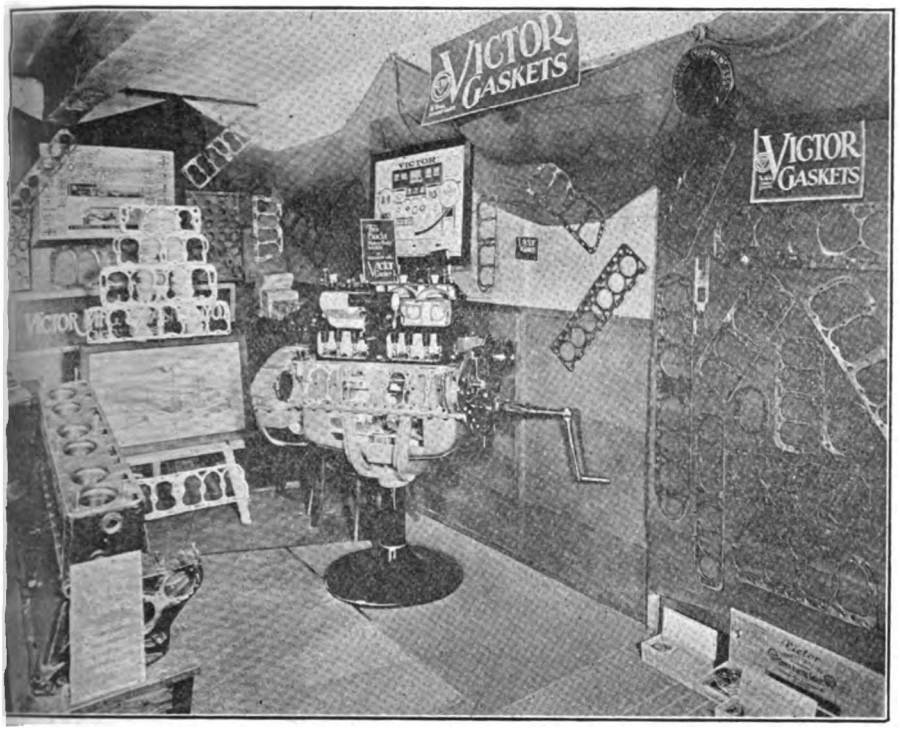

eth of Victor Manufacturing & Gasket Co., Chicago, Made a Strong Appeal for Business.

The association went on record as fa-ing the adoption of the national bud- system and pledged assistance ough the various channels through ich the desired results can best be ac-plished. The matter of spurious ad-ising, against which a campaign has n waged by the Associated Advertis- clubs of the world, was given due sideration, and the board of govern- was appointed a clearing house for questionable advertising that comes hin the range of this association. The ration of railroads and carrying panies to private ownership was fa-ed.

ne of the most important matters dis-sed was the new constitution and by-s, which was submitted at the last vention at Hot Springs in June. It unanimously voted to adopt the same h the amendments recommended by board of directors.

Next Convention at Del Monte, Cal.

t was voted that the next convention held the first week in June, 1920, at Monte, Cal.

Committees were also appointed under following heads: Credential, press, olutions, membership, finance, federal, de commission, railroad classification, ndardization, good roads and high-ys, labor and state association.

The labor situation, from the point of business man, was set forth in a stir-g address by Walter C. Hecker, vice sident of the Curtis Pneumatic Ma-nery Co., St. Louis, Mo.

ne of the most important steps taken the way of constructive work was the horization of the addition of two field retaries to work under the supervi-of the national field secretary. rge Fritz, who with the commissioner, Webster, will outline the programme e carried out. It is planned to make of such a character as to be of far-hing benefit to the entire trade.

The question of "wholesale only," which received considerable considera-tion at the last meeting, was again de-bated, but no definite action was taken, and the matter was tabled for further discussion at the next meeting in June.

Another matter that was discussed at length, but on which no decisive action was taken, was that of co-operation be-tween jobbers and manufacturers and among the jobbers themselves.

Among the social activities of the week in connection with the meetings of the association was a mock trial and min-strel show put on the evening of the third day in Aryan Grotto Temple, which was enjoyed by over 1200 members and their friends. This was given under the direc-tion of the Chicago Automotive Manu-facturers and was full of up-to-date, mirth-provoking features.

NEW OFFICERS ELECTED.

President—R. R. Engelhart, Sieg Co., Davenport, Ia.
Vice President—Robert A. Stranahan, Champion Spark Plug Co., Toledo, O.
Chairman, Board of Directors—Howard M. Dine, Dine-DeWees Co., Canton, O.
Vice Chairman, Board of Directors—L. P. Halladay, L. P. Halladay Co., Streator, Ill.

Directors.

William Von Elm, E. A. Laboratories, Brooklyn, N. Y.
Ivan Goodrich, Goodrich-Lenhart Manufacturing Co., Hamburg, Pa.
E. R. Waterman, Edward V. Hartford, Inc., Jersey City, N. J.
S. A. Fulton, The Fulton Co., Milwaukee, Wis.
Charles Stahl, Connecticut Telephone & Electric Co., Meriden, Conn.
Robert Weinstock, Weinstock-Nichols Co., San Francisco, Cal.
C. R. Churchill, Electric Appliance Co., New Orleans, La.
L. A. Cavanaugh, Motor Car Supply Co., Calgary, Conn.
Earl Reynolds, Tacoma, Wash.
R. R. Engelhart, Sieg Co., Davenport, Ia.

Some of the work accomplished by the standardization committee was among the important features of the convention. This committee met on Monday, in accordance with the scheduled programme. Those in attendance were: Chairman,

Multibestos Line Shown by Standard Woven Fabric Co., Walpole, Mass.

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Full Line of Accessories Exhibited at Headquarters of Fulton Co., Automotive Equipment Manufacturer.

F R. Hall, Ohio; vice chairman, William Von Elm, New York; C. L. Wheeler, Utah; W. B. Dean, Michigan; F. H. Suter, Wisconsin; W. F. Parker, Ohio.

The first matter was the consideration of unfinished business passed along by the preceding committee. It was decided that in order to accomplish the maximum amount of good to the association and its members the standardization committee should formulate an entirely new method of procedure, using as a basic idea the building of a set of standards which would not only be of value to the association of today, but which would lend themselves to expansion and be the basis of future standards which might be adopted from time to time.

With this thought in mind the committee divided itself into two groups, which were to study the various phases of a programme which would fill the needs of the association. It was unanimously voted to submit to the convention recommendation pertaining to the work of the standardization committee and to the issuance of a permanent record book to be known as the "Hand Book" of the Automotive Equipment association.

It was recommended that any member of the association desiring a hearing on a matter of standardization should seek the chairman of the sub-committee under which his question might properly come, and make arrangements that the question be brought up for discussion at the next regular meeting of the sub-committee.

The standardization committee will discuss and act upon all matters of a standardization nature and all standard practise and all recommended practise as handed on to it by sub-committees. All practises voted on favorably by the standardization committee will be passed on to the board of governors for their consideration, and then to the general assembly for their consideration.

All standard practise and all recommended practise adopted by the general assembly will at once be sent out to all members of the association, and said practise will become a part of the hand book of the Automotive Equipment association.

Hand Book Is Outlined.

This hand book will consist of a loose leaf binder which will be furnished the members at cost by the association. Filler sheets will be furnished each member of the association by the association without charge, and will contain information as follows:

List of officers and board of governors.

List of member companies; their delegates and alternates.

List of member companies and their corresponding secretaries.

List of standing committees and their personnel.

List of sub-committees with their chairman, vice chairman and secretary.

A description of the method of operation of all committees.

The constitution of the Automotive Equipment association.

By-laws of the Automotive Equipment association.

Introduction to the book of standard and recommended practise .

List of standard classifications.

Each binder will contain a full set of index sheets showing standard classifications under which the standard practise and the recommended practise sheets shall be filed as a matter of permanent record and information.

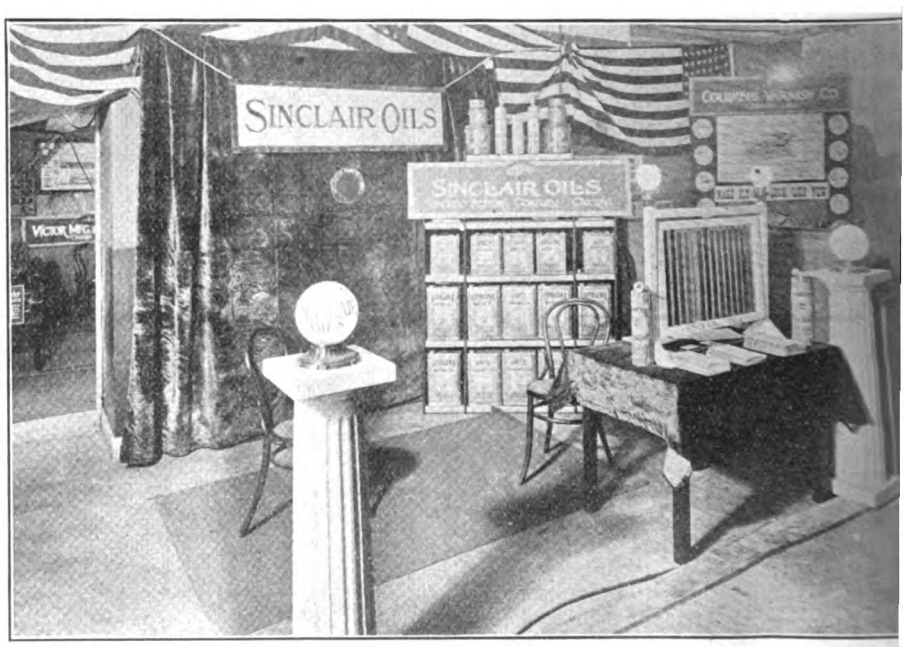
Each of the classifications as above enumerated will have a temporary chairman appointed by the standardization committee. It will be the duty of the temporary chairman to organize the members of his sub-committee, and duly elect a permanent chairman, vice chairman and secretary.

LIST OF CLASSIFICATIONS.

It was recommended that the manufacturers now members of the association be classified under the headings as given.

Group

1 Tire accessories, patches, reliners, etc.
2 Non-skid devices.
3 Lamps, bulbs, etc.
4 Ignition, spark plugs, etc.
5 Batteries and battery supplies.
6 Tire covers and fabric goods.
7 Bumpers, shock absorbers, etc.
8 Chemicals, canned goods, etc.
9 Oils and greases.
10 Metal goods, tool boxes, etc.
11 Gaskets, pipe fittings, etc.
12 Brake band linings, clutch facings, etc.
13 Welding outfits and supplies.
14 Shop equipment.
15 Tools and machinists' supplies.
16 Package goods, screws, nuts, bolts, etc.
17 Piston rings.
18 Cut-out outfits and supplies.
19 Repair parts for small cars.
20 Miscellaneous.



Simple but Effective Exhibit of Products of Sinclair Refining Co.

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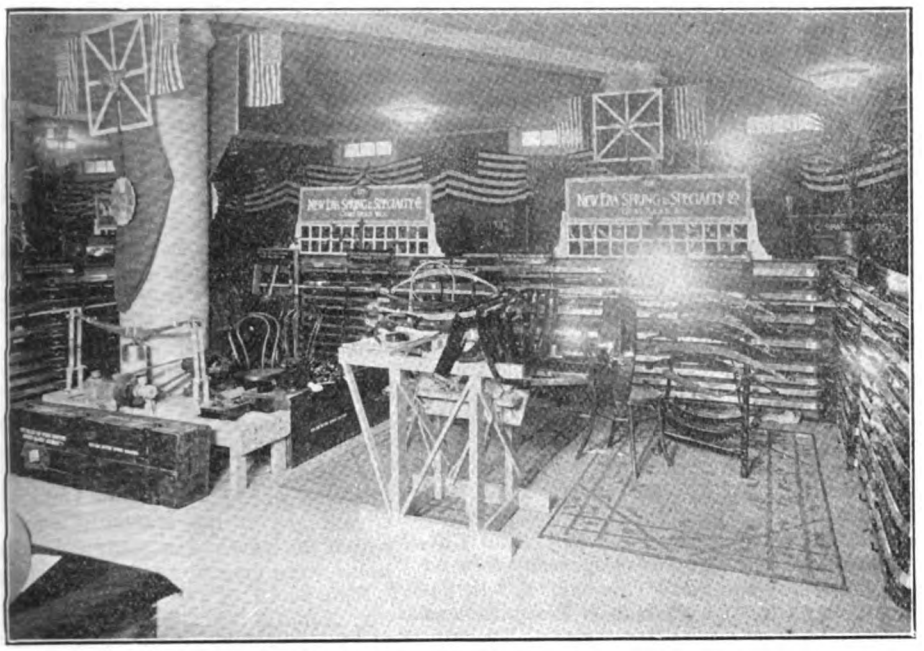


New Era Spring & Specialty Co. Specialized on Better Springs and Bumpers.

Description of Accessory Exhibits

The general scheme of the exhibits was to have them resemble as much as was possible a small store or office where *business* might be transacted with the same facility as if the exhibitor were in his own factory or jobbing headquarters. The result was that the jobbers and manufacturers got into close contact without any of the distractions prevalent at the ordinary motor car show, and real business resulted. The volume of orders booked far exceeded the most sanguine expectations of the exhibitors. One piston ring maker is reported to have sold more than 2,000,000 rings, and one metal goods specialty man received a single order amounting to $100,000. Another man said that it would have taken months of time and the expenditure of several thousand dollars to have gotten into touch with the prospects that voluntarily walked into his booth.

One of the primary objects of the exhibit was to permit the jobbers to get information for catalogues so they can be issued in January. Heretofore it has not been possible to compile catalogues until the jobbers have had a chance to see the lines offered by manufacturers at the New York and Chicago shows.

Walden-Worcester, Inc., had a very prominent position for its display of steel socket wrenches, and a full line was shown. The trade was greeted by L. H. Bellows, general manager; Charles A. Shedd, chief engineer; F. W. Bellows, sales manager, and L. H. Craig, Chicago; L. A. Raasch, San Francisco, and H. H. Stewart, New York. This company held a sales convention during the week which all of its salesmen attended.

As one entered the main entrance and turned to the right, the first exhibit was that of the Lockwood-Ash Motor Co., Jackson, Mich., with a display of its well-known Sterling spark plugs. A. L. Lockwood gave personal attention to all callers.

The exhibit of the Motor Specialties Co., Waltham, Mass., was in charge of George W. Boynton. A complete line of electrical fittings, switches, dash lamps, trouble lamps, valve grinders and other accessories was shown and the various products were nicely displayed.

D. R. Wallis had charge of the exhibit of the Splitdorf Electrical Co., Newark, N. J. This was a very attractive display and included a full line of Green Jacket spark plugs, electrical measuring instruments, ignition cable, magnetos, piston rings and the Master electrical primer. There were also a large number of dealers' helps shown in handsome cases, which were carefully studied by the trade.

A crowd could always be found at the booth of the Perkins-Campbell Co., Cincinnati, O., the well known manufacturer of seat covers, rain shields, tire covers, radiator and engine covers. M. Campbell, with several assistants, gave a hearty welcome to all visitors.

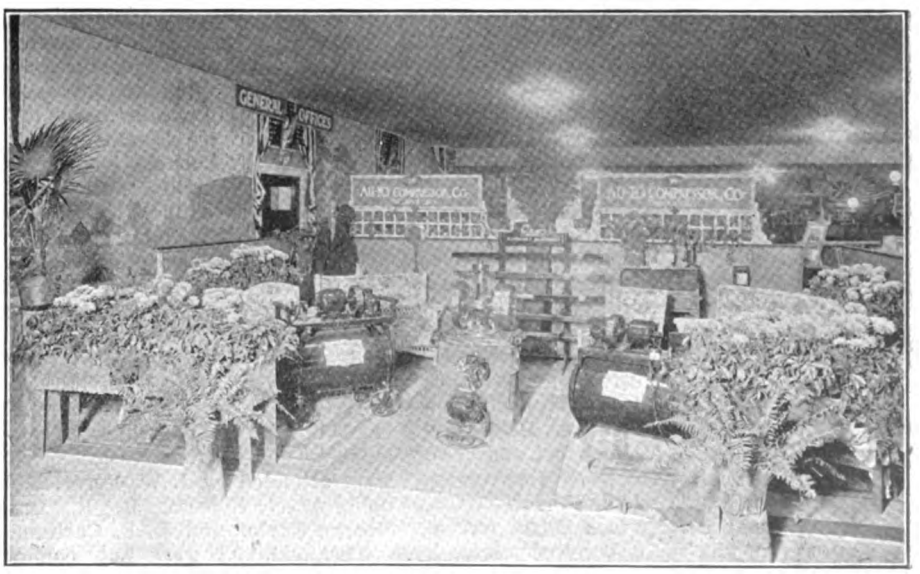
Gray & Davis, Inc., Boston, displayed a full line, special attention being given to the Ford starting, lighting and ignition system, which is stated to be composed of the same units as are used on high priced cars except for the difference in the matter of application. E. F. Wackweitz was in charge of the exhibit.

Smalley Daniels of the New Era Spring and Specialty Co., Grand Rapids, Mich., was busy greeting his legion of friends in the trade. A great interest was shown in the large display of "Better" spring bumpers, tire carriers and springs manufactured by this company. Mr. Daniels had the pleasure of introducing the trade to his son George, who will hereafter be connected with the company.

One of the most attractive booths at the show was that of the Au-To Compressor Co., Wilmington, O. Its line of air compressors for garages, connecting rods for Fords, together with the Oro combination wrench for spark plug and cylinder head bolts was very attractively displayed amid growing flowers in blossom. Big easy chairs were provided for the comfort of visitors, and the services of a stenographer were tendered. A. H. Kilburn was in charge of the booth.

The Northwestern Chemical Co. exhibited its entire line, making up a novel and interesting display. A Ford car was placed in the booth and from different parts of the car a ribbon was strung to cards showing how various repairs had been made by the use of the company's products. F. R. Hall was in charge. Following the show a meeting of all sales representatives was held at the plant at Marietta, O.

The Gardner Governor Co., Quincy, Ill., staged a complete exhibition of the eight models of air compressors manufactured for the garage trade. The booth was located just at the left of the entrance of the building and was one of the first to meet the eye. One of the features was the new two-stage type air compressor designed to give service without a fault. The following were in attendance: R. G. Gardner, C. A. Dickerson, L. R. Bremser, G. A. Wall, R. B. Sinnock and Walter B. Johnson.



Full Line of Au-To Compressor Co. Shown Embowered in Blossoming Plants.

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The Edgar C. Guthard Co., Chicago, had a main floor booth set in the path of the visitors in reaching the main exhibition room in the basement. The display clearly demonstrated the efficiency of the Master wrench. E. C. Guthard and Dan Cherrier of Chicago did the honors for visitors from their section. J. H. Cooper and H. E. Witherspoon to those from the East. Paul Barnard received those from the northwest and R. S. Longstaff from the Pacific coast.

Sioux Valve Grinding Tools.

Albertson & Co., Sioux City, Ia., was present with a complete line of Sioux valve grinding tools, so displayed that at a glance it was easy to see why the Sioux products are regarded as among those which have come to stay. The company was represented by O. Albertson, B. B. Weldon and C. H. Harper. Several additions to the Sioux line will soon be announced.

The Challoner Co., Oshkosh, Wis., presented a fine line of traction equipment. There is not a wheel made, it is said, that cannot be fitted with traction chains from the Challoner line. Among the company's experts in attendance were H. Osgood, Otto Kaufman, Carl Kennuman, R. Church, W. E. Clark and William H. Krug.

The Stiles-Gilliland Manufacturing Co., St. Louis, Mo., certainly covered its products in a manner worth noticing. The explosion whistle attracted a great deal of attention, as did also the practical fender straightener. The Liberty siren proved worthy of its name. J. Stiles, Samuel Braden and E. S. Carmack were kept busy booking orders.

Bumpers and Ford Specialties.

The Gemco Manufacturing Co., Milwaukee., Wis., displayed a full line of bumpers and Ford specialties. The booth was attended by G. H. Traveranus, H. A. Taylor, A. H. Tank, A. A. Lightfoot and F. N. Kentzinger.

While the booth of the Anderson Co., South Bend., Ind., was a little out of the way of the main traveled route, it was by no means overlooked. The Anco even heat manifold for Ford cars is well enough known to attract the attention of all who ever heard of a manifold, and the Anco timer and Anco double-duty ball thrust bearing were not at all slighted. The salient features were explained by A. B. Keasey, C. H. Wollcott, O. B. Zwietusch and B. C. Bremer.

The Van Cleef Brothers, Chicago, had its wares right in the heart of things. Over 100 different products of this concern were shown, which have become widely known. An attractive feature was the Van Cleef Dutch girl, so well known to automobile owner and trade, who was there in the life, wooden shoes and all. The representatives in charge included Felix Van Cleef, Maxime Van Cleef, Paul Acton, E. H. Meyers, R. M. Pardillo, Noah Van Cleef, Paul Van Cleef.

The Advance Felt Specialty and Cutting Co., Chicago, was represented in no uncertain manner. This line of felt, paper and leather gaskets is recognized as being in the fore front of such equipment. Orders were taken by J. F. Berthold and R. V. Hughes.

Attractive Dutch Girl Graced Well-Arranged Display of Van Cleef Brothers.

The Mayo-Skinner Manufacturing Co., Chicago, presented in a convincing manner, its line of air compressors, tire pumps, grease guns and garage equipment. The booth was in charge of Franklin Mayo, Howard Weakley, A. F. Cannon and T. F. Burns.

The Weaver Manufacturing Co., Springfield, Ill., made a fine display of garage equipment. With such a well known product no detailed description is necessary. The Weaver sales force, C. F. Hodgson, I. A. Weaver, Ralph Waldt, "Weaver" Jack Whaley, G. F. Coad and A. B. Crawford, were up to their eyes with business.

The H. W. Johns-Manville Co., New York, had a very extensive exhibit of band linings, speedometers, fire extinguishers and other accessories. Visitors were attended by J. W. Perry, E. E. Arnold, A. N. Slocum, R. R. Draggins, George Saylor and L. F. Carlton.

That exhibits were not confined to manufacturers in the northern states was manifested by the fact that the Interstate Electric Co, New Orleans, La., had on display its line of Steer Warm steering wheels, which if used on a Ford are heated from the magneto and on other cars from the battery. The business was booked by P. Stern, S. B. Corby and Charles F. Rhodes.

To see a full line of radiators, fenders and tool boxes for Ford cars, visitors had only to stop at the booth of the Corcoran Manufacturing Co., Cincinnati, O., where either W. R. Hughes, B. C. Pittenger or Martin Murray was pleased to show these accessories.

The Macbeth Lenses.

The Macbeth-Evans Glass Co., Pittsburgh, Pa., had a beautiful display of the Macbeth lenses. H. Parker and J. C. Chapline were glad to show the practical advantages of the Macbeth lamps with which the booth was equipped. Dealers' helps were also given a prominent place.

The booth of the Double Fabric Tire Co., Auburn, Ind., was in charge of F. D. Higgins, C. L. Stebbins and S. G. Biddle, who were pleased to show that company's line of tire accessories, including reliners, inside patches and Interlock inner tires. They report a good business.

At the booth of the Hawthorne Co. Bridgeport, Conn., the advantages of the Old Sol spot light were explained by Horace Hawthorne. This is well said to be the spot light that suits every purpose and every pocket book. This is also one of the companies that takes particular care of the dealer by furnishing dealers' helps. One of these was shown at the booth, consisting of the figure of a man on a standard pointing to an Old Sol spot light, and looked like a winner for either a counter or window display.

Air Principle Carburetion.

The Van Briggle Motor Device Co., Indianapolis, Ind., showed the air principle carburetors for Ford, Dodge and Maxwell cars, as well as shock absorbers for Ford cars and light delivery trucks. Here was also seen for the first time the Van Briggle shock absorber for Ford trucks. F. Moore, A. A. Dunlap, C. A. Taylor, A. Van Briggle, F. P. Wright, R. C. Hackett and C. G. Foswell were the salesmen in charge.

The one idea exemplified in the booth of the Brunner Manufacturing Co., Utica, N. Y., was comfort. In the center a handsome rug covered the floor. The furniture was rich willow, including easy chairs, lounges, etc., and while the visitors were enjoying a rest the company's line of air compressors was explained by T. L. Brunner, J. H. Meaham, A. B. Jenkins and A. F. Atherton. Here was made the first showing of the Brunner model No. 742 belted motor driven air compressor and the new 45 air cooled motor driven compressor, which has a capacity of five cubic feet and is especially designed for pneumatic truck tire inflation. Business was very brisk here throughout the show.

Complete Line of Accessories.

The Apco Manufacturing Co., Providence, R. I., showed at its booth a complete line of Ford accessories in which this company specializes, together with representative exhibits of the large st

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of general automotive supplies carried by this concern. The display was in charge of F. F. Wilson, C. H. McKeean, James D. McCauley, J. B. Wilson, G. A. Ashton and John Colley. By the throng constantly in line here it could be judged that many orders were being taken.

Special mention should be made of the splendid exhibit of the Frank Mossberg Co., Attleboro, Mass., which was in charge of Frank T. Chase and E. W. Scott. This company had on display a full line of wrenches and other tools, and the attention of the trade was especially drawn to the Mossberg speed socket wrench with heavy duty drawn steel socket. The showing also included a garage tool cabinet equipped with wrenches to fit every nut and screw on all passenger cars.

Rusco Transmissions.

The Russell Manufacturing Co., Middletown, Conn., manufacturers of the Rusco line of transmissions, brake linings and fan belts for Ford cars, was shown in an attractive booth in charge of M. J. Miley.

The Marvel Accessories Manufacturing Co., Cleveland, O., makers of steam vulcanizers, tail signal lights, valve grinders, windshield cleaners and tire chain tools, displayed its products in a beautiful electrically lighted display case. S. I. Rose was present to take orders for this line.

The National Standard Co., Niles, Mich., represented by R. W. Smith, displayed its line of Standard auto jacks, including a special jack for trucks having ball bearing features.

The Atwater Kent Manufacturing Co., Philadelphia, had a very tastefully decorated booth in which the trade was greeted by V. W. Collamore, W. J. Wheatly and S. A. McKenney. Among the features was the new Ford double unit, six-volt starting and lighting system, with Bendix drive and compound wound third brush generator for 1919-1920 Ford touring cars and roadsters, and the new type A. C. ignition system for all 1919-1920 Ford cars. This A. C. system is stated to be identical with that used as standard equipment on many foremost cars.

The Coe-Stapley Manufacturing Corporation, Bridgeport, Conn., had a very interesting exhibit of tire pumps, bicycle pumps, grease and oil guns, jacks and oil cups manufactured by this company. The representatives were George O'Donnell, president of the company; George C. John, C. L. Cagney and G. R. C. Cotten.

Brake and Clutch Linings.

The Standard Woven Fabric Co., Walpole, Mass., showed its complete line of brake and clutch linings. These were arranged in a manner so as to make a very attractive booth, and from the number of visitors it was evident that H. F. Collins, the Chicago manager, who was in charge, was doing business. The exhibit included a novel dealers' help in the form of an automatic policeman calling attention to the advertising slogans of the company, "Stop on Multibestos," and "Start on Multibestos," which is to be used in connection with window displays.

The Arrow Grip Manufacturing Co., Glens Falls, N. Y., had on display its Arrow grip traction and skid chain, also the Arrow grip roller base jack. E. G. Martin was kept busy showing these products.

The Auto Metal Parts Co., Des Moines, Ia., displayed a part of its line of radiator shutters. The exhibit attracted considerable attention and many good sized orders were said to have been booked. The shutters shown were adapted for Saxon, Nash, Ford and Maxwell cars. Those in charge were T. A. Messenger and J. E. Messenger.

The Inland Machine Works, St. Louis, Mo., had on view a full line of Inland piston rings. A representative list of salesmen were present, consisting of F. C. Bauer, L. T. Breck, A. Koenig, J. C. Clifford, R. C. Greenwall and W. R. Lick.

The booth of the Sinclair Refining Co. was located at the corner of the main exhibit room, where it could not be missed. The well known line of Sinclair oil products was shown, the points in favor of which were pointed out by W. L. Osborne, staff engineer, and George T. Briggs, manager.

Novel Feature of Northwestern Chemical Co.'s Booth, Showing How Repairs Are Made on Ford Car.

Shaler Line of Vulcanizers.

The C. A. Shaler Co., Waupun, Wis., had on display the entire Shaler line of vulcanizers. Practical talks to the repair man were the order of the day here if needed and every effort was made to demonstrate that the Shaler line fitted in with every condition to be met with. The booth was attended by five representatives, as follows: R. M. Dunlap, R. E. Malone, F. O. True, W. K. Melcher and E. B. Carroll.

The Howe Lamp and Manufacturing Co., Chicago, showed a representative line of spot lamps and the new Howe Ford timer was featured. This display was in the hands of Bert G. Cochrane, "Happy" Rhodes, Norman Cowan, Ray Cavanaugh, Joseph St. Mars, W. L. Hirsig and Charles Faucette.

At the booth of the B & W Manufacturing Co., Chicago, a complete line of radiators was exhibited, including such models as the Ford, Dodge, Maxwell, Chevrolet, etc. President S. D. Briggs and Sales Engineer R. H. Cory of the company were in attendance.

The Metal Specialties Manufacturing Co., Chicago, displayed its complete line of electrical supplies for the car, including switches, plugs, electric connections and electric cigar lighters. The booth was in charge of L. M. Golder, N. H. Oliver, Ben Steinberg and L. M. Clifford.

The Atlas Specialty Manufacturing Co., Chicago, had on display a full line of fabric goods such as radiator covers, tool bags, etc. Those in charge were C. J. Wallheim, W. Graham and W. C. Mueller.

The Curtis Pneumatic Machinery Co., St. Louis, Mo., was busy demonstrating the Curtis air compressor. Two new models were seen at this show for the first time at any exhibition. These were the trade style V, which is belted or geared, and the style Y, a small portable ¼ horsepower outfit especially designed for private garages or small public stations. L. C. Blake was in charge.

Titan Spark Plug.

At the booth of the Champion Ignition Co., Flint, Mich., W. S. Isherwood, sales manager, and a corps of assistants were kept busy telling about the merits of the A. C. Titan spark plug. This booth had an attraction for jobbers from all sections.

E. Edelmann & Co., Chicago, had a display that needed no outside advertising to attract attention to it, and the products on exhibition were a real invitation to the buyer. The popularity of the Han-D line of automobile tools was undisputed. Those in charge were E. Edelmann, B. Koral, M. Levit, H. R. Andariese and P. E. J. Palmer.

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Exhibitors Are Enthusiastic Over Success

Prominent Accessory Makers Comment on Benefits Derived from Accessory Show and Demand Continuance of Exhibit Feature.

The Get-Together Spirit.

This show has been a revelation to me and I can truthfully say that I had never expected to witness an event so productive of those things for which a show of this character is intended. It is really wonderful.

We are so in the habit of regarding a trade show as a conglomeration of things and attended by so many with conflicting interests that we expect only to be able to display our line and perhaps get enough business to cover our expenses, together with the uncertain publicity value. You can see for yourself by this bunch of orders the quantity of goods we have actually sold.

Comfort Was the Idea Exemplified at the Luxurious Headquarters of the Brunner Manufacturing Co.

The success of this exhibition is founded on a thorough understanding as to the requirements of the automotive equipment industry.

This is the time of the year the jobber or dealer is sitting back and regarding next year's business. In the past he has been forced to get his view through the eyes of the manufacturer's catalogue or the salesmen who called on him. He never had a chance to decide his questions or select his lines entirely free from the worries of other matters. Here he has found a complete display of not one line, but of several, and is free to make his choice of the one best suited to his needs.

From the jobber's standpoint he is able to get in contact with men who can best give him ideas as to his future policies, and at a time when he wants to get together facts and figures. His next year's catalogue is staring him in the face and through this show he is able to get items and information in proper order and material with which to prepare his catalogue in a clear and concise manner.

There are hundreds of reasons why this show is a success, but to my way of thinking the most important is that we are all here with the right kind of a get-together spirit and can talk business in a businesslike manner with no outside influence to interfere with our better judgment.

Never has the industry known such a gathering of those strictly in the trade. The register will show every state in the Union represented. The attendance is far beyond the expectations of everyone concerned.

O. P. HAND, President.

Burd High Compression Ring Co., Rockford, Ill.

Created an Enormous Interest.

In my opinion this Automotive Equipment association show has created an enormous interest on the part of the jobbing houses of the country, as is evidenced by the fact that all jobbing houses are represented here by their purchasing agents, who carry their order books with them. This shows that they visited the show intending to place orders. The fact that the show is held in early November is a great benefit not only to the jobber, but to the dealer and autoist as well, as they are fully advised of the new lines and improvements before the touring season begins.

Manufacturers have certainly found a new interest in shows of this kind because 100 per cent. of the attendance is of those actually interested in accessories. Past experiences of attempting to satisfy catalogue hunters and souvenir seekers is avoided. There is no reason why a similar show each season should not become a permanent feature of the industry.

J. H. COOPER,
Edgar C. Guthard Co., Chicago.

An Overwhelming Success.

I think the show is a great success, in fact an overwhelming success. It has brought the manufacturer in touch with the jobber and dealer at the season when they are thinking of buying.

The accessory business today is so large that it should be handled in an independent way rather than in connection with the automobile show. At this show we have been able to meet the trade from all sections of the country, and all are very optimistic as to future business.

A. H. KILBURN,
Au-To Compressor Co., Wilmington, O.

One Hundred Per Cent. Good.

The best way to express the result and benefits of this exhibit is that it i 100 per cent. good any way you look a it. Never since the beginning of the au tomobile industry, and I have attende prominent shows, have the manufactu er, jobber and dealer been able to get s close together as at this exhibit. No sid attractions to interfere. Nothing bu business, business, business. I can sa without fear of contradiction that t showing of automobile accessories h been so successful as the present on Every manufacturer who is showing h line here has met jobbers and deale from all over the country, who can with the express purpose of buying. I e pect to see the future exhibits held connection with the Automotive Equ ment association meetings much larg than the present one.

SMALLEY DANIELS, Pa
New Era Spring and Specialty Co., Gra Rapids, Mich.

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Exhibition Most Successful.

This exhibition was beyond question the most successful ever organized by manufacturers of automotive equipment. The attendance included jobbers and dealers from all sections of the country. It was particularly noticeable for the attendance not only of principals, but their buyers and catalogue men. A real business show at the proper time of the year to enable the jobber to collect information and decide on his line for 1920. Every person attending was extremely enthusiastic about the show and optimistic regarding 1920 business.

The show is bound to become a permanent feature and the 1920 exhibit will be larger and better.

W. S. BELLOWS,
General Manager Walden-Worcester, Inc., Worcester, Mass.

A Business Show for Business Men.

I consider this show to be a business show for business men. The accessory business has gotten to the point where it is one of the big businesses of the country and, while allied with the car industry, has grown to such proportions that there is no more necessity for an accessory manufacturer to show at an automobile show than for a hardware jobber to do so except that an exhibit at the regular auto shows is perhaps good advertising. This show has cemented the business relations of the jobber and manufacturer as nothing has ever done before.

S. L. ROSE,
Marvel Accessories Co., Cleveland, O.

Unison of Purpose the Watchword.

The reasons why the first annual exhibit of the Automotive Equipment association is a success can be stated in few words. We are all here. We all know why we are here. We intend to do those things for which we are here. These things in combination with the fact that all concerned are left free from the excitement attending other interests not concerned with their particular business are what make this show a complete show from every standpoint.

I was walking around today looking at the various badges worn by the men in this room. Every part of the country was represented by at least one man. The East and West, the North and the South met with but one idea. Carrying on business as a unit was the watchword and when you come down to facts you can't beat the positive unison of purpose as evidenced at this gathering.

Buyers and sellers, makers and distributors, are meeting one another face to face and finding that each has his own troubles and in meeting, the result is found to be beneficial to every one of us.

Jobbers are finding that retailers are anxious to establish firmer relations with them and manufacturers are learning that the jobber is struggling for the same ideals that he thought he was the only one that cared a darn about.

The result of this exhibition will be the greatest development seen in years and I predict that other industries will take a page from the history of this affair to guide them in their future meetings.

This show is already a success. It was bound to be. Watch next year and you will see this event will be at least twice the size of this show and the attendance will surely be several times as great.

You ask why is this exhibition a success. I ask you, in return, how could it help but be? Every purpose of such an occasion is certainly met.

G. L. BRUNNER,
Brunner Manufacturing Co., Utica, N. Y.

An Ideal Exhibit.

Keeping pace with the 20th century idea of better methods and economical merchandising ideas, the accessory exhibit held by the Automotive Equipment association in Chicago the week of Nov. 3 has thoroughly demonstrated its superiority over anything so far presented to fill this bill.

It is my honest belief that it is the right method, according to all methods, up to the present time, that have been put before the automobile accessory trade of the world.

First—The exhibits were instructive and made for business pure and simple.

Second—They were attended only by people actually interested, leaving out sight seers and souvenir hunters.

Third—It was possible for jobbers to obtain all ideas for the following year's business, as the exhibit was instructive and came just before the new catalogues were to be compiled and printed.

Fourth—The attendance was by heads of firms, their buyers and purchasing agents and their sales managers.

Fifth—The economical way for a manufacturer to place his goods before the jobbing trade, for with one exhibit and one expense, the whole trade could be instructed. This also applied to the jobbers.

Summing this all up, from expressions received from numbers who were consulted, this exhibit was a great success from the start to the finish. It was a show that we have all been looking forward to. The results produced simply depended upon the individual manufacturer and the comparative merits of his products and sales policy.

S. W. HANNA,
Columbus Varnish Co., Columbus, O.

Strictly for Business.

In my opinion, the first business show of the Automotive Equipment association was a huge success. There were few, if any persons in the big crowd attending the show who were not there strictly for business. Every jobber present seemed intent on making the most of the opportunity to get acquainted with the various manufacturers and the goods.

Certainly we have no cause to complain. The Victor Co. closed enough actual business to pay for the time and trouble of arranging the exhibit many times over. I believe many accessory manufacturers who were not represented this year realize that they made a mistake and that the show next year will be even more of a success.

A. C. DELSON,
Sales and Advertising Manager, Victor Manufacturing and Gasket Co., Chicago.

Attractive Booth of Motor Specialties Co., Waltham, Mass., at Automotive Equipment Exhibit at Chicago, Ill.

Biggest Thing in Automotive Industry.

If I started to tell you of all the good things I could say about the A. E. A. show in Chicago, it would fill a good sized book, but I will say that from every standpoint it is the most successful show that I have ever attended and the A. E. A. should be given credit for putting over the biggest thing in the automotive industry.

THOMAS F. WILSON,
President Apco Manufacturing Co., Providence, R. I.

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Some Opinions as to Trade Prospects for Season of 1920

The outlook for 1920 is exceedingly bright. Manufacturers are placing heavy specifications for the 1920 season, and the demand for all styles and sizes of automobile cables is increasing. We are running full capacity at the present time, and are planning to increase our present facilities in order to take care of the further demand for 1920, which we feel that we can reasonably expect during the early months of next year.

On the whole we believe that 1920 will be a banner year for the automobile industry in general, provided there is no serious tie-up in raw material.

N. A. WOLCOTT,
President Packard Electric Co., Warren, O.

NEW MEMBERS.

Jobbers.

Alsten-Goulding Co., Worcester, Mass.

American Motor Equipment Co., Boston, Mass.

Chapin-Owen Co., Rochester, N. Y.

Horton-Gallo-Creamer Co., New Haven, Conn.

Ko-Mo Supply Co., Inc., Charlotte, N. C.

LaMontagne, Ltd., Montreal, Canada.

Ozark Motor & Supply Co., Springfield, Mo.

Roper, Harris & Dunn Co., Greenville, Tex.

W. H. Rowerdink & Son, Rochester, N. Y.

Rudolph & West Co., Washington, D. C.

Severin Tire & Supply Co., Oklahoma City, Okla.

Spaulding Supply Co., Aberdeen, S. D.

Texas Auto Supply Co., Fort Worth, Tex.

Manufacturers.

American Hammered Piston Ring Co., Baltimore, Md.

Boyce-Veeder Corp., Long Island City, N. Y.

Continental Auto Parts Co., Columbus, Ind.

Elite Manufacturing Co., Ashland, O.

Keystone Reamer & Tool Co., Millersburg, Pa.

McCandless Miniature Lamp Works, New York, N. Y.

Manley Manufacturing Co., York, Pa.

Midwest Manufacturing Co., Minneapolis, Minn.

Polson Rubber Co., Cleveland, O.

Sidel-Rattner Manufacturing Co., Brooklyn, N. Y.

Templeton, Kenley & Co., Chicago, Ill.

Universal Tool Co., Detroit, Mich.

WILLIAM M. WEBSTER.
Commissioner of the Automotive Equipment Association.

Outlook Is Excellent.

We are pleased to advise that our company started to market one item in 1915. We adopted a policy of advertising in the leading trade publications and sales to be handled through jobbers. We have since then added four items to our line, and we are now selling more than 500 jobbers in the United States, Canada and 23 foreign countries.

Basing our opinion on requests for catalogue matter and electrotypes from the jobbing trade we know that the year 1920 will be the greatest year in the history of our business. And we have based our contracts for raw material accordingly.

While there is a great deal of unrest at this time owing to labor conditions and which to a certain extent have hampered out production, we believe that the true American spirit will prevail, and that radicalism in both labor and capital circles will be crushed and that there will be a more thorough understanding by these two factors which enter into our unparalled prosperity.

J. F. SHUFORD,
President Shurnuff Manufacturing Co., St. Louis, Mo.

Glimpse of Booth of the Columbus Varnish Co.

Preparing for Enormous Business.

We wish to state that we are preparing for an enormous business in 1920. After having a great deal of trouble obtaining material for seat covers we found it necessary to purchase very large quantities to be able to get the patterns that we desired. For some time we hesitated about purchasing these enormous quantities, but after going over the field very carefully to see what the prospects were for 1920, we decided that we would not only purchase the amount of material that the mills wanted us to buy, but we doubled that amount.

Many people have figured that the automobile concerns would catch up on production along about the first of January, not figuring, however, the increased demand, and this company believes that the panics and a great many things of this kind that the people are predicting are entirely in the minds of the people without investigating to see what the real conditions are. Regardless of the so-called labor unrest and the fact that many statesmen are predicting panics on account of the extravagance of the people, business continues good and will continue good, and it is through the so-called extravagance of the people that these times of prosperity will continue.

The idea that history will repeat itself and panics will follow the war as in the past, does not in the least frighten this company in regard to the season of 1920 or even 1921. We are preparing for a very large business and believe that it will be here.

M. D. CAMPBELL, Sales Manager.
Perkins-Campbell Co., Cincinnati, O.

COMMITTEE OF ARRANGEMENTS.

William M. Webster, Commissioner, Automotive Equipment Association.

Chairman, L. P. Halladay, L. P. Halladay Co., Streator, Ill.

W. K. Norris, President, McQuay-Norris Co., St. Louis, Mo.

George L. Brunner, President, Brunner Manufacturing Co., Utica, N. Y.

F. B. Caswell, Sales Manager, Champion Spark Plug Co., Toledo, O.

R. R. Engelhart, President, Sieg Co., Davenport, Ia.

Anticipate Big Trade.

We anticipate a very large volume of trade for 1920. We have improved our models and also created some new designs and our trade is more favorable to our line of production than ever before inasmuch as we have given our jobbers every protection and also conduct a very efficient service department to take care of all repairs and parts for our lamps required by our jobbers.

HORACE HAWTHORNE,
The Hawthorne Co., Bridgeport, Conn.

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Brief Comments on Annual Equipment Show

Beyond my fondest hopes.—Von Elm, E. A. Laboratories.

A huge success.—Perry, Johns-Manville Co.

Keep me space for next year.—Shuford, Shurnuff Manufacturing Co.

Never thought it could be done so successfully.—Sacks, Pennsylvania Piston Ring Co.

A success beyond expression.—Safford, McQuay-Norris Manufacturing Co.

Never did so much business at a show.—Harlem, Judd & Leland Manufacturing Co.

Success don't half express it.—Wissler, Herring Motor Co.

Put me down for space three times as large for next year.—Koral, Edelmann & Co.

A long felt want in the accessory and equipment line—we are highly gratified.—Caswell, Champion Spark Plug Co.

I'll never miss one of these shows—but more space next time please.—Carlisle, Atwater Kent Manufacturing Co.

Pleased? Yes, indeed, and I was one of those on the stage.—Patterson, Warner-Patterson Co.

It seems like a dream—I'm afraid I'll wake up; pleased? Yes, highly satisfied.—Crabill, Central Brass & Fixture Co.

The Canadian manufacturers who are not here are surely missing it.—MacWilliam, Hyslop Bros.

A great credit to this association.—J. Ernest Millen, John Millen & Son.

If I had not been here to see it I could never have believed it.—Walter Chanslor, Chanslor & Lyon Co.

This will go down in history as one of the best shows and the grandest success ever.—McGauley, Peters & Herron Co.

This will make the association stand out like the Rock of Gibraltar.—Auger, McCoy Motor Supply Co.

This should be an incentive for every jobber and manufacturer worth while to get into this association.—Weinstock, Weinstock-Nichols Co.

A splendid success—perfectly wonderful.—Bloch, Gibson Co.

A good show, well staged, good attendance and what's better, results.—Campbell, Perkins-Campbell Co.

I wouldn't have missed it for anything.—Hennecke, Moto-Meter Co.

We gave up half of our space and at that did twice as much business as we expected.—Heineke, Halladay Co.

I don't know to whom the credit is due, but it is due somebody, for it was the finest from every point of view and we are pleased beyond expression.—Isherwood, Champion Ignition Co.

A success? Well I would say so—just leave it to this grand association to do things.—Low, Electric Appliance Co.

I am highly pleased as I believe every one else is.—Oliver, Metal Specialists Manufacturing Co.

Both as a manufacturer and a jobber, I can say the best ever.—Stern, Interstate Electric Co.

Everyone should feel proud of it—I know we Canadians do.—Hopkins, Canadian Fairbanks Co.

The manufacturer that is not in this show surely misses it.—Smith, Pennsylvania R. & S. Co.

More space and bigger quarters next time, please.—Sutherland, Splitdorf Electric Co.

Almost beyond human conception.—Reinhard, Reinhard Bros.

If there was anything left undone it will be cared for in the next—but it was a howling success from every angle.—Wright, Ballou & Wright.

Did more business than at any other show.—Knight, J. & B. Manufacturing Co.

At that the jobber knows how to buy and when to issue his catalogue.—Suter, Shadbolt & Boyd Iron Co.

A money and time saver and an educational event.—Ramey, American Ever-ready Works.

The biggest and best ever staged.—Bouthinon, Spencer Metal Products Co.

Have never heard so much satisfaction expressed before.—Hodgson, Weaver Manufacturing Co.

Now for more space and a larger hall.—Fulton, Fulton Co.

To use talking, it went over big.—Stiles, Stiles, Gilliland Manufacturing Co.

We are more than satisfied.—Laidlaw, Dayton Wire Wheel Co.

The whole crowd was just feeding up on enthusiasm all the time.—Chase, Frank Mossberg Co.

When the history of this association is written, this show will stand out most eminently as one of its greatest achievements.—Jackson, Jackson Motor S. Co.

ADVANCE IN CRUDE OIL.

An increase of 25 cents a barrel in the price of Mid-Continent and Texas crude oil has just become effective, bringing the price up to $2.50 a barrel, the highest price that has ever been recorded for this product. There was recently announced a rise in the price of Pennsylvania crude, but this is the first advance in Mid-West and Texas for more than a year.

It has been realized in the oil industry for some time that the production of high grade oils was far below the demand, and there have been frequent rumors that the price would be advanced in all the producing areas. Estimates place the increase in production at 1,000,000 barrels a month, while the foreign and domestic demand is racing forward at the rate of about 4,000,000 barrels monthly.

During the war the price was kept down by strict government regulation, but now the law of supply and demand is having full sway. One factor in the advance is said to be the increased cost of drilling wells, which is estimated to have been some 50 per cent. during the year, but in that time, until very recently, the price of the oil had not advanced.

It was pointed out recently by an oil man that gasoline was one of the few commodities which had not increased in price.

BIGGEST LONDON SHOW

WITH more than 200 makes of automobiles exhibited, the 13th annual automobile show at the Olympia in London proved the biggest ever held there. Automobile representatives from all parts of the world attended. Few freak machines were shown. The exhibits included vertical fours, sixes and eights; water and air cooled horizontals and two-cylindered liliputian replicas of the monster aerial statics.

The turning of several former ammunition plants into automobile factories resulted in many new cars. As twice as many applicants desired space as could be accommodated, it was decided to hold the show in two separate sections, so that all could display their products.

The chief exhibits included the Crossley, Austin, Belsize, Douglas, Daimler, Rover, Rolls-Royce, Standard, Singer, Sunbeam, Star, Vauxhall and Napier.

The lowest priced car shown was a two-cylindered machine selling for $575. The Napier was higher priced than any before offered by a British firm, the chassis price being $7280. The 50 horsepower Rolls-Royce chassis was priced at $6552. A 10 horsepower Enfield selling at $1500 was exhibited.

NEW FACTORY FOR TIMERS.

What is believed to be one of the largest buildings in the country devoted exclusively to the manufacture of timers for Ford cars has just been erected at Sandwich, Mass., by the McCulloch Manufacturing Co. This new plant is located on the Cape Cod canal, and has a floor space of over 15,000 square feet. The McCulloch timer is practically a new product in the tire accessory field, having been originally housed at 216 High street, Boston. These quarters soon became too small and the building at Sandwich was planned.

The executive offices of the company will be located in Boston where, in charge of A. P. McCulloch, president and general manager, other McCulloch products will be made. The Sandwich plant, which will devote itself exclusively to the Ford timer, will be under the supervision of W. L. Ross, vice president.

The McCulloch Manufacturing Co. specializes in Ford ignition, and in addition to the timer is making the McCulloch timer grinder and wipe contact.

PACKARD'S QUARTERLY DIVIDEND.

The Packard Motor Co., Detroit, has declared its regular quarterly dividend of 1¾ per cent. on the preferred stock, payable Dec. 15.

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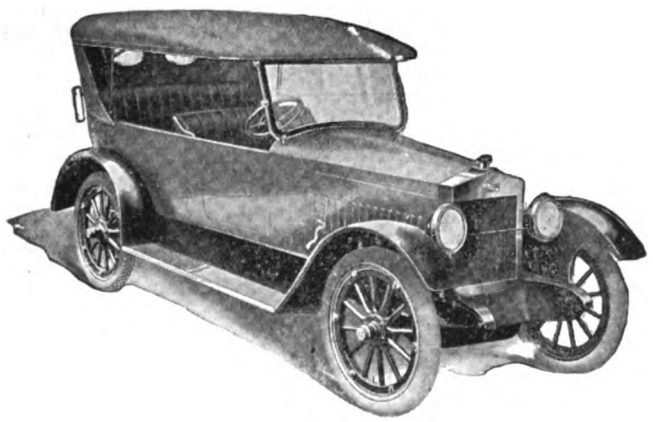
TO ATTEMPT to satisfy the local and domestic market is a problem that constantly faces the motor vehicle manufacturer and one that necessitates constant study of all phases of the situation. How much more difficult then is the situation which faces the American manufacturer of a car which he expects to market and have operate with satisfaction in foreign countries. Then there is to be considered not only the choice of the foreign buyer in the matters of general design and color scheme, but the various operating conditions to be met with, the rules of the road requiring in general the control of the car from the opposite side to that common in America, road clearances, the grade of gasoline possible to secure, the type and design of parts that will give the utmost service in the hands of the average foreign user,



The New Alsace Export Car.

his ability to get parts and renewals, the sort of top material that will withstand alike the rains of the gold coast and the tropic sun of the Sahara, and the matter of designing the car for easy and safe shipment in the smallest possible number of cubic feet.

This problem of the export automobile has been approached by the Automotive Products Corporation, New York, with a complete understanding of the many problems involved and a thorough grasp of American manufacturing methods and processes and the possibilities of achievement in design and equipment, and it now announces the Alsace, a car produced exclusively for export sale. It has collaborated in the design and controls the entire production of this vehicle, which is built entirely from standard American parts, readily obtainable at all major distributing points throughout the globe, and in its ensemble presents a design which is pleasing to the critical foreign buyer and will render long and efficient service whether on the boulevards of Paris or the veldts of the Transvaal.

This car is to be sold only through large and well established foreign distributors at strategic trade centers, and the fact that advance orders have already been booked for several hundred cars even before the appearance of the descriptive literature, indicates the confidence placed in the organization and equipment of the Automotive Products Corporation, which is an allied corporation of the well known American Steel Export Co.

The brief specifications of the Alsace car follow: Motor, Herschell-Spillman, four-cylinder, 3½ by five inch; lubrication, force feed and splash; cooling, thermo syphon; radiator, honeycomb, large area, Rolls-Royce type, nickel silver shell; clutch, Borg & Beck; carburetor, Zenith; transmission, Grant-Lees, selective, three-speed; starting and lighting, Dyneto two-unit; ignition, Bosch magneto, water proof; battery, Philadelphia Diamond Grid six volts, 120 amperes; drive, Hotchkiss; axle, front, Standard Parts, I-beam; rear, Standard Parts full floating; brakes, service and emergency, each 14 by two-inch; wheels, wood artillery type; frame, five-inch, pressed steel; springs, semi-elliptic, front and rear; fenders, 10-inch, full crown; steering, Gemmer irreversible, right side drive; fuel system, Stewart vacuum; windshield, slanting and adjustable; wheelbase, 116 inches; tread, 56 inches; tires, 32 by four-inch, non-skid rear, plain front, Fisk or Goodrich; body, five-passenger, straight line, one-man top, best leatheroid upholstery; finish, radiator shell, nickel silver, fenders, splash pans and shields, black enamel, body, Rolls-Royce blue, deep red or cobalt blue; weight, 2600 pounds; price, $1485 list, f. o. b. factory, Philadelphia.

Calcutta, India, has more motor cars on its streets than any other kind of vehicle.

TRADE OPPORTUNITIES.

31,143—A commercial agent in France desires to secure an agency for the sale of sewing machines, bicycles, automobiles and bicycle supplies, tires, etc. Correspondence should be in French.

31,277—A firm in Spain desires to purchase and secure an agency for the sale of automobile accessories. Correspondence should be in Spanish. References.

31,279—The partner of a firm in Uruguay will shortly arrive in the United States and desires to secure agencies for the sale of textiles, industrial chemicals, medicinal and industrial oils, electric lighting plants for farms, pianos and five and seven-passenger automobiles, one at $1400 and one at $2200. Quotations should be given c. i. f. Montevideo. Correspondence may be in English. References.

31,282—An engineer in Lettland desires to secure the representation of exporters of agricultural machinery and tools, automobiles, fire clay materials, retorts and fire stones (sketches are requested); and also an agency for the sale of lard. Correspondence may be in English.

31,296—An American firm having a branch office in India desires to secure an agency for sale in that country of medium priced automobiles. References.

31,298—An agency is desired by a man in Brazil for the sale of rubber tires and all kinds of mechanical rubber goods. References.

31,302—An agency is desired by a man in Norway for the sale of a medium priced automobile. Reference.

31,336—A dealer in oil in one of the Baltic provinces desires to secure the representation of exporters for the sale of lubricating oils. Correspondence may be in English.

31,350—An agency is desired by a man in Egypt for the sale of light low price motor cars. Quotations should be given f. i. b. Alexandria. Payment, cash on arrival. References.

31,285—A commercial agent from England is in the United States and desires to secure an agency for the sale of hardware, roller skates, household appliances, tools and automobile accessories. References.

31,266—A firm in India desires to be placed in touch with exporters of general merchandise, motor cars, motorcycles and motor accessories are requested. References.

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New Haven, Conn.—The Fuller Storage Battery Co. of 100 Ann street has bought from Samuel A. Lewis the Orange Street Garage at the corner of Grove and Orange streets, the price be ing understood to be about $65,000. The building, which is at present one story in height, will be enlarged next year by the addition of two stories. The Fuller company intends to conduct a tire and repair business in addition to its battery and electrical equipment lines. The second and third floors will be devoted to the storage of automobiles. The president of the Fuller Storage Battery Co. is Sherman A. Fuller, formerly with the Hartford Electric Light Co., and the treasurer is John E. Bolger, a former newspaper man.

North Tonawanda, N. Y.—The Herschell-Spillman Motor Co. has plans under way for the construction of a four-story addition to its plant. New machinery will be installed at a cost of $500,000, and the company will increase its working force to a total of over 1000, which will enable the company to reach an estimated output of $10,000,000 a year. Production will be devoted to four and six-cylinder motors.

Pittsburgh, Pa.—The Gearless Motor Corporation's new factory building, now under construction in East Liberty, will contain approximately 30,000 square feet of floor space, and it is expected that production of the Gearless Four 36 steam car will be begun in the new factory about the first of the year.

Goshen, Ind.—The Elastic Auto Body Co., Chicago, is arranging to manufacture its product, a combination body for Ford cars, in a section of the Goshen Buggy Top plant. The head of the concern is F. A. Wagoner, and he states that eventually the company will build its own plant.

Boston.—The United Motors Service, Inc., has added to its activities official factory service on Harrison radiators at its Boston branch, 19-23 Jersey street. This product is made by the Harrison Radiator Corporation, Lockport, N. Y., and is a fitting addition to the service that the United Motors is giving on Delco, Remy and Klaxon equipped cars.

Buffalo, N. Y.—The Sentinel Motor Corporation plans to make alterations on its garage at a cost of $8000.

Philadelphia.—The Fanning-Mathis Co., Brown and Broad street, distributor for Marmon cars, has been reorganized, and the name changed to Fanning-Hatch Co. Colonel C. A. Hatch, late of the United States marine corps, has with others, bought out the interests of Senator T. A. Mathis of New Jersey. Colonel Hatch becomes vice president and treasurer, Frank J. Fanning is president and G. D. Armstrong secretary. On the board of directors is John Gribbel, formerly president of the Union League. The Fanning-Hatch Co. has decided to add the Hupmobile to its line of pleasure cars.

Cincinnati, O.—The Sayers & Scovill Co., a pioneer carriage manufacturer, has approved plans for the construction of an automobile assembling plant at Winton Place, a suburb that is being developed as a manufacturing center. The first section will afford 100,000 feet of floor space and it is planned to complete three units within two years. This is stated to be the first factory built here for the construction of passenger cars.

New York City.—The new show rooms for Automobile Delage, 128 West 58th street, opposite the Plaza hotel, have been opened after extensive alterations.

Indianapolis, Ind.—The Lafayette Motor Co. is to build an addition to its plant at Mars hill at an early date.

Brockton, Mass.—The garage operated by Fred O. Josslyn, 37 Martland avenue, was destroyed by fire Nov. 23, a lamp which was being used in vulcanizing an inner tube, setting fire to some waste. The loss was $800.

Jersey City, N. J.—The Hudson County Oakland Co., of which Edward Murphy is the head, will move from Bergen avenue into the new Buick building on Bergen square on its completion.

RIM MAKING A BIG INDUSTRY.

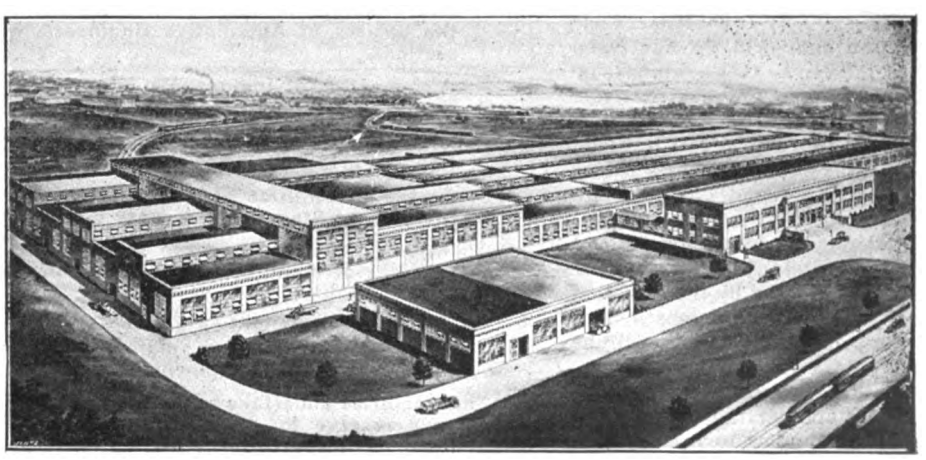
Ground was broken this month at Akron, O., for an additional $1,000,000 plant in the group of Firestone factories. The new plant will house the Firestone Steel Products Co., which annually produces approximately 1,250,000 demountable rims for pneumatic motor car tires and 65 per cent. of the steel bases used in the United States for solid truck tires.

In the new plant the company will have facilities the most modern and efficient obtainable. The main building will be 860 feet long and 250 feet wide. Advantage will be taken of every opportunity to give the workers light and ventilation. The machinery, from large traveling cranes to small riveting devices, will be of the most improved type.

Immediately in front of the main building will be a two-story office building, 170 feet long and 40 feet wide. It will be connected with the main building by covered bridges. A cafeteria for the entire factory force will be housed in the basement of the same building.

Rims manufactured by the company, all of which have been evolved by Firestone engineers, are: Type A a quick detachable, demountable rim; type B, a universal rim, used with either clincher or straight side tires; type C for straight side tires only, and type E a split rim for straight side tires.

Buffalo, N. Y.—The Stewart Motor Corporation has filed plans for the construction of a $10,000 building for an engine testing plant.



The New Plant of the Firestone Steel Products Co., Akron, O., as It Will Appear When Completed at a Cost of $1,000,000.

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Service Most Important Problem Industry Must Meet

Convention of Managers at Detroit Develops Need of Standardization, Through Factory and General Policies, and of Training Men for Motor Transport Corps Reserve.

Detroit, Nov. 12.—That service is the most important problem with which the automotive industry, and especially the manufacturers of trucks, must deal, is the conclusion of every person attending the convention of service managers, which closed a three-day session at the Hotel Statler today. The convention was organized by the National Automobile Chamber of Commerce and it was the largest gathering of the kind in the history of the industry.

More than ordinary interest attaches to the convention for a number of reasons, and the first of these is that without doubt a service or service manager's department will be developed by the National Automobile Chamber of Commerce, which body will retain jurisdiction, and suggestion was made that this establish sections in different sections of the country conveniently central to different enterprises, which will operate independently, with frequent meetings, at which pertinent subjects will be considered, the general plan being much the same as that of the Society of Automotive Engineers.

Annually or oftener there will be conventions which will be open to the industry, at which policies will be determined, subject to the approval of the N. A. C. C., and committees will be appointed which will formulate suggestions for service which will eventually be submitted to the chamber and to the different members for approval or rejection.

The meeting passed a resolution that will be addressed to the N. A. C. C., which suggested that the next convention be held at Indianapolis, after Detroit and Cleveland had been proposed as places for meeting, and while no date was stated there was general understanding that this would be determined by the chamber, or at least by the directors of that body. The locations of the different sections will be largely a matter of the desire of those eligible for membership wherever they are in sufficient number to organize.

The policy of the N. A. C. C., as st ted by General Manager Alfred Reeves, is to encourage the organization of service managers and the sentiment of the convention was that so far as possible service should be standardized to afford to the owners of power vehicles the largest measure of practical benefits. By this is meant that each company ought, because of its own interest, standardize its own service and for the benefit of the industry as a whole there should be recognition of a uniform or standard policy by all concerns engaged in the manufacture of power vehicles. This could best be proposed by a central body, which could obtain the ideas of the different companies, and crystalize these into what would in largest measure be most practical. With the large number of concerns operating in the industry determination of opinion with reference to a single policy could not be reached quickly, and dealing with a subject of this importance there was reason to give serious consideration from every aspect.

Report of Committee on Revision.

In this convention, however, there was nothing which will commit the N. A. C. C. At the opening a report was submitted by the committee of the chamber on standard repair parts and service policies, and this was followed with a series of papers on four principal topics, these being in sequence "General Service Policies," "Factory Service Organization," "Service Relations Between Factory and Dealers" and "Relations Between Distributors or Dealers and Customers." Generally speaking the subject of service was broadly dealt with. Regarding the proceedings of the convention as a basis for determination of policy one finds that there was one service department operating plan outlined, and that the other speakers dealt with details of department systems, all of sufficient importance to justify consideration.

Statement should be made that some of the companies have developed service departments that are the results of long experience and large investment, which function admirably, and whatever policy is determined could not consistently be in conflict with these. There is every reason, however, to demonstrate the value of such divisions and present the possibilities of a system.

Would Discontinue Free Repairs.

Without exception the speakers having occasion to deal with the subject, whether directly or in discussion, favored servicing owners to any reasonable degree and the discontinuance of making free repairs. By this is meant maintenance for a stipulated period. The convention was squarely against this, and the belief of some of the speakers was that if free repairing was discontinued there would be possibility of lessening the initial cost of vehicles, for something cannot be given for nothing, and now wherever repairs are made gratis, those who neglect their machines do so at the expense of those who do not, a condition that is so manifestly unreasonable that it cannot continue.

The convention was thoroughly representative and was attended by service managers from all sections of the country from Boston to Los Angeles, and in all 143 were registered as attending, these representing 100 different interests. These may be summarized as 42 car manufacturers, 21 truck manufacturers, 16 car and truck manufacturers, five engine and parts makers, one

PROPOSALS PRESENTED TO SERVICE MANAGERS' CONVENTION.

- Organization of a division of the National Automobile Chamber of Commerce, operating similar to the Society of Automotive Engineers, with local sections.
- Next convention at Indianapolis suggested by resolution to be submitted the N. A. C. C.
- Report of the Committee on Revision of Service and Repair Parts Policies of the N. A. C. C.
- Suggested substitution of Square Deal Warranty for the present Standard Warranty of the N. A. C. C.
- Abolition of free repairing and defining exact responsibilities of manufacturer, distributor, dealer and user.
- That factories standardize servicing and adopt system that will simplify maintenance of Motor Transport Corps equipment in emergent need.
- That factories undertake to train men to qualify them as a reserve for the quick development of the Motor Transport Corps for national defense or offense.

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tool maker, three dealers, four service organizations, one builder of fire apparatus, one exporting concern, the Motor Transport Corps and five trade publications.

Government Wants Industry's Cooperation.

The participation of the United States War Department as represented by the Motor Transport Corps, U. S. A., was with the object of determining the cooperation of the industry with the military establishment of the country so that a policy could be formulated and the resources of the nation accurately established. There were two primary objects, the one to learn so far as possible the manner of servicing of each company, so that the army in the event of need could obtain sufficient parts for the maintenance of its vehicles, and the other to determine to what degree it could rely upon the industry training men in their work so that they would be available should there be occasion to mobilize any considerable force.

Maj. R. A. Osmun, representing the Motor Transport Corps, outlined the purpose of that branch of the service to maintain four large schools where men could be trained as officers, non-commissioned officers and enlisted specialists, and these men would be the nucleus of a very large department that could be quickly organized in the event of offensive or defensive operations by the army.

Industry Must Train Men for Army.

Great emphasis was placed upon the dependence that must be placed by the War Department upon the industry, for without question a considerable part of the personnel of the Motor Transport Corps in time of need must be drawn from the factory organizations, and logically whatever training of a special character shall be given in the factories must be standardized to meet military requirements.

No plan was determined, but a great deal of information was obtained which will be placed at the disposal of the War Department and with this a plan or system will be proposed that will be consistently operative with the policies of the manufacturers. However, the needs of the nation will go a long ways towards standardizing the service departments of the various factories because there must be cooperation with the government.

In the statements made by Maj. Osmun he made it clear that the cooperation of the industry was extremely important, for in large measure the efficiency of the army for national defense would depend upon the training that could be given men, and there must be a standard that would be adequate for military needs.

Report Dealt Specifically with Trucks.

The report of the committee on revision of service and repair parts policies of the National Automobile Chamber of Commerce was presented by E. T. Herbig, chairman, and as it was developed from a conference of truck manufacturers it applied specifically to trucks, but there was apparently no reason why it should not apply equally well to passenger cars. The committee formulating it was composed of the representatives of three truck manufacturers, two of truck and car manufacturers and two of car manufacturers, so that it could be regarded as equally representing the two divisions of the industry.

Statement was made that the report had not been unqualifiedly indorsed by the National Automobile Chamber of Commerce, but it was at least sufficiently meritorious as to justify submitting it to the service managers for their information and suggestion. The report suggested the abolition of the present standard warranty and the substitution of a "square deal warranty," which would guarantee the best of service so far as maintenance of vehicles is concerned, but would limit the responsibility of the manufacturers to replacement of parts found to be defective of workmanship or material within a period of 90 days from delivery, and make such adjustments as would be necessary to insure normal operating condition for 30 days after delivery, provided the vehicle had not been damaged by accident or neglected or abused. Monthly inspection at the service stations of branches or dealers would be made without charge with report of the inspectors and recommendations, but outside inspections would be charged for.

SERVICE MANAGERS' CONVENTION WAS REPRESENTATIVE.

Delegates present	143
Truck manufacturers	21
Truck and car manufacturers	16
Car manufacturers	42
Engine and parts manufacturers	5
Service companies	4
Dealers	3
Fire apparatus manufacturer	1
Tool manufacturer	1
Exporter	1
Motor Transport Corp, U. S. A.	1
Trade publications	5
Total interests represented	100

Responsibilities of Each Interest Defined.

The detail of this report is set forth on another page of this magazine. The responsibilities of the manufacturer, distributor, dealer and user are sufficiently well defined, and emphasis is made that free repairing is not to be expected and the owner is expected to care for his property as he would any other utility that might be acquired.

The proceedings of the convention were inaugurated with an address by Roy D. Chapin, vice president of the National Automobile Chamber of Commerce, who stated the object of the assembly and what was hoped to accomplish, and when he retired the sessions were presided over by General Manager Alfred Reeves of the chamber and E. T. Herbig.

The programme for the sessions was as follows:

The First Day's Sessions.

General topic, "General Service Policies;" papers on "Recommendations of National Automobile Chamber of Commerce Committee on Revision of Service and Repair Parts Policies," by E. T. Herbig, sales manager, Service Motor Truck Co., Wabash, Ind.; "Service Relations Between Accessory, Parts and Assembly Manufacturers and Vehicle Manufacturer, Dealer and Owner," by E. A. Haskins, service manager, Federal Motor Truck Co., Detroit; "Should the Factory Encourage Service by Independent Garages and Service Stations? If So, on What Basis?" by L. C. Voyles, service manager, Nordyke & Marmon Co., Indianapolis, Ind.

General topic, "Factory Service Organization;" papers on "The Functions of Direct Factory Service Representatives in the Field," by R. C. Reichel, service manager, Chalmers Motor Car Co., Detroit; "Packard Service Organization," by C. R. Lester, manager technical service department, Packard Motor Car Co., Detroit, and "The Improvement of Vehicle Design and Quality Through Service Records," by Walter M. Ladd, service manager, Pierce-Arrow Motor Car Co., Buffalo, N. Y.

The Second Day's Session.

General topic, "Service Relations Between Factory and Dealers;" papers on "What the Dealers Require from the Factory Service Department," by Ralph C. Rognon, president, Automobile Service Association, New York, N. Y.; "Plan for Regulating Distributors' Parts Stock Supply to Assure Adequate Assortment and Maximum Activity," by H. W. Drew, assistant manager, technical service department, Packard Motor Car Co., Detroit, and "Pirate Parts-Factory Control of the Source of Supply of Spare Parts and Material," by W. M. Warner, manager parts department, Cadillac Motor Car Co., Detroit.

General topic, "Relations Between Distributors or Dealers and Customers;" papers on "The Extent to Which Free Service to Customers Constitutes Good Business," by J. B. Bray, service manager, Grant Motor Car Corporation, Cleveland, O.; "What Is the Most Efficient System of Estimating Charges to Customers for Repairs?" by O. T. Hillshafer, service manager, Chandler Motor Car Co., Cleveland, O.; "The Necessity for Inaugurating an Educational Programme Emphasizing the Responsibility of Vehicle Users as Regards Care and Operation," by A. B. Cumner, service manager, Autocar Co., Ardmore, Pa.; "Service Necessities of the Motor Transport Corps," by Maj. R. A. Osmun, U. S. A.

Discussion of the Subjects.

Discussion followed each of the papers, in some instances to considerable detail, and a great deal of interest was evidenced in the subjects, explanations in response to queries leading to frank statements and frequently diametrical differences of opinion.

Besides the papers some other topics were introduced for discussion, among them being "Should Factory Service Departments Deal Directly with Owners of

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Large Fleets?" "Should Service Be Rendered Directly to Cars Owned in Territory Adjacent to the Factory?" "Should Factory Discount on Parts Cover Distributor's Profit Without Necessitating Adding Handling Charges by Distributor to Car Owner and Dealer?" and "When Should Service Be Discontinued on Obsolete Parts?"

General Manager Reeves had occasion to make numerous statements relative to the general policies of the National Automobile Chamber of Commerce, to interpretation of rulings on the excise revenue tax as applied to the automotive industry, and explained that the distribution of surplus trucks to various federal departments and to states, inaugurated by the War Department through the Department of Agriculture, which had been suspended because of differing opinions of the provisions of the bills authorizing such distribution, had been resumed, the bills being regarded as valid by the Department of Justice.

Visits to Principal Factories.

The evening of the first day the delegates to the convention enjoyed a theater party. The third day was largely given over to visits to eight of the principal factories of the city, these being divided into four groups of two each, and the visitors having the option of morning or afternoon trips, so that four factories in all could be seen by those who desired. The plants were those of the Hudson-Essex and Chalmers, the Packard and Dodge, the Federal and Michigan State School, and the Ford and Cadillac companies. The visitors were conducted through the works, special attention being given to the service departments, which were explained by the executives of the different companies, so that each individual had opportunity for learning first-handed whatever information was desired. Practically every delegate took part in the factory excursions.

Committee Favors Square Deal, Not Free Repairs

Report on Revision of Service Policies Suggests Clearer Establishment of the Responsibilities for Manufacturer, Distributor, Dealer and Owner.

WHAT was probably the most important paper of the convention of the Service Managers at Detroit was that read at the opening by E. T. Herbig, sales manager of the Service Motor Truck Co., Wabash, Ind., and chairman of the committee on standard repair parts and service policies of the National Automobile Chamber of Commerce, which committee consists of H. W. Drew (Packard), W. M. Ladd (Pierce-Arrow), A. B. Cumner (Autocar), W. M. Britton (Republic), O. T. Hillshaffer (Chandler) and W. B. Riley (Jordan).

The importance was from the fact that the committee had prepared a tentative policy that was to be submitted to the National Automobile Chamber of Commerce for approval, and was desirous of obtaining an expression from the heads of the service departments of the concerns represented. The title of the paper was "Recommendations of National Automobile Chamber of Commerce Committee on Revision of Service and Repair Parts Policies," and it was mainly a proposition to modify the well known standard warranty so that there should be practically no period when the manufacturer would be responsible for what is known as free service.

The paper was substantially as follows:

The National Automobile Chamber of Commerce committee on revision of service and repair parts policies was appointed to consider what changes for the better might be suggested in policies in existence for years. The appointment of the committee was the result of a paper read before the truck manufacturers' convention in New York in which statement was made that existing policies were quite satisfactory, there being no outstanding deficiencies. The majority of suggestions were of minor import and were impelled by the consistent growth of the industry, which justified certain distinctions being made in the text of policies, so as to more fully meet the demands, the general principles remaining unchanged.

The committee made recommendations to the chamber that were not unqualifiedly indorsed. This was due principally to the elimination of the standard warranty. The committee in its report submitted the following for consideration:

In place of the technical obligation called a warranty the committee felt that a set of principles as a working basis and a medium of understanding could well be formulated, in which would be incorporated an expression of the manufacturers, distributors, dealers and users responsibilities respectively. In this connection it should be recalled that the committee's interest has been primarily in the truck industry, the platform designed having specific reference to it.

A reading of the principles or platform will make clear the broad idea in mind and help visualize the demarcation of the lines of responsibility in which the user as well as the manufacturer and his representative shares.

1—Manufacturers: Square Deal Warranty.

Satisfactory relations between manufacturer and user is contingent upon mutual good faith. All manufacturers should guarantee to make good all their just obligations expressed and implied, which will assure each and every user the maximum of truck service at the minimum of consistent cost.

2—Distributors' and Dealers' Responsibilities.

The best maintenance results can be obtained with the user through distributors' or dealers' representing the manufacturers. The distributors' and dealers' service obligations are:

(a) To carry out the manufacturers' square deal warranty with the user.

(b) To maintain adequate facilities for making repairs, adjustments and do general overhauling in a prompt and competent manner at reasonable charges.

SALIENT FEATURES OF THE REPORT OF POLICY REVISION.

- Report submitted with recommendations that were not unqualifiedly indorsed.
- Substitution of "Square Deal Warranty" for the present standard warranty of the N. A. C. C.
- Limit manufacturers' responsibility to replacement of defective parts within 90 days from date of delivery.
- Limit distributors' and dealers' responsibilities to adjustments for 30 days after delivery.
- Provide monthly inspections without limit at branches or service stations, with charge for work done at a distance.
- Practically abolition of free repairing.
- Betterment of service to keep vehicles in operative condition.

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(c) To thoroughly instruct the user in the proper care and operation of his truck.

3—Users' Responsibility.

The greatest responsibility for satisfactory truck service rests on the user. The responsibility for proper operation and care are entirely beyond the control of the manufacturer and distributor. Upon the user, carrying out consistently and intelligently the instructions on care and operation, depends the success of truck service.

There follows then in the committee's recommendation an outline of the detail practises of the above.

Detail Practises: Manufacturers' Responsibilities—Replacement of Defective Parts.

(a) Within 90 days after the delivery of a new truck to the user the manufacturer will furnish, free of charge at the factory or branch, duplicate parts to replace any parts that are returned to the factory or branch with shipping charges prepaid, and which are determined by the company to have been defective in material or workmanship, or it will put such parts in condition as good as new.

Repair Parts Service.

(b) Discounts to independent repair shops will be subject to agreement between distributor or dealer and the repair shop.

(c) The manufacturer reserves the right to dispose, within 30 days, all parts returned, without assuming liability, unless covered by shipping instructions or adjustment is accepted.

(d) The manufacturer will refuse to consider claims for or accept for adjustment any parts not supplied by him.

Accessory Service.

(e) For service and replacements on engines, starters, batteries, magnetos, generators, carburetors, tires, rims or other trade accessories that are not made by the manufacturer of the truck; application should be made direct to the nearest service station maintained by the maker of such accessory. While not assuming any direct responsibility for articles not made by them, the manufacturer, its branches or dealers will do all that is possible to assure the user of a square deal from the makers of these parts or accessories. If, however, the accessory dealer is not adequately represented in a particular locality the dealer there is obligated to give the user proper service on such accessories.

(f) The manufacturers shall provide dealers with a list of the manufacturers of accessories used on these trucks and a list of service stations.

Distributors' and Dealers' Responsibility: Inspection and Adjustment.

(a) Truck brought to service stations maintained by factory branch or dealer will be inspected monthly without charge. The same service will be rendered at points outside of the service stations at a regular charge based on the distance. Inspection includes examination and report by the inspector of his opinion of the condition of the truck.

(b) Necessary adjustments, to put the truck in standard operating condition, will be made without charge during the first month after the delivery of a truck to a user, provided the truck has not been tampered with nor injured by accident, abuse or neglect. After the first month adjustment will be made at the regular charges of the service station. Adjustment includes only such adjustments as the inspector has, in his opinion, found necessary to put the truck in standard operating condition.

(c) Every dealer is expected to give the same inspection and adjustment service on any truck made by the manufacturer without regard to the territory in which it was bought.

Repairs, Replacements, Etc.

(d) All work not included in inspection and necessary adjustment or installation of replacements will be charged for at regular rates.

(e) When any charge work is to be done and the cost can be estimated in advance, the user, upon request, will be advised of the approximate or maximum amount of the charges before the work is begun.

E. T. Herbig, Chairman, Committee of N. A. C. C. on Revision of Service and Repair Parts Policies.

(f) When it is necessary for the convenience of the user to render service at a distance from the service station, the time spent by employees going to and from the job will be charged for at the regular rates of the station, together with all proper expenses of making the trip, cost of shipping parts, if any, and the necessary incidental expenses.

Overtime Work.

(g) Any overtime, holiday or Sunday work done upon the request of the user will be charged for at the regular overtime rates.

Instruction.

(h) On delivery of a new truck personal driving and maintenance instruction will be furnished for a reasonable period without charge. All other personal instruction will only be given in accordance with the agreement between the customer and the dealer at the time of purchase.

Repair Parts.

(i) The dealer will be required to maintain a minimum stock of both "current" and "service" parts as specified by the manufacturer.

(j) The dealer will be required to furnish an inventory of "current" and "service" parts upon request.

(k) Stocks of parts shall be designated as follows:

1—Current Parts—All parts used in trucks of models being produced by the factory.

2—Service Parts—All parts for models no longer being produced by the factory and which have not been superseded by other parts that are interchangeable with them.

3—Obsolete Parts—Parts that have been superseded by other parts that are interchangeable with them.

Return of Parts.

(l) Parts claimed defective must be returned to the factory with shipping charges prepaid within 10 days from date of replacement.

(m) Obsolete parts may be returned only by individual agreement with the manufacturer.

(n) Surplus parts may be returned only by individual agreement with the manufacturer. All parts shipped to the manufacturer by the dealer shall have transportation charges prepaid and be properly tagged.

We now come to the most important part of the triangle of responsibility—that of the user, whose responsibility has unfortunately been too little emphasized, but who will by the proper dissemination of a plain statement of facts, shoulder his burden of the responsibility and facilitate the service problems, greatly to the benefit of himself, as well as the dealer and the manufacturer.

The facts that should be driven home to him are that he is alone responsible for five commonly neglected features of motor truck operation, which are:

Lack of regular inspection.
Lack of intelligent lubrication.
Loose nuts and bolts.
Overloading.
Overspeeding.

It is impossible to over-emphasize the importance of these matters, which are beyond the control of the manufacturer, and which the user must recognize to be in the nature of an obligation on his part deserving of the most careful consideration if successful operation is to be maintained.

The manufacturer provides an efficient machine capable of successful operation for a period of years, but when the truck is installed the responsibility passes to the user as in the case of any other practical utility which cannot be of infallible construction.

The manufacturer and dealer are interested in the most efficient and economical operation of the truck, but a full measure of cooperation is necessary on the part of the user, who should avail himself of all facilities provided by the service station.

There is no reason why the user should not bear his rightful burden of responsibility, nor do we believe he will fail to do so if we show him the way.

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Accessory Service Relations From Maker to Owner

Interests Are Inter-dependent Through Distributor and Dealer, and Best Results Obtain When Parts Selling Is Regarded As a Business That Yields Fair Profits.

By E. A. Haskins, Service Manager, Federal Motor Truck Co., Detroit, Mich.

AN IMMEDIATE clarification of the subject under consideration is obtained if we change the first two words, service relations, to maintenance relations, and the much buffeted word, service, can be relieved of its mystery if given the common sense interpretation "maintenance."

I will, therefore, ask your consideration of the subject "Maintenance Relations Between Parts Manufacturer, Vehicle Manufacturer, the Distributor, Dealer and Owner." In the following discussion we may use the term dealer in a general sense, meaning the vehicle manufacturer's distributing organization.

We will also make two general subdivisions; one the furnishing of parts, and the other their installation (under which will come the general discussion of instruction).

If every seller of merchandise would only have vision enough to realize the value of proper maintenance this subject would need no discussion. Under existing conditions, however, the future sales value, good will if you please, resulting from legitimate business like effort to keep equipment in operation, has been subservient to the idea of production, immediate sales and immediate profit.

Regard Maintenance a Burden.

Some seem to have considered this maintenance problem a burden or necessary evil rather than one of the important divisions essential to the continued popularity and sale of their product.

Others have surrounded it with a veil of mystery, intimating that there is only one place to secure parts and only one way in which parts can be made to perform satisfactorily the function intended. This does not apply to parts other than those covered by the subject under consideration.

To get down to particulars, we like to think of maintenance as vital, but still incidental to the real problem, that is, sale of finished product. We are not in business to sell parts, but to keep equipment in operation. We are not vitally interested where the customer secures supplies necessary to maintain his vehicle as long as the parts are up to the standard necessary to secure best results.

Inter-Dependence of Interests.

There are two ways of visualizing the inter-dependence of all parties under discussion.

First: Consider each as a link in a chain, each one responsible to the link on either side; starting with the parts maker as the ring and through the vehicle maker, distributor, dealer to owner, we find the owner—the man who pays all our bills—dependent for satisfaction upon the parts maker. Mr. Owner does not necessarily appreciate this fact and if the dealer, distributor and vehicle manufacturer, especially the latter, is measuring up to his responsibility, or rather opportunity, the owner will never need to have this forced to his attention. Likewise, dealer, distributor and finally the vehicle maker is hampered or helped by the parts maker's maintenance facilities.

Let us not throw too much of the load upon the ring end of the chain. Let the vehicle manufacturer consider himself a wholesaler or jobber carrying a stock of suitable size to cover several months requirements and endeavor to educate the distributor and dealer to appreciate that they are the retail organization and upon them rest the opportunity of carrying a stock sufficient to care for day to day demands so that the hook end of the chain will really assist in catching additional buyers.

Second: Consider a pyramid with parts makers at the apex and the owner at the base. All our increase in business is based on owners' satisfaction. If the parts maker's product or service is not up to standard the owner will spread his feeling of dissatisfaction so thoroughly as to ultimately hinder Mr. Parts Maker's sales, and he is, or should be, vitally interested in the owner's satisfaction, even though he does not get into personal contact with the owner, as do the other interested parties.

Prices a Potent Factor.

Now for the price: Everything bears a price—even satisfactory service costs something. The question of discounts and list prices has caused much discussion. It is manifestly unfair for the parts maker to establish list prices and discounts so that the price to the owner, if passed direct by him, is much different than when handled by the vehicle manufacturer and his distributing organization. I say much different advisedly for it has never been our policy to attempt to hold to a parts maker's list if this provided a greater or less profit than considered legitimate. We have endeavored to make our service and parts division sufficiently attractive so that after the dealer has been properly started by the vehicle manufacturer he will have real financial reason for keeping it up. The real fundamental of maintenance is speed or promptness of repairs. What matters a few cents more or less compared to a vehicle tied up for several hours or days?

It would greatly simplify matters, therefore, if the parts maker would establish a discount sufficient to enable his list price to mean something only as a comparison. Let him protect the vehicle manufacturer regarding deliveries and not supply owners or dealers direct when he is not shipping the same parts to the vehicle manufacturer, who may have orders for similar parts which have remained unfilled for some period.

Make the Distributor Headquarters.

If the distributor is worthy of the name let him be the headquarters for parts and repairs in his territory. If the party nearest the owner is honestly trying to give service, justify his efforts, do no more yourself than you are legitimately asking him to do. Do not let anyone get the impression that he can get any more by going over the dealer's head.

PERTINENT POINTS IN ACCESSORY SERVICE POLICIES.

- Keeping equipment in operation has been subordinated to production, immediate sales and profits.
- Maintenance an important sales division and not a burden upon business.
- The real fundamental of maintenance is speed or promptness of repair.
- Manufacturer should protect the vehicle builder on deliveries.
- Dealer should be headquarters for parts and repairs in his territory.
- Makers of highly specialized products should establish own service stations.
- Parts makers should thoroughly instruct dealers, through vehicle builders, in maintenance.

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We have no patience or sympathy for the dealer who does not make a real honest effort to help the owner; factory help in his territory is charged to him after the first visit.

Let us all protect the party next in line on the hook end of the chain whenever he is trying his best, but it is of paramount importance to keep the owner happy, even at the sacrifice of pride or immediate profit.

If the parts manufacturer's product is of a very specialized nature, demanding more care, knowledge or experience in its maintenance than can be expected of the vehicle manufacturer's dealers force, let the part manufacturer establish his own widespread repair system and work with the dealer in caring for such work. We can see no reason why the vehicle manufacturer should receive any remuneration in any fashion from such work which has been performed without his knowledge or assistance and without material in which he has his money invested.

Keeping Ahead of Parts Design.

The parts manufacturer should appreciate the necessity of keeping the vehicle manufacturer informed in advance of proposed changes in design, so that we all may have an opportunity of preparing to care for these changes and not wait until such changes are in production.

As an ideal we, therefore, have the owner cared for by the dealer who has a reasonable stock of most active repair parts and dependent upon the distributor for replenishment of his stock and for

E. A. Haskins, Service Manager, Federal Motor Truck, Detroit, Mich.

parts seldom used, as well as expert mechanical assistance and instruction. The distributor in turn depends upon the vehicle manufacturer for his supply of parts so that his efforts can be roughly checked. Failure of any one of these should permit of the owner's request upon the parts maker receiving prompt and immediate attention in such a way as the other parties can be kept informed of their shortcomings, so that proper action can be taken to prevent repetition.

The price demanded by the parts makers from the owner should be sufficient to discourage such relations if the dealer is honestly trying to maintain the owner's equipment. We believe that the parts maker's price should be greater than the vehicle manufacturer's list so as to discourage direct dealing unless the vehicle maker or dealer is not making an honest effort in the owner's behalf.

The furnishing of parts is given the position of importance due to its being by far the most important feature of satisfactory maintenance. Parts themselves, however, are of little value unless properly installed. Therefore, every vehicle manufacturer should be able to secure suitable instruction from the parts makers so that he in turn can properly instruct the dealers' organizations by means of shop courses, schools and printed instructions.

Let us all help, not hinder. There is no such a thing as free service. Therefore, if it costs money, charge for it; if we are wrong, admit it. Give uniform treatment. Make anything worth while worth money to be appreciated and some of our problems will be simplified.

Factory Must Support Dealer Service Stations

Should Discourage Independent Shops That Flourish Upon Dissatisfied Owner Custom and Protect Their Own Organizations and Sales by Highest Grade Work.

WHETHER or not the manufacturers should stimulate the repair of machines outside of the organizations of the distributors and dealers was considered in a paper on "Should the Factory Encourage Service by Independent Garages and Service Stations? If So, on What Basis?" by L. C. Voyles, service manager for the Nordyke & Marmon Co., Indianapolis, Ind.

He assumed that the ideal of every manufacturer was to satisfy each owner, and while this was not 100 per cent. practical, the nearer this standard was approached the better. Were it possible for the owner to take his car to the factory for adjustment and repair the possibilities of affording satisfaction would be much greater, but obviously this was out of the question because of the scattered distribution, and so a general operating plan was necessary. Experience had proven that it was best to make this service a part of the duty of the dealer, and for that reason the work had been included in the contract made with him.

The dealer must have shop facilities, with sufficient space, tools and equipment and special machinery and an efficient force of trained mechanics, as well as an adequate stock of parts. The degree of attention given to this phase of the business was rarely what it should be, and it was this condition the industry was now suffering.

After a dealer has met the requirements for maintaining service and has established a shop and invested his capital, is it fair to encourage independent repair shops? He himself did not believe this policy was consistent.

Independent Shop Customers.

Two classes of owners were affected by the independent garage or repair shop, the first including those who go to them deliberately, possibly from disagreement or because of dissatisfaction, and the other includes the tourists. The latter class may be influenced by advertising or by signs displayed.

If the factory receives too large a number of complaints, the ratio being based on the number of car owners, from a certain territory relative to the service afforded, the condition should be immediately investigated, to determine the cause and bring about such change as the needs of the instance demand. This cause may be the shop personnel. The mechanics may assume to know more about mechanical construction and operation than the engineers and designers. There is a possibility that they are going too far in making changes, or it may be that the design or the construction of the machine is the cause. Perhaps it may be that it has been used in conditions not anticipated and certain changes are necessary. This may be true of new types.

Factory Should Maintain Standard Service.

Whatever the cause, the factory should make correction through the dealer rather than through the independent

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shop or garage. Not to do so is first to admit that the dealer's service is not adequate, and second that it is not possible for the factory to make its product serviceable. The surest way to keep owners from independent shops is to have our own so good that the owners shall be satisfied.

The time is not far distant when a dealer's service will determine his sales success. Even now it is a very important factor in a reorder. A good dealer is seeking to improve his service. This is a sales as well as a service problem and calls for the closest cooperation between the sales and the service departments of the factories.

The success of the independent garage shop depends largely upon the differences of the dealer and the customer, and rather than increasing these differences the factory should endeavor to reduce them by cooperating with the dealer. All of us have received letters from owners stating that a dealer could not do this, that or the other, and that it was necessary to take a car to a friend, who is an excellent mechanic, who tells him the cause and that restoration will mean a considerable expense. Very often the owner wants an opinion from the factory with reference to the proposition of the mechanic, and occasionally the factory is asked to bear a part of the cost of the restoration.

Advise Owners of Dealer's Service.

Why could not the owner be told that the repair man exists by the cars he works on and that he sells his work by telling the owner what may or may not be necessary? If an owner were to receive a letter from a factory stating that the dealer is qualified to afford him service and advise him if the work recommended is necessary or not; that the dealer is interested in the success an owner has with his car; that the dealer's men are experts with it; that he has the equipment with which to work; that the friend may not be familiar with the clearances or limits of the car; that he may not be familiar with its construction—then the owner may stop, look and listen. If the dealer cannot do what has been stated of him and his shop, then he is not a first rate dealer and it is up to the factory to see that such changes are made as will insure service.

Sometimes the repair man may be a former employee of the dealer, who has engaged in business and expected to take with him some of the dealer's customers. He may be a competent mechanic and we have no quarrel with him, but we must protect our own interests.

WHY FACTORY SHOULD ENCOURAGE DEALERS' SERVICE.

- Experience has proven that this work had best be done by dealers' shops.
- In event of dissatisfaction the factory should bring about a change in shop methods and personnel.
- Should advise owners of practicalities of dealers' service.
- Owner should inherit expense and inconvenience of work of independent repairers.
- Factory should control service where conditions necessitate work in shops outside dealer territory.

All Service Through the Dealer.

There are no doubt instances where a man can make excellent arrangements with a dealer and do work to the advantage of all concerned, but such an arrangement should be worked out through the dealer, who should be responsible for the work and the plan of operating.

It is the unreliable, incompetent man, who has no interest in the owner other than the money he can get, that we must protect ourselves against. We cannot refuse to sell parts, but if no discount is allowed and the owner finds he can get parts more promptly through the dealer, he will eventually go to the dealer. Owners have the right to take cars anywhere for work upon them, but they also have the right by so doing to inherit the expense and inconvenience consequent with doing business with those who do not directly represent the factory.

The former employee may believe he can do as good work, and may have signs that convey the impression he has a dealer service station, which is not fair nor legitimate. Legal action may be taken if it can be proven that this was done with intent to deceive, but such action may lead to impressions of discrimination and aggravate conditions instead of improving them. The best protection is for the dealer to have his departments so organized and equipped and efficient that he can give the best of service.

Sometimes small shops send owners to buy parts at dealers' establishments, and such visits give the dealers chances to deal direct with the owners, which may lead to adjustment of differences and resumption of business relations.

Service in Open Territory.

All of the above has been assumed with reference to a dealer's territory. There may be cases in a territory, very large or sparcely settled, where all the cars cannot be brought to a dealer's station, in which event it is obligatory for the dealer to arrange through some local repair shop for service, but not through the factory, and the dealer should be held responsible for the service. The dealer should see that the repairer is familiar with the car and that he has the shop equipment and the mechanics that can give service. If there is doubt of this the repairer's men should devote such time as is necessary to work in the dealer's shops, or vice versa, for the purpose of instruction and qualification.

In large cities it may not be possible from either the dealer or the owner standpoint to have all of the cars brought to one point, and the dealer can take such steps as are necessary to insure service in all sections. It is up to the dealer to carry out his obligations and responsibilities.

Where an owner lives in an open territory, if there are a sufficient number of cars in use the dealer may arrange for service from a local man, but this should be on the basis of a contract and the repair man should be responsible and the factory should have jurisdiction and protect the owner and the dealer.

When changes of dealers were made, as in past years, owners may have felt that they were justified in taking cars to other places for work on them. Thus the factories have been responsible, and, being responsible, they must do their part to bring about changes.

The business is better established and the automobile dealer today is as legitimate as any merchant. Many times the quality of a car is judged by the reputation of the dealer. He must be a business man and having this qualification he must have factory support instead of what will lead to confusion and encourage the independent shop.

Function of Direct Factory Men in the Field

THE development and results obtaining from a system that had comparatively recent origination was dealt with in a paper read by R. C. Reichel, service manager for the Chalmers Motor Car Co., Detroit. He pointed out that the reduction of the cost of service was the same as reducing the price of a car and he believed that the owners of cars would buy better cars if they were confident they would be taken care of at the small service stations. If the cost of service to owners can be lessened a much larger market is automatically opened to the sales department.

One of the causes of the high cost of service is the neglect to determine every mechanical cause of failure. Every machine has its peculiarities and if it is not perfectly understood more or less unnecessary work is done and the cost is unnecessarily increased. If we can get the right kind of mechanics we can reduce the cost 50 per cent. He personally believed that a man was not qualified to do work with a minimum of labor unless he had done the work at least once.

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and the longer experience was by far preferable.

As to obtaining mechanics: Considering both outside and factory schools it was only practical to cover from one-fifth to one-half of the territory where the work was most needed. The small dealer cannot send men to schools because of the expense of educating them, and should he do so the men will go to larger places where the wages are higher and the work more standardized as to hour of labor. Mechanics always want to work on a definite hour basis. For these reasons the small dealer quickly loses his trained men. Not only this, the schools deal largely with theory and seldom with actual conditions, but if they have the work to do comparatively few men get the full benefit of the experience.

Dealers Used Road Men as Mechanics.

With reference to road mechanics, the original idea was to send men to instruct or advise the dealer's help, but these men have been used by the dealer and distributors as additional men and for this reason their work has often been useless to the factory. The men only handle one kind of trouble and go from place to place, so that the mechanics of the shops are just as helpless as ever. Road men that are mechanics only do not handle other necessary details; they do not see to keeping up the stocks of parts at minimum investment, neither do they give attention to the personnel nor appraise the value of the shop of the tools and equipment.

Some use stock auditors and service mechanics to cover all of these details, but this is a big disadvantage because the auditor only sees from his angles and the mechanic from his, but if the responsibility for the dealer having an efficient, well organized, properly conducted service department rests upon one man who is well trained, maximum results are obtained.

Field Men Control Chalmers Service.

Concerning service representatives, the plan his company has used for 18 months has been practically tested. This has been found to come nearer the answer to improvement of service than any that has been developed. The service representatives are personally responsible for the service given by the distributors from all angles. They check the distributors' stock, insist on accurate stock record, demand that the dealers summarize stock to eliminate slow moving and dead stock, keep the stock investment to minimum, check the tools and equipment, make recommendations for necessary tool equipment, check for cleanliness, light, arrangement of tools, etc.; check the personnel and make recommendations for changes, either through the department at Detroit or through the managements of the concerns. They see that all mechanical needs are handled by the distributors' mechanics. They are not permitted to get into overalls or do any work save in extreme cases. They serve as instructors and only supervise the work and the mechanics are usually qualified to meet the demands upon them. They only call on the distributors.

R. C. Reichel, Service Manager, Chalmers Motor Car Co., Detroit, Mich.

This system does not leave the small dealers in as bad a condition as before as the factory insists on the distributor having service representatives who are practically the same type of men as the factory service representatives, who handle their work in the same way. The service men call on the distributors every 30 days and check on the same points and details as the factory representatives check with the distributors, and give the dealers' mechanics the same instruction as is given by the factory service representatives.

The factory representatives take the time to see that the distributors' representatives are fully informed and where necessary will go to one or more dealers with a distributor's representatives. In this manner every place where there is a Chalmers dealer is covered, which eliminates much mechanical work. The factory and service representative is the personal contact between the factory and the distributors in all service matters. Service complaints, unusual claims and all matters of this kind are covered by the representatives with the distributors.

VALUE OF UNIFORMITY OF WORK IN DEALERS' SHOPS.

Reduction of service cost automatically increases the market for vehicles.

With the right kind of mechanics the average expense can be reduced 50 per cent.

Factory representatives to supervise service must be specially trained men qualified to do this work.

Distributors afford the same character of supervision for the small dealers.

Shop efficiency is increased and the satisfaction of the owner insured at relatively reduced expense.

Results Are Extremely Satisfactory.

Some of the results are a 60 per cent. reduction of the technical correspondence, the elimination of nearly all unjust claims, great reduction in the volume of material parts replacements on account of the service representative being able to suggest good methods of restoration without the installation of new parts, a reduction of the number of cars held awaiting parts shipments from the factory, through the service representatives being able to arrange exchange of parts between distributors on factory shortage items, the elimination of unnecessary checking of complaints at the factory caused by complaints being made from territories that are not accurate, giving the factory a quick check, and restoration on failures developing through the immediate reports of the service representatives (the reports being accurate because of the knowledge of the men), the reduction of sales resistance by having a personal check on complaints, and having at the factory clear information of the distributors' service departments, so that if a distributor feels that his service cost is running high we can talk to him on the basis of whether his cost is high because of his own service department's inefficiency, or whether the cause is the car itself.

In work of this kind the type of man is important. In developing this organization we took the pick of the former road mechanical force and have built these men up to the needs of the factory. In doing this we gave them ample time at the factory, in the service department handling claims, technical correspondence, parts orders and parts order routine, so that they were familiar with all of those divisions, and also learned the mistakes being made from the territory and in handling the distributors' business with the factory. We have found the men developed in this way are very glad to have the opportunity to broaden, and we are confident that in developing them the factory is developing men who will later control the territory sales work. From his point of view good motor car salesmen must be thoroughly informed on all angles of the business, including mechanics, service, sales, etc.

CLEAR STREETS FOR FIRE TRUCKS.

A recent proposal in Seattle, Wash., to move fire apparatus to a point further distant from the center of the city, brought out the fact that, while it is unquestionable that motor driven apparatus travels so fast that the factor of distance has been practically eliminated, at the same time it is said that the increasing use of other motor vehicles has brought about a congestion in the streets that cannot be lost sight of. Given a clear street and the motor apparatus can make quick time, but the chances for a clear street are diminishing every day. Street congestion is compensating unfavorably for the additional speed of motor driven over horse driven apparatus, and as a consequence the factor of distance from the area of maximum fire risk is still considered important.

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List of Representatives Present at Service Managers' Convention

Concern	Address	Representative
Automotive Service Association	New York, N. Y.	Ralph C. Rognon
Auto Electric Service Corp	Detroit, Mich.	D. W. Burke
Automobile Journal Publishing Co	Pawtucket, R. I.	William W. Scott
Autocar Co	Ardmore, Pa.	H. W. Coals
		A. B. Cumner
		F. C. Hubley
Autocar Sales & Service Co	Boston, Mass.	C. R. Borton
		H. E. Ferris
Atterbury Motor Car Co	Buffalo, N. Y.	C. L. Wiedrich
Allen Motor Car Co	Columbus, O.	R. B. Perry
Anderson Motor Co	Rock Hill, N. C.	L. W. Brock
American-LaFrance Fire Engine Co	Elmira, N. Y.	F. E. Walker
Apperson Bros. Automobile Co	Kokomo, Ind.	G. W. C. Braithwaite
Acme Motor Truck Co	Cadillac, Mich.	A. B. Westman
Auburn Automobile Co	Auburn, Ind.	W. H. Denison
Bearings Service Co	Detroit, Mich.	D. H. Torrey
Buick Motor Co	Atlanta, Ga.	E. G. Uborne
Briscoe Motor Corp	Jackson, Mich.	J. L. Blyth
Baker-R. & L. Co	Cleveland, O.	C. H. Warren
Barley Motor Car Co	Kalamazoo, Mich.	C. W. Warner
Class Journal Co	New York, N. Y.	J. E. Schipper
		R. W. Burlingame
		J. Howard Pile
		H. C. Skinner
Chilton Co	Philadelphia, Pa.	D. S. Hatch
		T. F. Cullen
		George H. Duck
		C. P. Shattuck
		A. G. Metz
		J. C. Weed
Continental Motors Corp	Detroit, Mich.	J. G. Painter
Commerce Motor Car Co	Detroit, Mich.	D. F. Holmes
J. I. Case Threshing Machine Co	Racine, Wis.	G. B. Gunlogson
Cleveland Automobile Co	Cleveland, O.	J. T. Nicholson
Cadillac Motor Car Co	Detroit, Mich.	W. M. Warner
Crow-Elkhart Motor Corp	Elkhart, Ind.	D. C. Norris
Clyde Cars Co	Clyde, O.	H. M. Humphrey
Columbia Motors Co	Detroit, Mich.	George C. Gurney
Chandler Motor Car Co	Cleveland, O.	G. T. Hillshafer
Chalmers Motor Co	Detroit, Mich.	R. C. Reichel
		W. A. Hillman
Detroit Electric Car Co	Detroit, Mich.	A. C. Downing
		George L. Bixby
Diamond T Motor Truck Co	Chicago, Ill.	J. J. Boland
Dorris Motor Car Co	St. Louis, Mo.	R. M. Whitney
Daniels Motor Car Co	Reading, Pa.	G. M. Delker
Dort Motor Car Co	Flint, Mich.	C. M. Sincell
		J. R. VanCleve
		R. H. Soule
Elgin Motor Car Corp	Chicago, Ill.	N. A. Hendrickson
		A. H. Sackett
Federal Motor Truck Co	Detroit, Mich.	E. A. Haskins
		George H. Dow
Franklin Automobile Co	Detroit, Mich.	Paul Williams
Fuller & Sons Manufacturing Co	Kalamazoo, Mich.	O. E. Harmon
General Motors Export Co	New York, N. Y.	E. L. Harkness
General Motors Corp	Detroit, Mich.	G. A. Whitcomb
Grant Motor Car Corp	Cleveland, O.	J. B. Bray
Gray & Davis, Inc	Detroit, Mich.	E. F. Wackwiz
		W. H. Cleveland
Garford Motor Truck Co	Lima, O.	M. A. McCullough
Hupp Motor Car Co	Detroit, Mich.	C. E. Salisbury
		D. E. Purdy
Haynes Automobile Co	Kokomo, Ind.	H. R. Perry
Holmes Automobile Co	Canton, O.	H. W. Gilmore
Hinckley Motors Corp	Detroit, Mich.	C. M. Brede
Insurance Field Co	Chicago, Ill.	G. R. Weldele
International Harvester Corp	Akron, O.	O. H. Braewiery
		F. A. Frisk
Jones Motor Car Co	Wichita, Kan.	O. Steiger
		O. H. Ressegiue
Kleiber & Co	San Francisco, Cal.	N. B. Burkness
Kline Car Corp	Richmond, Va.	T. B. Bigger
King Motor Car Co	Detroit, Mich.	C. E. Havens
Lincoln Motors Co	Detroit, Mich.	G. G. Jackson
		J. H. Normington
		W. T. Emmons
Locomobile Co. of America	Bridgeport, Conn.	G. E. Pope
		W. S. Teel, Jr.
Liberty Motor Car Co	Detroit Mich.	Albert Gough
Lexington Motor Co	Connorsville, Ind.	C. H. Beaumont
Maxwell Motor Sales Co	New Castle, Ind.	J. E. Burns
Moreland Truck Co	Los Angeles, Cal.	W. R. Forker
Moon Motor Car Co	St. Louis, Mo.	A. H. Rederer
Mitchell Motors Co	Racine, Wis.	D. E. Roche
Moline Plow-Stephens	Moline, Ill.	E. H. Snavely
Milburn Wagon Co. Works	Toledo, O.	M. B. Davey
Maxwell Motor Co	Detroit, Mich.	A. E. Richmond
National Automobile Dealers Association	St. Louis, Mo.	H. G. Moock

OVERLAND STANDARD OF TESTING.

The Willys-Overland Co., Toledo, O., believes that in testing out its latest model, the Overland Four, before presenting it to the public, it established new standards of testing and refinement of details to make a car as near perfect as possible mechanically before it goes to the owner.

The history of the development, building and testing of the Overland Four, which introduces the three-point spring suspension, covers a period of years. The car is the product of a decade of progressive engineering achievement toward the ideal light weight car; of a year's intensive engineering experiment and two years' actual demonstration and tests in all kinds of weather and over all sorts of roads.

During these two years of tests the Overland Four was 250,000 miles of actual road demonstration—10 times around the world—before a single car went on the market. This may be compared with the usual 25,000 to 75,000 miles of demonstration. They were of great value to the engineering and production departments of the company, and, finally, to the man who buys the car. The section of the country where they were held was the Southwest, Colorado, New Mexico and Arizona, where nature seems unfinished—a rough, rock-strewn, tortured country. A staff of engineers accompanied the fleet of Overland Fours to watch every hour of the performance. Here the three-point suspension was tried out to the utmost and found efficient in providing easy riding and adaptability to all conditions of roads, while the all-steel construction gave it an unusual stamina.

JERSEY CITY SHOW IN FEBRUARY.

The members of the Hudson County Automobile Trades association have decided to hold an automobile show in Jersey City, N. J., some time the latter part of next February. Edward Cox, the president of the association, has appointed a committee to report on a date and place. The Fourth Regiment Armory is considered as the most appropriate building for holding such an event, which will be continued for one week.

The association realizes the value of co-operation between dealers and is assured of the publicity benefit to the trade in such a show which would make a direct appeal to the half million people residing in Hudson county.

SIX SPEEDERS SENT TO JAIL.

Magistrate Frederic House of the New York Traffic court on Monday, Nov. 24, sent six men, who were arraigned on charges of speeding, to the city prison to serve sentences varying from five to 15 days, they all having been up for the same offense at least once before.

In pronouncing sentence Magistrate House said that as fines did not seem to do any good, he felt convinced that the only way to check speeding was to send the offenders to jail.

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Features of the Automobile Salon

THOSE who have depended on the annual fall Automobile Salon in New York for the last word in whatever is elegant, rare and unique in motor car construction, both domestic and foreign, anticipated this year's exhibition in the Commodore hotel with unusual interest on account of the omission of the event a year ago because of war conditions. This was the first time the Salon was held at the Commodore, as previous shows have been held at the Astor. The ball room, its ante-rooms and foyer were all occupied, the ball room proper being decorated from ceiling to floor with festoons of American flags, draperies and foreign emblems significant of the various countries represented, and held within the folds of these decorations were plush banners carrying the name of each make of car over the space occupied by it.

The limited number of accessories on view were allotted space in the foyer. These included such leaders as Smith speedometer, the Rees automobile jack, Klaxon telephones, Faure tires, Laidlaw upholstery fabrics, the Westinghouse air springs and Dunlop tires.

While several exhibitors were prevented by labor troubles at factories from showing all the chassis mounted with bodies, this was compensated for by the unusual interest visitors seemed to take this year in examining the latest refinements in mechanical features. There was a good opportunity afforded for the comparison of Italian, French and English types with those of American make, as each of these foreign countries was well represented. The Sunbeam, Delage and Lancia each had a chassis on view, the Sunbeam and Delage being shown for the first time in this country, being hitherto best known here as racing models of speedway events.

America presented one new American chassis, the Dupont, which is the latest high priced American car put on the market.

The exhibits were as follows:

Sunbeam, two six-cylinder models; Delage, five-passenger touring car and one chassis; Lancia, four-cylinder chassis; Renault, four chassis and coupe-limousine with body by Kellner, Paris; a limousine with body by Ferber of Paris, and a coupe-limousine with body by Henry Binder, Paris; Du Pont, four-passenger touring car and chassis; Locomobile, chassis and four-passenger sportif body, special custom made six-passenger cabriolet, six-seated coupe, six-seated sedan and a seven-passenger limousine; ReVere, five-passenger touring car with Victoria top, racing roadster with disappearing assemble seat and four-passenger touring car; Cunningham, six-passenger touring car, six-passenger enclosed drive, four-passenger town landaulet and four-passenger sedan; Daniels, chassis with disc wheels, seven-passenger with victoria top, six-passenger landau-brougham, seven-passenger suburban and three-seat-coupe; Porter, chassis and an enclosed drive limousine, five-passenger touring, two seven-passenger touring cars and a large size falling front landaulet; Brewster, runabout, landaulet town car, country brougham and enclosed drive limousine; Singer, chassis and four-passenger sport model; Meteor, four-passenger touring car; Rolls-Royce, cabriolet with body by Barker of London, also a model in miniature of the Vimy airplane in which Alcock and Brown made their trans-Atlantic flight, which was equipped with Rolls-Royce motors.

Very handsome new body models mounted on chassis were shown by Barker of London, Brooks-Ostuk, Rubay, Holbrook and the Fleetwood Co.

Among the novel features of this year's salon were the aviation exhibits. These included the Hispano-Suiza, shown by the Wright-Martin Co., the 300-horsepower Renault aviation motor and the miniature Vimy type Vickers airplane mentioned in connection with the Rolls-Royce display.

Mechanically all the cars shown were pronounced by experts in attendance to be masterpieces, and all agreed that the coach work has set a new standard for America. From the standpoint of sales the various companies represented reported that they enjoyed the most active days in the history of the Automobile Salon.

Concern	Address	Representative
Nordyke & Marmon Co.	Indianapolis, Ind.	L. V. Voyles
National Motor Car & Vehicle Corp.	Indianapolis, Ind.	S. H. Keene
Olds Motor Works	Lansing, Mich.	W. Von Zimmerman
Oakland Motor Car Co.	Pontiac, Mich.	C. J. Nephler R. A. Armstrong
Oneida Motor Truck Co.	Green Bay, Wis.	J. W. Hendley
Packard Motor Car Co.	Detroit, Mich.	C. R. Lester H. W. Drew F. C. B. Bank
Paige-Detroit Motor Car Co.	Detroit, Mich.	F. W. Henning William DeGalen F. W. Boman
Pierce-Arrow Motor Car Co.	Buffalo, N. Y.	W. M. Ladd C. D. Cowles
Premier Motor Corp.	Indianapolis, Ind.	G. J. Miller
Pilot Motor Car Co.	Richmond, Ind.	J. W. Connor
Peerless Motor Car Co.	Cleveland, O.	E. D. Pugh
Republic Motor Truck Co.	Alma, Mich.	George Ogden
Reo Motor Car Co.	Lansing, Mich.	L. E. Finch
Root & Van Dervoort	Moline, Ill.	D. S. Smith
Studebaker Corp.	Detroit, Mich.	George W. Sweet Don O. Wilson George W. Crest
Scripps-Booth Corp.	Detroit, Mich.	J. Anderson Roy Bramlett F. N. Lewis W. N. Lindberg
William Small Co.	Detroit, Mich.	Bert Small
Selden Truck Corp.	Rochester, N. Y.	W. C. Barry H. R. Selden
Stutz Motor Car Corp.	Indianapolis, Ind.	W. A. Weidely
Simmons Motor Car Co.	Detroit, Mich.	H. A. Newby
Schacht Motor Truck Co.	Cincinnati, O.	B. M. Shay
Saxon Motor Car Co.	Detroit, Mich.	J. H. Hickey
Standard Steel Car Co.	Pittsburgh, Pa.	C. G. Walter R. S. Ellis
Signal Motor Truck Co.	Detroit, Mich.	H. A. Mitchell
Sterling Motor Truck Co.	Milwaukee, Wis.	H. J. Loebl
Service Motor Truck Co.	Wabash, Ind.	C. A. Versdoor A. P. Mudgett E. T. Herbig
Stewart Motor Corp.	Buffalo, N. Y.	H. S. Townsley
Templar Motors Corp.	Cleveland, O.	M. Bleiweiss
Motor Transport Corp., U. S. A.	Washington, D. C.	Maj. R. A. Osmun W. T. Norton, Jr.
United Motors Service, Inc.	Detroit, Mich.	J. L. Elwood
Universal Tool Co.	Detroit, Mich.	R. E. Roseberry
Union Motor Truck Co.	Bay City, Mich.	H. M. Donegan
Velie Motor Corp.	Moline, Ill.	C. M. Gustine
Westcott Motor Car Co.	Springfield, O.	J. M. Rehe
White Co.	Cleveland, O.	F. H. Stetzel J. H. Faxon, Jr.
Winton Co.	Cleveland, O.	W. H. Doddridge

VERDICT AGAINST FORD CO.

A verdict of $600,000 has just been awarded in the Federal District court of New York to the Hotel Woodward, Broadway and 55th street, in its suit for $1,000,000 against the Ford Motor Co. for alleged breach of contract.

In 1914, according to the plaintiff, the Ford company agreed to erect an annex to the hotel, wherein there were to be 300 rooms, the ground floor to be a sales room for the automobile concern. What with the scarcity of rooms and the present day profits in the hostelry business, the hotel company estimated that its possible profits lost when the Ford company failed to build the annex were easily $1,000,000, The case had been on trial for about two weeks and the jury rendered the verdict for $600,000 after a short consultation.

USED 216 TYPES OF AUTOS.

During the recent war emergency, 216 different types of passenger cars and trucks were represented in the 150,000 machines purchased by the United States war department, according to the annual report of Brigadier General Charles B. Drake, chief of the motor transport corps.

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ACCESSORIES, EQUIPMENT AND TOOLS FOR THE GARAGE AND REPAIR SHOP

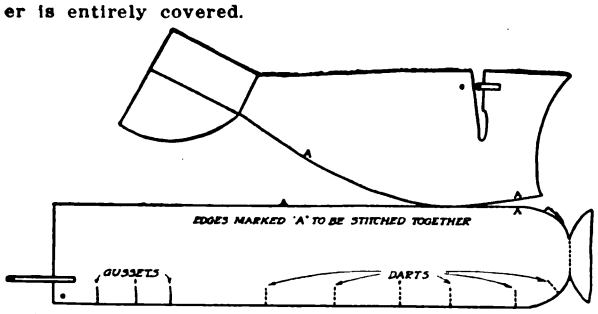
The Corrugated Lock Washer is a patented invention that came into use during the war period and was largely used in aeroplane construction. Instead of the single bearing surface provided in the ordinary lock washer, the corrugated lock washer has six bearing surfaces that give

added securities to the bolt and nut fastening.

Manufactured by the Smith & Hemenway Co., Inc., 281 Broadway, New York City. Prices and literature on application.

Fender and Door Protectors for the garage and service station are for the use of repairers when working about the engine and the interior of the car. The protector is placed over the top of the fender when the repairer is working on the engine and at the bottom of the door when working about the interior of the car.

The protector is made of a leather substitute, consisting of a strong cotton fabric base coated with pyroxylin "dope." A pocket along one edge allows for the insertion of the fender. A flap on the inside of the cover runs down on the inside of the fender in such a manner that the fender is entirely covered.



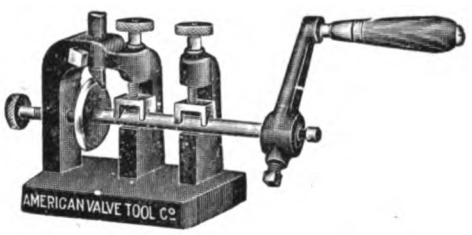
The material of which the protectors are made has a heavily napped back, which provides protection for the polished surface of the fender. The protector is thick enough to cushion any ordinary friction or blow. The covers may also be used to protect the cars while standing in garages, preventing injury to the doors or fenders by being struck by other machines while being moved in or out of their stalls in the garage.

Similar protectors are being used by garages to protect the upholstery of cars from being soiled by the greasy clothes of the repairer. Oil or grease that soils the protector may be easily washed off with soap and water.

Manufactured by the E. I. du Pont de Nemours & Co., Wilmington, Del. Prices on application.

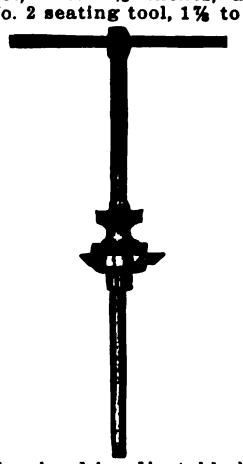
American Adjustable Valve Facing and Reseating Tools comprise two separate devices, one for refacing valves and the second for reseating the valve seats of automobile and truck engines.

The valve facing tool is a bench tool, in which the valve to be faced is placed and turned against a cutting tool by



means of a handle fastened to the valve stem by a set screw. Adjustment of the valve is made by a thumb nut at the head of the valve and two adjusting screws over the stem. The cutter is adjustable for valves of various diameters.

The adjustable valve seating tools consist of a reseating head having four cutters, a suitable handle for turning the cutter head and an extension rod that passes through the valve stem bushing to keep the cutter in its proper position. Two sizes of rods are provided with the No. 1 seating tool, 1 to 1⅞ inches, and three with the No. 2 seating tool, 1⅞ to 3 inches.



The cutting head is adjustable by means of two knurled nuts at the top of the cutter head. Loosening the top nut also loosens the lower nut enough to set the cutters to the desired width. Tightening the upper and lower nuts fastens the cutters securely.

Manufactured by the American Valve Tool Manufacturing Co., 354 West 50th Street, New York. Price for complete set, $20; all tools guaranteed.

"Ha-Maa" Hudson Automatic Manifold Air Adjuster is a device that governs the flow of air to the intake manifold of the Ford or any other light engine. It consists of a brass nipple that is threaded into an opening drilled and tapped in the center of the manifold and a special hex cap that contains a ball valve, spring and plunger.

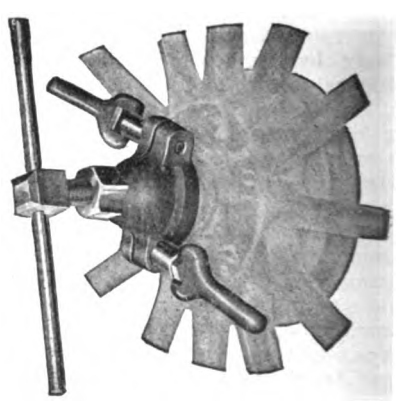
The object of the device is to admit air into the intake manifold of the engine in quantities to suit the varying speeds of

the engine, and it is stated that air so admitted will allow the engine to show a greater speed with a smaller consumption of gasoline than when the "Ha-Maa" adjuster is not used.

To test the device the carburetor should be set properly before the air adjuster is attached. After attaching the adjuster it will be noticed that the engine will show more speed and the needle valve may be closed slightly.

Manufactured by the Hudson Motor Specialties Co., Real Estate Trust Building, Philadelphia. Price, $1.50.

American Ford Wheel Puller is somewhat heavier than the usual type of wheel puller for the Ford car and is made with two clamps instead of the conventional one clamp. The device consists of a heavy casting, threaded for screwing over the



threaded hub of the wheel, two clamps for setting the threads closer in mesh and a powerful screw and handle for forcing the wheel off from its keyed seat.

Manufactured and sold by the Fairbanks Co., New York. Price, $5.

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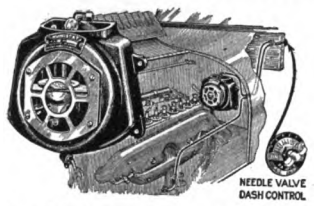
The "Humistat" Attachment is a vaporizing device that is attached to the dash of the car under the hood and is connected by a copper tubing with a control button and needle valve on the front of the dash, and is connected to a nipple on the intake manifold above the carburetor.

The Humistat is designed to introduce water in small quantities, determined by the needle valve control to the engine through the intake manifold. It is stated that engine operation is obtained by using the Humistat similar to that obtained when driving a car during the evening when the air contains more or less moisture.

The floating spray feature of the attachment is patented, supplying moisture in uniform quantities under varying conditions of engine operation, and subjects the small bubbles of air to a greater water



contact than formerly, it is claimed, giving high vaporizing efficiency.

The Humistat attachment may be used during cold weather as well as during the warmer months and only in the severest weather will it be found necessary to drain the water, the heat of the engine keeping the water in the container from freezing during moderate weather. The water capacity of the Humistat is ample for 400 to 500 miles with one filling.

Tests in actual operation on many makes of cars have shown that the Humistat will keep engines snappy and cause them to deliver nearer their full power.

Sold by the Pettingill-Andrews Co., New England distributors, automobile division, 100 Brookline Avenue, Boston, Mass. Prices and literature on application.

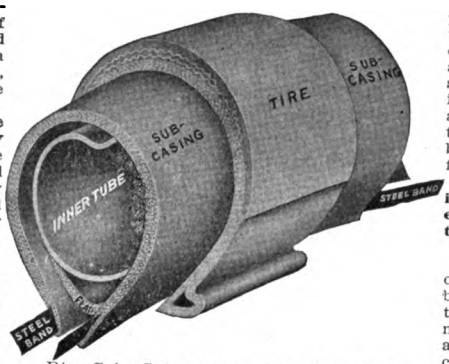
Fisher Rim-Grip Sub- Casings are made to fit the inside of weak or partially worn casings and act as a reinforcement for the tire and also allows the car owner to get considerable additional mileage from his tires.

Rim-Grip Sub-Casings are made somewhat different than the usual run of interliners, as they are formed much like the ordinary fabric tire, that is alternate layers of fabric and rubber are cemented together in a mold and formed in the shape of the tire that they are to fit. The edges are reinforced with strips of metal as in a

THE Fisher PATENTED RIM-GRIP SUB-CASING

casing, giving added strength, and preventing the sub-casing from creeping or turning. Flaps are used in the larger subcasings, while in the Ford car sizes they are omitted, as it is impractical to use them with the Ford type of clincher rim without pinching the tube.

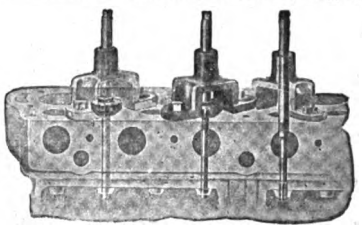
The manufacturer states that it is possible to use Rim-Grip Sub-Casings with tires that have rim cuts or stone bruises that would usually make it necessary to throw away the tire, and that the additional mileage gained will more than pay for the sub-casing, although it is suggested that a better plan is to place the subcasings in the new tire and allow the tire to run until it is completely worn out, when the sub-casing may be placed in another tire and used in the same manner, repeating the process till the sub-casing is entirely worn out and unfit for further use.



Rim-Grip Sub-Casings are shipped, including instructions for fitting them to tires and they may be applied by anyone who desires to do the work, as the instructions are very simple.

Manufactured by the Fisher Rubber Co., 1816 St. Clair Avenue, Cleveland, O. Prices on request.

Storm Valve Port Renewing Tool is especially designed for the Ford engine but may be used on some other makes of engine blocks. The manufacturer states that the valve port renewing tool enlarges the port, forming a new narrow seat similar to that on a new engine and produces a new stem guide which, when fitted with 1/64-inch over-size valve stems, makes the entire valve system as good as new. Attention is called to the upper jig or guide that is provided; it is said that this is the only way absolute accuracy may be obtained. This jig is secured to the engine block by two bolts which fit into the

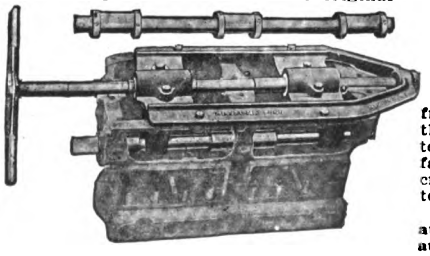


cylinder head bolt holes and remain in position until the operation is completed. The jig is then moved to the next port by the removal of one bolt.

On an engine that has been subject to considerable wear where the valve seats have become widened by use and repeated grindings, the Storm renewing tool is a quick and efficient remedy, as the enlarging reamer cuts away a portion of the old seat, enabling the reseating reamer, which is next used, to cut a narrow seat. Worn valves may be remedied by reaming to over size by using the valve stem guide reamer.

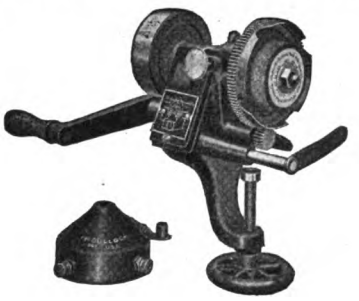
Manufactured by the Storm Manufacturing Co., Minneapolis, Minn. Price, $15.

New Storm Tool for Aligning Ford and Fordson Main Bearings provides a rapid means of aligning faulty main bearings, consisting of a babbitting jig and boring bar. The new Storm tool is said to make a new perfect bearing exactly the same as the original and in the same original position. The jig which holds the babbitting arbor and the boring bar is held in correct position and alignment by an aligning arbor passing through the cam shaft bearing holes. The babbitting arbor is 1/8 inch smaller than the crank shaft, allowing ample space for the pouring of the metal and providing surplus metal to be cut away by the boring bar, which has four cutters for each bearing.



Manufactured by the Storm Manufacturing Co., Minneapolis, Minn. Price for Ford engine only $70. Price for Fordson tractor engine on application.

The McCulloch Timer Grinder is a hand or belt power grinder that may be used by repairers for regrinding the inner contacts of Ford and Fordson timers. The machine is clamped to the work bench and the power supplied either by the crank at the side or the crank may be removed and belt power substituted. The timer is placed in the special chuck and held securely while being ground by the flat retaining spring which fits the end of the timer case. The handle is turned in a clockwise direction while the milled screw is fed in an anti-clockwise direction so



that the spring comes into action to keep the timer in register with the stone.

It is claimed that the McCulloch grinder will grind timer cases that have become practically worthless through wear, in a few moments time and will give to the timer case a glass like surface, keeping it perfectly true with the outer shell. When used with power the handle is unshipped. When not in use as a timer grinder the small stone and the timer chuck may be removed and the machine used as a precision grinder for grinding small tools, drills, etc.

Manufactured by the A. P. McCulloch Machine Co., 216 High Street, Boston, Mass. Prices on request.

Toptite Dressing is stated to be a perfect dressing for tops and seat cushions made of fabric, leather, pantasote or mohair. It waterproofs, preserves and renovates top and seat cushion coverings, producing a fine, permanent finish that is claimed to be lasting. The ingredients

from which Toptite is made are the best that the market supplies and are claimed to contain nothing that is injurious to the fabric or other covering and will not crack or smut the clothing when applied to seat cushions.

Manufactured by the Woodtite Laboratories, Modesto, Cal. Prices and literature on application.

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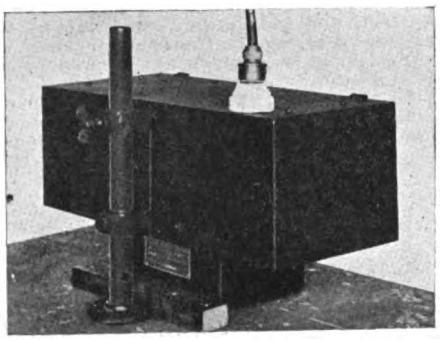
Hydrate Electric Battery Oven is a device for softening the wax of storage batteries, allowing the jars to be easily removed and examined.

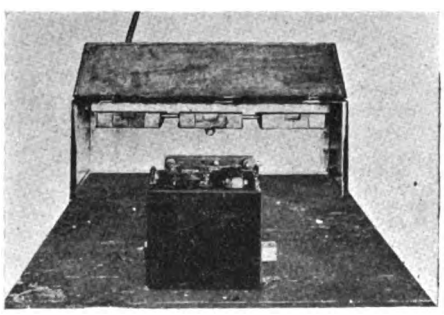
It consists of an enclosed box, having a suitable heating coil that is connected through a lamp cord to any convenient lamp socket. The battery is placed under the box the current turned on for a short time and the exterior solid parts of the battery thoroughly heated, the solution of the battery cells not rising to any appreciable temperature.

The manufacturer claims it to be a time saver for the service station handling a large battery trade, as a battery may be unsealed, inspected and the troubles diagnosed in a very short time and eliminating the chance of breakage.



The Hydrate Electric Battery Oven is a metal box open at the bottom, and containing in the upper portion of the box three electric heating units. The back of the box, by means of a bracket, is attached to an upright pipe standard on which it can slide, so that the height is readily adjustable to meet the height of any battery and is held in position by a thumb screw. There is also a stop which prevents the battery from coming in contact with the heating units. The oven is 21¾ inches long and nine inches wide inside, and is large enough for any standard starting, lighting and ignition battery.

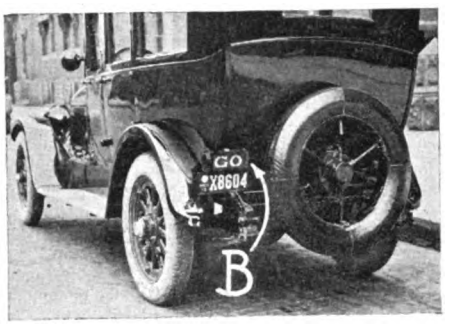
The heating units are designed for any 110 to 125-volt lighting circuit, either direct or alternating. The power required



is 1½ kilowatts, so that the cost of operation is low. The front of the oven is hinged and may be opened for examining the battery while it is being heated. The oven is shipped completely assembled, including the heating units and connecting cable ready for installation. The upright standard and the mounting block are drilled and screws and all parts furnished. The installation is accomplished in a few moments time.

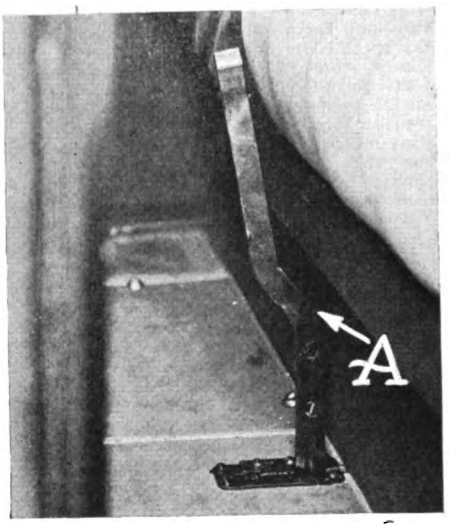
Manufactured by the Service Station Supply Co., Detroit, Mich. Price, $42.50.

The Auto Indicator Safety Signal is a rear signaling device known as the "Four-in-One Auto Indicator." It combines the signal and tail lamp in one instrument and is operated automatically, showing the arrows for turns and the words "Go" and "Stop." The housing at the rear of the car is enameled steel, nine inches long and 4½ inches wide. In this housing there is a longitudinal reel which revolves on bearings at the ends of the outside casing.



On the four sides of the reel are the words "Go" and "Stop," one arrow pointing to the right and another pointing to the left. When the brake is applied the word "Stop" appears and when the brake is released the indicator goes back to the neutral position, or "Go."

A small hand lever "A" is conveniently placed and a slight manipulation of it will make the arrow point in the direction the driver intends to go. This feature is especially attractive to operators of closed cars. The word "Go" shows red at night, making it an effective tail light, while any change in direction or change

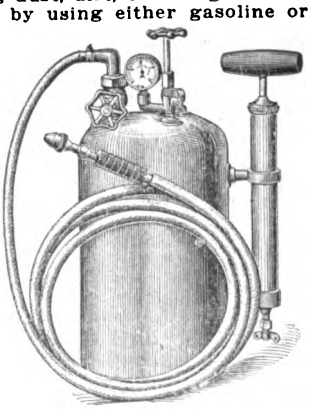


in signal is flashed in a white light. The indicator is placed over number plate "B." The housing is light and ornamental and the control is simple, durable and effective.

Some states make it compulsory for automobile owners and operators to equip their cars with a signaling device, and the manufacturer claims that this one has been approved by boards of examiners as complying with the law.

Manufactured by the Auto Indicator Co., 209-217 Ottawa Avenue, N. W., Grand Rapids, Mich. Price, retail, $15. Dealer and jobber trade solicited.

The Turner Engine Cleaner is for removing dust, dirt, oil and grease from the engine by using either gasoline or kero-



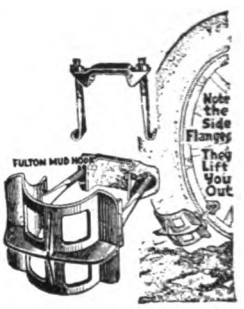
sene in a suitable container, forcing the gasoline or kerosene through a hose and small nozzle by air pressure, supplied either by a small hand pump attached to the side of the container or connected direct to the shop air pressure system.

The containers are made in three sizes, No. 1 of one quart, No. 2, two gallons, and No. 3, five gallons. No's. 2 and 3 are equipped with a valve, allowing connection to be made to the shop pressure system, a pressure gauge and a valve admitting the kerosene to the hose and nozzle. The containers are made of heavy seamless metal, having all joints acetylene welded and all connections, valves and nipples of brass, air tight. The air pressure gauge registers to 40 pounds.

Manufactured by the Turner Brass Works, Sycamore, Ill. Prices, No. 1, $5.20; No. 2, $22.60; No. 3, $26.40.

Fulton Mud Hooks for the motorist and truck operator are malleable castings that are fitted to the rim of the wheel and tire in case of emergency and give added traction to the wheel.

The mud hook is fastened to the rim by means of special bolts which have a hook at one end for holding the mud hooks, the other end being threaded and fastened by means of a clamp passing over the felloe



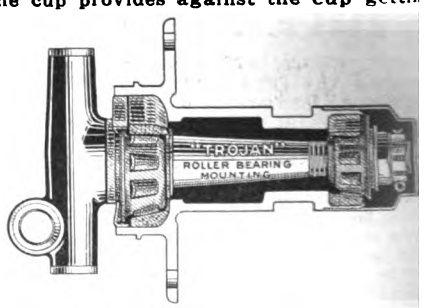
of the rim. Through this type of fastening the mud hook is rigidly held in place.

Two mud hooks constitute a set and they are of a size that may be conveniently carried in the tool box. It is stated that the mud hooks give traction enough in mud or snow to easily move the car.

Manufactured by the Fulton Co. 1910 St Paul Avenue, Milwaukee, Wis. Price, $ for set of two.

"Trojan" Tapered Roller Bearings fo Ford and Chevrolet Cars are designed o the same principle as tapered roller bear ings used in any high grade car. Whe disassembled the retainer holds the roll in place on the cone, making mountin easier and less liable to misadjustment, a well as preventing the loss of the rolls.

Trojan retainers are especially heav and are made from one piece of steel. Th cups and cones are extra heavy. As th metal supporting the cup in some hubs rather thin, this excessive thickness the cup provides against the cup gettin



out of round, when carrying its load, being forced to its position on the h The rolls have an excess carrying capac and are made of high grade alloy ste All "Trojan" bearings are guarante against imperfect workmanship and ma rial.

Manufactured by the Ahlberg Bear Co., 317-327 East 29th Street, Chica Prices and literature on application.

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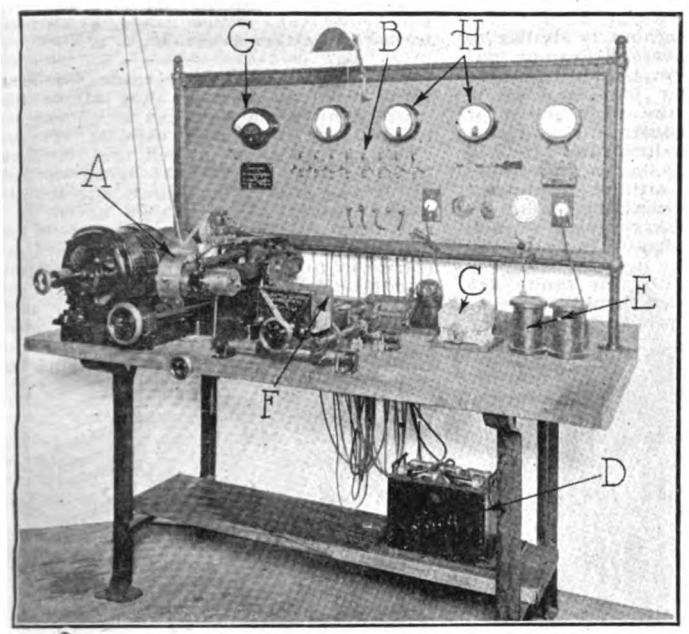
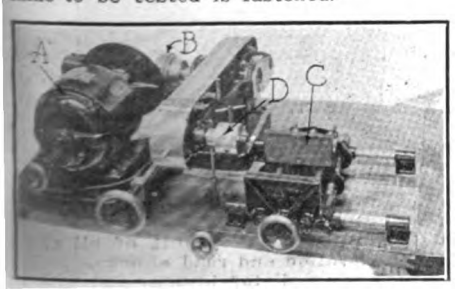


Cowie Testing Equipment for testing and repairing all makes of automotive electric equipment, consists of a shop bench containing the necessary apparatus, switches, ammeters, voltmeters, etc., for the testing of generators, motors and magnetos.

The bench legs are made of cast iron, which makes the bench more rigid and allows it to be bolted to the floor. The universal drive and holding device, which holds and drives any and all makes of automobile electrical devices for testing them under operating conditions, is shown at A in the illustration. The spark gap testing device is shown at B and the ammeters and voltmeters are shown at G and H. The magneto and coil test block are shown at C and the magnet recharger at E. A storage battery as source of current supply is shown at D and the adjustable clamps at F.

The Cowie universal drive and holding device is designed to hold and drive any or all makes of automobile electrical equipment, such as generators, dynamos, starting motors, magnetos, etc. A two-horsepower electrical motor (A) supplies the power and by means of a friction drive (B) the instrument to be tested can be operated at any desired speed. It also has a universal holding device (C), which is adjustable and will securely clamp the instrument being tested while it is being operated. There is also an adjustable check (D) in which the shaft of the machine to be tested is fastened.

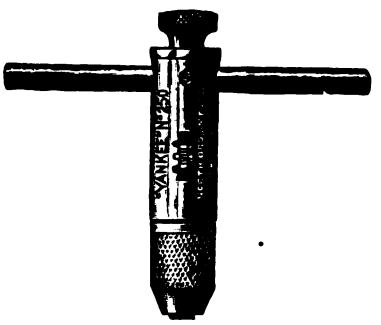


The armature and field coil test equipment consists of a standard growler to operate on 110 or 220 volts A. C. current, and is equipped with an ammeter and rheostat. The magnet charger has a magnetometer, which indicates in pounds the strength of any size magnet and will readily show whether it is in good condition or must be replaced. The coils of this device are wound so as to operate on a six or 12-volt battery.

The magneto and ignition coil test block has a cast iron cradle, which is connected to that point and will test any magneto, armature or ignition coil. The breaker is a standard Westinghouse vertical head, which carries the cam and platinum points. These are mounted on a block to fit the holding vise and are so connected as to make all test of ignition coils, either with or without the condenser connected.

Manufactured by The E. S. Cowie Electric Co., Kansas City, Mo., and Wichita, Kan. Prices and literature on application.

"Yankee" Ratchet Tap Wrench No. 250 is a universal tap wrench that will take taps in size up to and including 3/16 inch. The outside diameter of the wrench is ¾ inch and the length over all is 3¼ inches. A larger size, No. 251, takes taps up to and including 5/16 inch, having an outside diameter of chuck of ⅞ inch, with a

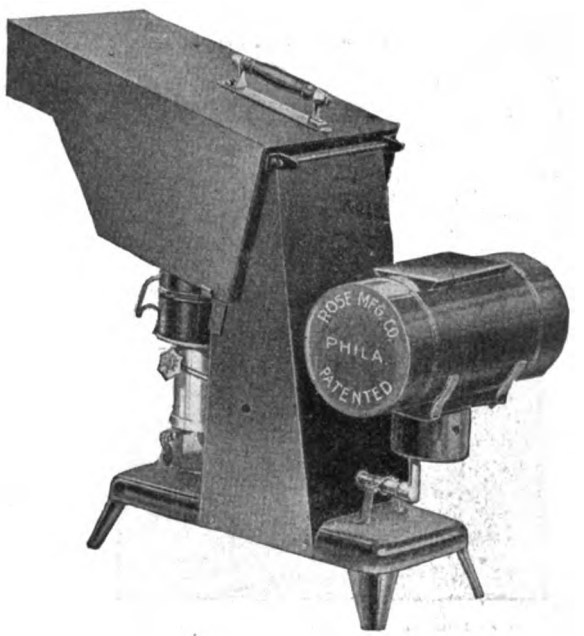


length over all of five inches. No. 1251 takes taps of the same size as No. 251 except that the length over all is 13 inches. This wrench is special for work in steel cars, etc., where the work is of an overhead nature where a long stock is required.

The distinguishing features of the Yankee ratchet wrench is its adaptability, convenience and efficiency for working in close quarters, corners and inaccessible places.

The ratchet mechanism is of the same construction as that used in other Yankee tools and allows the worker to use the wrench for either right or left hand work by simply sliding the pawl in the center of the handle from the top to the bottom of the slot or vice versa. The cross bar is held central by a friction device and is of ample leverage for larger taps than what the chuck will hold. A knurled thumb piece at the top of the wrench affords a ready means of starting in and backing out the tap quickly. For packing in the tool chest, the cross arm is readily removed, so that the wrench occupies but little space.

Manufactured by the North Bros. Manufacturing Co., Philadelphia. Prices on request.



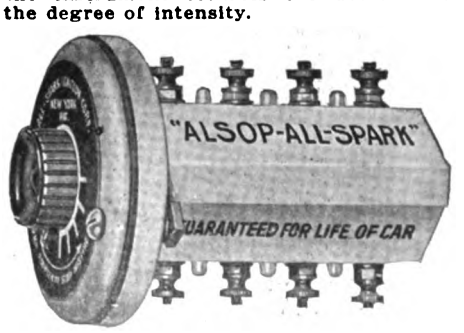
The Neverout Auto Radiator and Garage Heater is designed for the private garage. The base of the burner has a capacity of 1½ gallons and the heater will burn for 36 hours with one filling. The burner is screened, similar to a miners' safety lamp, and burns with an intense blue flame. Heat from the burner is carried upward and forward through a flue that allows the heat enter directly the front of the radiator, thoroughly warming the cooling medium and the units of the engine.

The manufacturer claims that this device after heating the radiator will allow enough heat to pass into the air to heat the garage enough so that a person may work in the garage with comfort. This device, with the safety screening method employed, has been approved by leading fire insurance companies, it is stated.

The extreme length of the heater is two feet, five inches; height, 26 inches; width, 12 inches, and weight, 19 pounds.

Manufactured by the Rose Manufacturing Co., Garage Heater Division, 910 Arch Street, Philadelphia. Price, $27.50, complete, express prepaid.

The "Alsop-All-Spark" is a spark intensifier that is placed on the dash of the car and has the high-tension wires from the coils attached to the terminals of the device. The current passes through the intensifier and, by means of terminals and high-tension cables, is led to the plugs. A knurled hard rubber button on the face of the instrument controls the device and the degree of intensity.



The maker claims that the "Alsop-All-Spark" will cause a plug to fire even under adverse conditions and that it has a tendency to correct many of the troubles that arise from too much oil in the base of the engine. Spark plugs that become fouled with oil or carbon, it is claimed, are cleaned by the higher intensity of the current.

Manufactured by the All-Spark Ignition Co., 13 Water Street, New York. Write for prices and literature.

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The Presto-Felt Windshield Cleaner is a new article for the motorist and is designed by the manufacturer to keep a section of the windshield free from moisture, allowing the driver to see clearly.

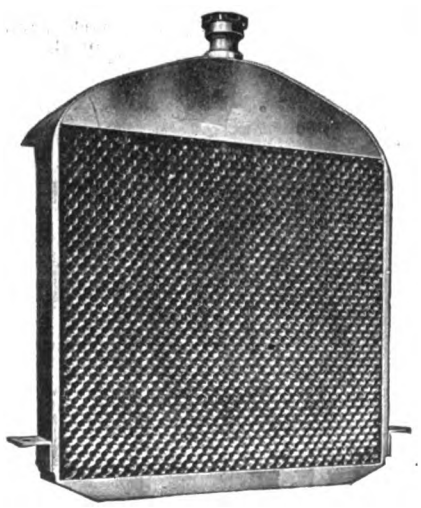
The Presto-Felt windshield cleaner is composed of two chemically treated pads of felt, held in place on the windshield by two springs, attached to the shield at the top and allowed to swing through an arc on the shield. While the Presto-Felt windshield cleaner is made in only one size, it is adaptable to all windshields, by means of a simple fastening clip at the top, tightened by a bolt and nut.

The chemical used in the felt pads is applied to the shield after moisture has collected on the glass of the shield. Swinging the cleaner across the shield allows the chemical from the pads to stick to the shield, and as moisture attempts to collect the drops of water are flattened out by coming in contact with the chemical, leaving the surface of the glass so treated clear for the operator to see through.

It is claimed that one treatment is sufficient for the duration of a storm and that both sides are cleaned at the one operation.

Manufactured by the Presto-Felt Manufacturing Co., Toledo, O. Price, $2 each.

The White Radiator for Ford Cars is a replacement radiator having a shell of the same type as the regular Ford radiator, but having a core constructed on different lines. The core of the White radiator is of the honeycomb type, made up of many sections or thin flat tubes, connected at the top and bottom to the tanks of the radiator and separated from each other by unusually large air spaces. The core is



made of a soft brass, having all joints sealed in high grade solder, making the core one solid unit.

It is claimed that the White radiator insures better cooling. The vertical air passages between the tubes allow sufficient expansion to help prevent bursting when the water freezes.

Manufactured by the F. H. Lawson Co., Cincinnati, O. Prices, Fords 1911-1916 inclusive, $27.50; 1917-1920 inclusive, $27.50.

Emco Truck Radiator (Ford Type) is a new radiator for replacement purposes on the Ford one-ton worm drive truck. The construction throughout is similar to that found in the larger and heavier motor trucks. The radiator is made in three sections and is easily disassembled in case of accidents or the replacement of tubes. The tubes are constructed of seamless drawn copper ⅝-inch diameter, 76 tubes being used. The tanks and frame are tough malleable castings, combining minimum weight with maximum ability to withstand vibration. Large vents at each side of the frame materially increase the circulation of air.

The top and bottom water tanks are detachable and, if repairs should be necessary, any tube can be removed and a new

one put in its place with a blow torch and a soldering iron. A leaky tube can be repaired merely by inserting a smaller tube inside the damaged one, or, on the road, the tube can be merely pinched out and repairs completed later. New fins and tubes may be purchased at nominal cost.

The manufacturer claims that the Emco Radiator is proof against freezing and that the water will not boil on account of the larger cooling capacity.

Manufactured by Motor Truck Radiator & Manufacturing Co., 2 Columbus Circle, New York. Price and literature on application. Quality guaranteed.

Carborundum Valve Grinding Compound in the handy combination can is a mixture of the hard, sharp, fast cutting carborundum grains and a high grade grease. It is made in coarse, medium and fine mixtures, and it quickly cuts the carbon, giving the valve a true, clean seat. The coarse or the medium compound is for

roughing in the valve and the fine for polishing the valve. The handy combination can carries both the fine and the coarse compound in separate compartments, and is ready for instant use.

It is also supplied to the garage and service station trade in one and five-pound cans. Either the coarse, medium or fine compound can be purchased in the cans.

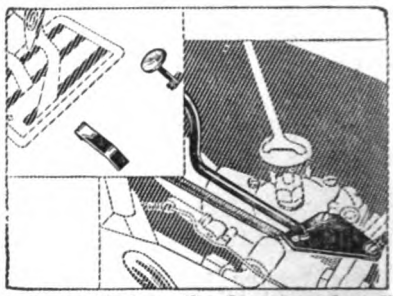
This grinding compound is particularly valuable in grinding valves, lapping pistons and rings and in all forms of grinding where a rapid grinding compound is

desired. It has the advantage of not becoming imbedded in the metal.

Manufactured by the Carborundum Co., Niagara Falls, N. Y. Prices, combination can for the motorist, No. 277, 50 cents; one-pound can, either grade, $1.25; five-pound can, either grade, $5.

The Sense Foot Accelerator for Ford Cars is an attachment that allows the Ford operator to feed gas to the engine independent of the hand throttle. The accelerator rod is so placed that it clears the magneto plug and the carburetor hot air intake pipe, attaching to the throttle valve by means of a special plate.

A chain connects from this plate to the end of the throttle rod, allowing the accelerator to be used independent of the throttle. A hole is drilled through the accelerator rod where it fits into the plate operating the throttle valve, and a cotter pin is inserted, so that the rod will not slip down, causing the rod to bind. A



rest is provided on the floor board so that operation of the accelerator is easy and free from jolts caused by passing over uneven ground.

It is said that the Sense accelerator will not bind after years of hard service and that the drivers' foot cannot come in contact with the accelerator when operating the foot pedals.

Manufactured by the C. H. Rice Co., Cherokee, Ia. Price, $1.50.

The Doric Radiator for Ford Cars is patterned somewhat after the Rolls-Royce type. Like the Rolls-Royce radiator, it embodies such features as a solid Liberty silver alloy finish instead of nickel.

The Doris radiator affords the Ford engine a larger cooling surface which, it is claimed, does away with the excessive heat, especially in the front seat of the car, keeps the engine at a nearer even temperature and allows the engine to develop more and better power. The method of suspension is novel in that the strain is taken from the casing of the radiator and is placed upon a strap fastened at the

bottom, relieving the shell of all strain due to vibration and road shocks.

The Doric radiator is provided with an extra tank, securing greatly increased water capacity and affording ample provision against emergencies. Large vents permit free circulation. A high grade hexagon core is used on account of its effective cooling and leak resisting qualities.

Manufactured by the Motor Truck Radiator & Manufacturing Co., 2 Columbus Circle, New York City. Price, $40. Immediate deliveries. Quality and efficiency guaranteed. Liberty Silver Shell to fit standard Ford core, price, $10.

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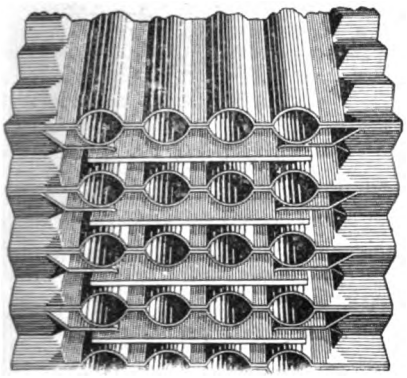
Lober Non-Bursting Radiator for Ford Cars consists of a core constructed on the tube principle, having the tubes formed in sections 2⅜ inches thick and able to expand during freezing weather. The water circulation is allowed to pass through these tubes and the edges of the tubes are crimped so that the inrush of air may more readily pass. The radiator tubes are made of brass throughout and the manufacturer claims that the tubes will stand repeated freezings without damage.

As will be noticed from the illustration, the tubes are in sheets of four, separated at their centers by partitions, allowing the edges to come together, but when freezing takes place in the radiator the centers separate, allowing for expansion without damage. After the freezing has been overcome the center partitions contract, giving the core its original form.

The tubes are separated one from the other by metal partitions, fastened at the top and bottom of the core. Air passages are provided in and around the tubes by



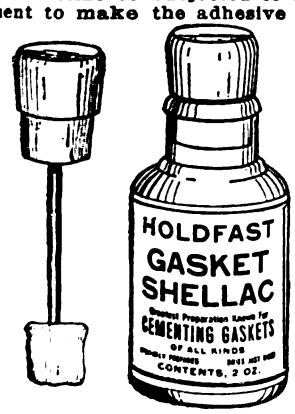
means of spacer partitions passing from the front to the back and forming the front and rear sections of the radiator.

In case of leaks, soldering is easily accomplished, as the depth of the soldering is only ¼ inch front and back. The core is 2⅜ inches thick. In assembling the radiator the parts are assembled and the core dipped in melted solder, making the core a solid unit.

The Lober Non-Bursting Core is guaranteed by the manufacturer to stand freezing and the company will repair or replace without charge any radiator damaged from freezing if returned to the factory, charges prepaid. It is also guaranteed to be made of the best of materials and workmanship.

Manufactured by the Lober Art Brass and Specialty Co., Toledo, O. Prices on application.

Holdfast Gasket Shellac is an adhesive compound used in replacing gaskets about the engine. It is furnished to the trade in two-ounce bottles, complete with swabber for applying the shellac. In preparing this shellac, the manufacturer states, the gum shellac is subjected to a special treatment to make the adhesive qualities

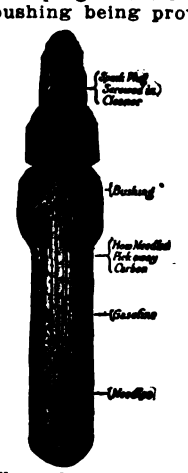


greater than they ordinarily would be.

Holdfast gasket shellac, it is claimed, is made from the highest grade of materials obtainable, and is of a thick bodied consistency, making it especially suitable for gasket work. Slow drying qualities predominate and it is said that this feature is desirable where permanent results are sought.

Manufactured by the Buffalo Specialty Co., 375 Ellicott Street, Buffalo, N. Y. Prices on request.

Champion "Minute" Spark Plug Cleaner is a small device, originated by the manufacturer of the Champion spark plug, for the easy cleaning of spark plugs, especially plugs of the non-separable type. The spark plug cleaner is screwed to the threads of the plug at the end of the shell, a rubber bushing being provided for this



purpose. The tube is six inches long and is made of heavy moulded glass, one end of which is open. Inside the tube are 50 hardened loose steel needles that serve as the carbon removers.

To clean a plug the tube is first half filled with gasoline or, better still, a like amount of Johnsons' Carbon Remover. The Johnson product is superior to gasoline in that it is made specially for the purpose of removing carbon deposits. The plug is then screwed into the shell and the tube shaken up and down for a minute or two. The action of the needles loosens the carbon, while the liquid washes it away and dissolves the accumulation of carbon.

Manufactured by the Champion Spark Plug Co., Toledo, O. Prices on request.

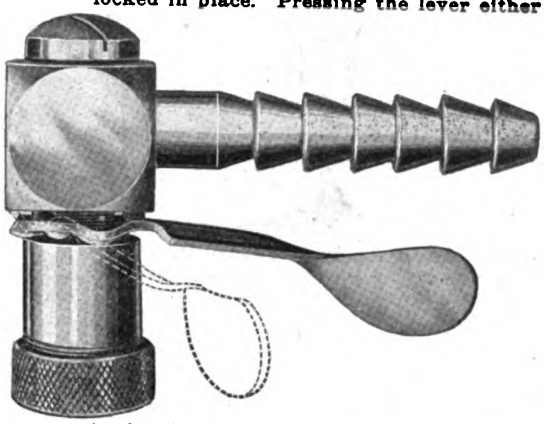
The "Exytite" Tire Chain Adjuster may be attached to ordinary tire chains in place of the regulation chain fastener. The manufacturer claims that this device will overcome the trouble of having a fastener come loose and the loss of a chain; that

it is easily hooked or unhooked by the driver without injuring the hands or fingers, and that it may be unhooked without the use of tools.

The device consists of a heavy steel wire, rust proofed body with a clamping and locking lever, on which is pivoted a connecting piece with eyelet for fastening adjuster to tire chains. Made only in one size and this size is adapted to all chains for passenger cars. Chains can be made tight or loose as desired. The hook locks the chain and the clamping lever locks the hook. Sold by jobbing houses or may be purchased direct from the manufacturer.

Manufactured by the Exytite Sales Co., 82 Church St., New Haven, Conn. Price, $1.50 for set of four.

The "Lox-On" Air Hose Chuck or air hose connection does not depend upon a rubber washer to grip the tire valve stem, but slips over the valve stem and by means of the lever the chuck is firmly locked in place. Pressing the lever either



to the right or left accomplishes this locking effect and once locked the device is sure to allow all of the air from the source of supply to enter the tire.

Manufactured by the Automatic Safety Tire Valve Corporation, 1765 Broadway, New York. Price, $3.

Pronto Fire Extinguisher is a new product and, as its name implies, is a quick acting agent in case of a fire caused from gasoline, naphtha, kerosene, etc. It is an extinguisher of small size that may be carried in the automobile or truck or

may be used in the factory.

The Pronto consists of a 16-ounce container, a crown sealer cap, an upper and lower patented bracket and the actual fire extinguishing liquid The device is installed in brackets and attached to the wall, door or other convenient place. When fire breaks out the extinguisher is simply pulled from the brackets and the contents dashed into the base of the fire. The sealer cap automatically comes off as the extinguisher leaves the brackets.

The maker states that the liquid, which is carbon tetrachloride, is the most powerful fire extinguishing agent known. Instead of drenching fire as does water, this liquid, upon contact with fire, forms a heavy non-inflammable gas that spreads like a blanket over the base of the flames, drives off oxygen and thus chokes the fire. It is said to be the most effective liquid known for gasoline, oil and other hazardous fires and, because it is a "dry" liquid, it is a non-conductor and is safe and unusually effective to use on electrical fires.

Manufactured by the Allen Corporation, 546 Greenwich Street, New York City. Price, $1.50 each, six for $8.50. Literature on request.

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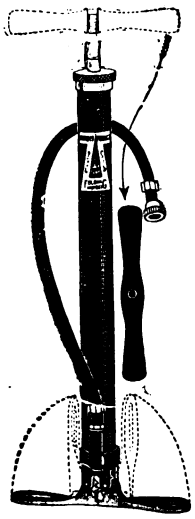


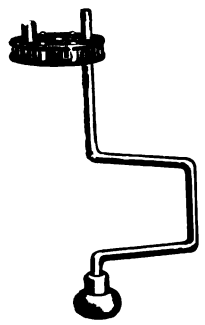
Sidel-Ruttner Folding Wonder Pump is of the collapsible type. It is easily taken apart and folded, taking little space in the tool box. The base is of malleable iron, the handle of hard wood removable, and the piston has an air tight assembly with a cold rolled steel plunger rod. The cylinder is made of heavy gauge steel, japanned and baked, black with all brass finishings lacquered. The pump has a positive check valve in the base, insuring a positive flow of air to the tube when pumping. The pump is also fitted with a suitable length of hose and connection to the tube valve. A brass cap having a knurled edge, facilitating removal, is fitted to the top of the pump cylinder, through which the plunger rod works.

Dimensions when folded are 21 by 2¼ inches by two inches over all. The weight is 2¾ pounds. Packed one in box, 25 in a shipping case.

Manufactured by the Sidel-Ruttner Manufacturing Co., Inc., 31 Broadway, Brooklyn, N. Y. Price, $3; west of the Rockies, $3.20.

The Universal Off-Set Speed Wrench for Ford Cars removes the connecting rod nuts of the crankshaft very easily and is especially useful in reaching and turning the fourth connecting rod nuts in the Ford crankcase.

The wrench is made of steel, having three cut gears, hardened socket and heavy brace. It is strong and durable. The offset is 4¾ inches long, having a three-inch distance between socket and

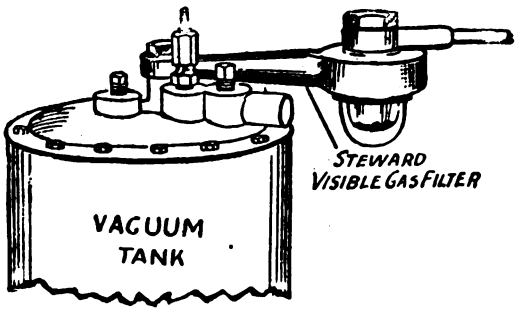


brace rod. This allows ample distance to place the wrench in the crankcase and have the socket fit up directly on the nut of the fourth connecting rods of the crankshaft. The brace is one-half inch steel rod with a 10-inch swing, giving sufficient leverage to remove the tightest nuts. The wrench is 17 inches over all and weighs four pounds.

Manufactured by Sawyer Sales Co., Terminal Building, Lincoln, Neb. Price, $5.

The Stewart Visible Gas Filter is attached to the main fuel pipe of cars equipped with the Stewart vacuum feed tank. The work of the filter is to separate the sediment and water that accumulates in the main tank from the gasoline before it reaches the vacuum tank.

The filter consists of a cast arm, fastened to the intake of the vacuum tank and the fuel pipe by suitable connections. A glass bowl is provided at the filter,



through which the gasoline flows from the fuel pipe. Sediment and water, being heavier than the gasoline, settle to the bottom of the glass bowl, while the gasoline passes up and through a fine mesh screen and on into the vacuum tank. The bowl is easily accessible for cleaning and may be removed by unscrewing a retaining bushing at the top of the bowl. Gaskets are provided above and below the bowl, making the device air and gas tight.

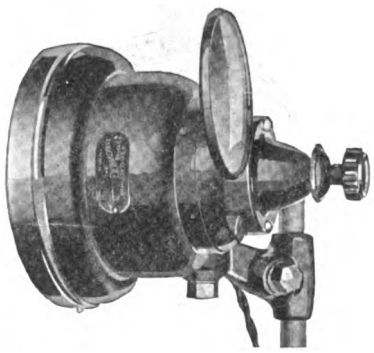
The gas filter is easily attached by any one handy with tools and once in place will show sediment as it collects. The sediment may be removed as occasion warrants. The manufacturer states that the filter will eliminate many of the troubles due to sediment and water or lint in the gasoline feed line and will result in a smooth, quiet operating engine.

Manufactured by the Automotive Material Co., Chicago. Price, $5.50.

The Red Spot Searchlight combines a powerful white light with a red light that can be changed from white to red or red to white by pulling out or pushing in a button at the rear of the lamp.

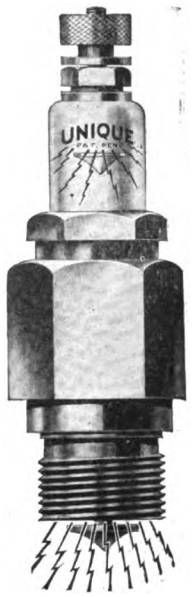
The searchlight is attached to the windshield, is hinged to a swivel bracket so that it may be swung to varying positions, and carries at its top a mirror that is also attached to a swivel arm.

A knurled button on the back of the lamp controls the flow of current, while a smaller button controls the change from white to red. The lamp is renewed from



the back, without disturbing the front of the lamp, by removing two small screws, allowing the lamp assembly to be completely removed. This saves the reflector from being scratched and also saves springing the front of the lamp. Brackets are furnished for practically any make of car for 75 cents.

Manufactured by the F. W. Wakefield Brass Co., Vermilion, O. Price, $5.



The Unique Deflector Spark Plug consists of three sections and two gaskets and is constructed on the separable principle. The maker states that the shell of the plug is made of high grade steel and the porcelain is made of finest grade. The gaskets are copper asbestos and are claimed to be gas tight. The bushing at the top of the shell is made of brass and fits into the shell threads. Gaskets placed above and below the shoulder of the porcelain and with the threaded bushing form a gas tight fitting.

The main center electrode passes from end to end of the porcelain insulator and has at its lower end a disc formed integral with the electrode. The manufacturer claims that this disc provides a circular firing area of 360 degrees, insuring a circle of sparks. It is further claimed that the use of the Unique plug insures a thorough ignition of the charge and that the missing of the cylinders is done away with. A thinner mixture may be used and the maximum power maintained.

Manufactured by the Norris Co., 332 S. La Salle Street, Chicago. Prices, ⅛ or ¾ inch, $1.25.

West's Automobile Top Dressing is prepared especially for rubber, leather, pantisote and all artificial leathers. The maker states that it has a good body, flows evenly and is made to stand the hard usage of an automobile top. The maker also claims that it restores the original

finish to tops and upholstery. It is jet black. A special advantage is that it dries over night.

Another product of the same company is the Mohair Top Dressing, which is for cloth goods, such as mohair and cravenette. This is recommended for cushions and backs. Both products are put in gallons, half gallons, quarts and pints, 12 to the case, and also in half pints, 24 to the case.

Made by L. M. West's Sons, 230 Broadway, Rockford, Ill. Write for prices and literature.

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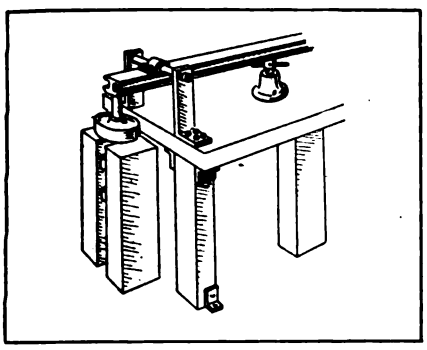


Home-Made Lever Press.

HOME-MADE LEVER PRESS.

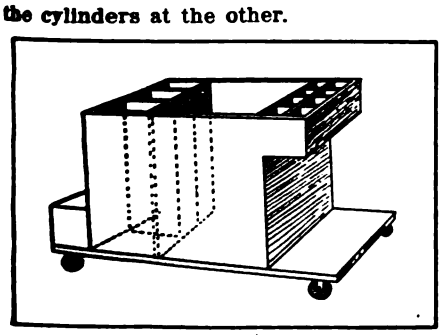
A handy lever press for a small repair shop is made as follows: Secure a length of street car rail from a junk dealer and a short piece of shaft. A heavy plank bench should be built with stout legs that may be fastened to the floor. Brackets are made from four-inch iron, heated in a forge and bent at right angle. Four holes are drilled in the end of the iron for fastening to the bench and a single hole drilled in the other end for the short shaft.

Two brackets will be needed, one at each side. A bearing is made from a strip of iron, shaped to the shaft, by heating in the forge. Holes are drilled at each end to attach it to the rail, and corresponding holes drilled in the rail.

The device is assembled as shown in the cut, using a screw jack of small size for gaining the leverage. The work is raised or lowered by using blocks of different heights and it has been found that this device will take care of practically all of the work that will come to the small shop, such as pressing off gears, pulleys, etc.

TRAVELING PARTS BOX.

"A place for everything and everything in its place" is most important when overhauling the car, and this idea can best be carried out by providing a box with suitable compartments and mounted on casters. The box shown in the illustration has a space in the center for large units such as wheels, radiators, axle housings and the like. There is a series of compartments for small parts, and spaces for larger units, such as axle shafts and steering gear parts. The pistons and rods are carried at one end and the cylinders at the other.



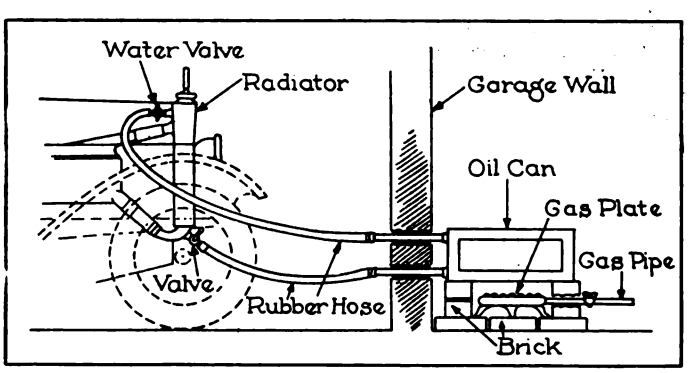
Traveling Parts Box.

GAS HEATER FOR THE GARAGE.

A novel gas heater for a garage recently brought to the writer's attention is so simple in construction, and the owner declared it intensely practical, that it is given to Journal readers for what it is worth.

The outfit consists of a small box or house close to the rear of a garage in which an ovenlike structure of fire brick was placed on the ground to surround a burner, raised to clear the ground. A four-inch gas burner was placed in the center of the oven and connected through a shut off valve to the gas supply of the house lighting system. Over the burner was placed a two-gallon gasoline or oil can, setting on the brick sides of the oven and clearing the burner three or four inches. Two ⅜-inch pipes were run from the side of the can through the wall of the garage, one pipe above the other. The pipes were coupled to the can by soldering on it brass nipples.

In the garage rubber tubing, ½ inch bore, lead from the pipes to the radiator of a car, the lower tubing connected to the drain out petcock and the upper tube



Gas Heater for Garage.

is carried in an easy curve to a petcock soldered at the top of the radiator inside.

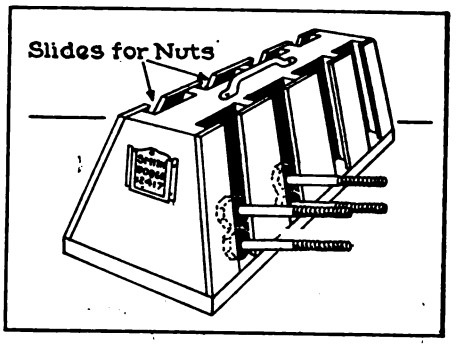
When the car is run into the garage at night the lengths of hose are connected at the top and bottom of the radiator, the petcocks opened and the gas lighted at the burner. The water will heat in the tank and a circulation will be started through the radiator that will keep the water warm and the car ready for use at a moment's notice.

The dimensions of the parts used may be of interest, and are as follows: Gas ring, four inches diameter; gasoline or oil tank, two gallons (heating tank); iron pipe, ⅜ inch; hose pipe, ½ inch; gas taps of ordinary brass pattern, ⅜ inch clear bore.

The heating effect is easily under control and the only care necessary is to see that the tank of the radiator is kept full, and that the upper pipe slopes gradually upwards, and does not sag anywhere, otherwise air or steam locks may stop circulation.

NUT AND BOLT RACK.

A unique device for holding nuts and bolts removed from an engine during overhauling is made from a wooden block somewhat wider at the bottom than at



Nut and Bolt Rack.

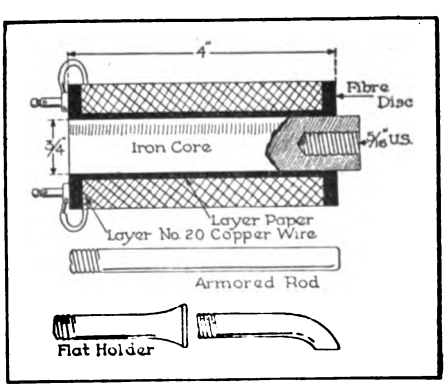
the top, and about 18 inches long, although the length may be varied to suit the individual needs. Slots are cut in the sides of varying widths to take various sizes of nuts and bolts and strips of either light wood or strips of metal were screwed to the slots, partially covering them. Space is left between the strips for the insertion of bolts and nuts. The grooves will be T shape and the head of the bolts are inserted in the grooves with the ends sticking out.

The bottom of the block is covered with a section of board so that the nuts and bolts are retained in the grooves. A small clip or card holder is attached at the end, showing the repairer's name, the car worked on and the job number. Several of these blocks will be required in a garage doing considerable repair work, so that the nuts and bolts of each job may be kept separate.

A handle is attached to the top of block for carrying about the shop.

PICK-UP-MAGNET.

A magnet is handy to remove iron and steel parts from places inaccessible with the hand, especially an electric magnet, because of its greater attraction. In the magnet illustrated a ¾-inch soft iron core four inches long is wound with six layers of No. 20 cotton covered wire. The terminals are brought out at one end and at the other there is a 5/16-inch tapped hole for the insertion of various types of rods to aid in reaching out-of-the-way corners. A six-volt storage battery may be used as the source of current supply. Be certain the rods used for the handles are insulated.



Pick-Up Magnet.

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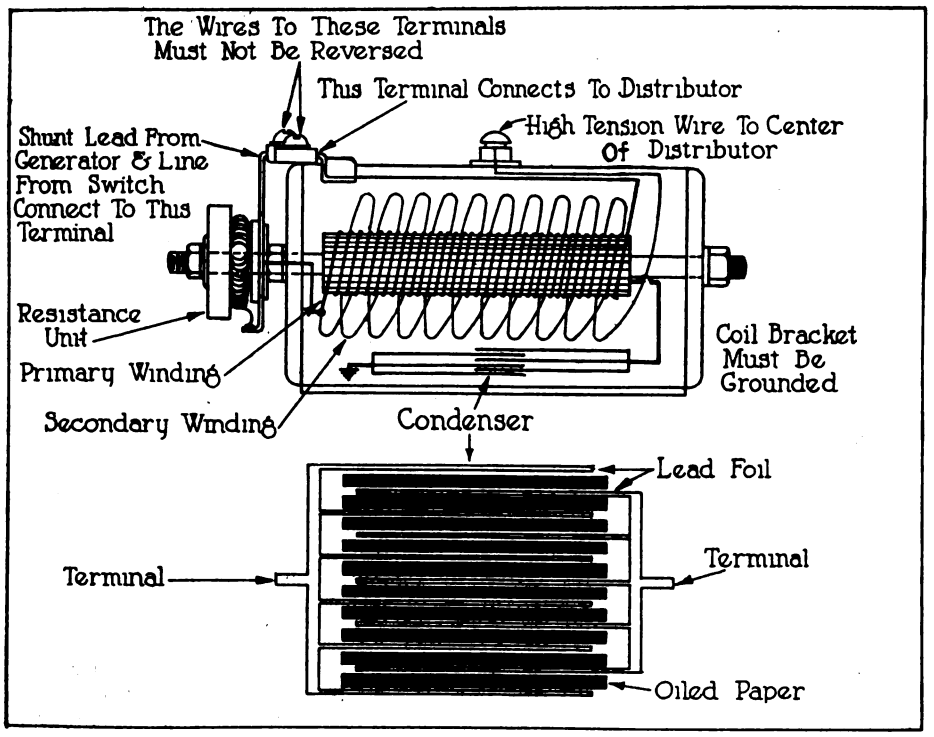
Explaining the Condenser and Manner of Testing It



Sectional View of Delco Coil and Condenser, Showing in Detail the Construction of a Condenser and the Connections of the Condenser in Relation to the Coil.

THE condenser is found connected across contact points of breaker mechanism. Its use is to prevent the contact points from burning and pitting and to assist the coil to increase the voltage in the secondary windings.

In construction it comprises strips of tinfoil, insulated from each other by oiled paper. Half of these tinfoil strips are connected to one terminal and half to the opposite terminal. Current cannot flow through the condenser, but the condenser has the property of absorbing a certain amount of electricity and building up the voltage.

Defective condensers not only cause the points to pit rapidly, but also cause the ignition system to work poorly, or, more likely, not at all. A test of the condenser is therefore necessary.

Testing Apparatus.

The testing apparatus consists of a 16-candlepower carbon lamp connected to a 110-volt direct current line. The condenser is connected to the two leads and the ends of the wire snapped together. If the resulting spark is hot, fat and cracks with a good sharp report, the condenser is all right. If this does not happen, junk the condenser and purchase a new one.

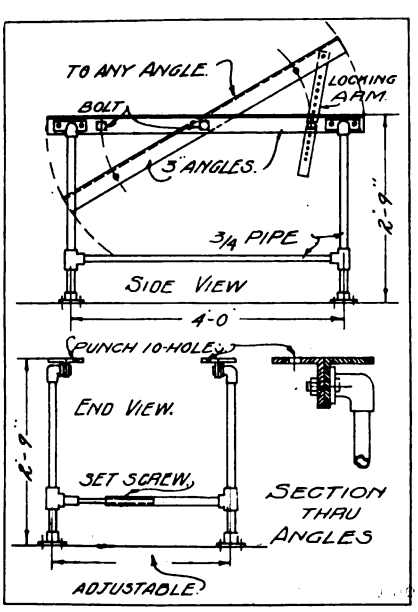
This test may be made with alternating current, with 110 volts, in the same manner. The test is, however, a little more difficult. By trying the alternating current test a few times on a condenser known to be defective and one known to be right, the repairer will be able to use the alternating current satisfactorily.

The testing outfit described for the condenser test will be found invaluable in making all sorts of electrical tests, for short circuits, grounds and open circuits.

HOME-MADE ENGINE STAND.

An engine stand that may be made in a few hours time by any mechanic or garage repairer from water pipe and four lengths of angle steel will prove as serviceable for use as any stand that may be purchased, and it is constructed in such a manner that any size engine may be handled upon it and the work done from many angles.

The stand is constructed from three-quarter or one-inch gas or water pipe and the necessary fittings for the uprights and cross members. Floor flanges being used at the tops and bottoms of the uprights for the stand to rest on at the floor and the angle iron lengths are fastened to the tops of the uprights. The height of the stand is 33 inches from the floor, which brings the engine to about the proper height for the repairer to work. This height may be varied in building the stand to convenience the repairer, but 33 inches has been found to be the average height required.



The four angle iron members are about four feet six inches length and as will be seen from the diagram, two are bolted together to form a side. Holes are bored in the ends of the inside angle iron strip so that engines having base or arm holes in different locations may be bolted to the angle iron bed and held securely. Most any size bolt may be slipped through the holes while work is done upon the engine, so long as they hold securely. The stand is made wider or narrower by adjusting the cross members at the ends. A set screw is fitted to the longer length of pipe and is seated against a short steel or iron rod fastened securely by welding or otherwise to the short length of pipe extending from the fitting in the upright. This rod is such a length that quite a range of adjustment is obtained, so the stand may be used for varying width of bases.

With this stand by removing the end bolts in the angle iron bed the engine and stand may be tilted to any angle desired for work. This is possible as the center bolts allow the inside angle strips to turn free from the outer strips and when turned are held in any position by a strap fastened to one of the end bolts, having a series of holes drilled in it, spaced an equal distance apart. The edges of the angle iron strips should be beveled so that the repairer will not catch his clothes and tear them.

With a little forethought a nice piece of work can be made in constructing a stand of this type and considering the small cost for the material and the labor of assembling will more than repay the shop owner building it.

All of the pipe and fittings are threaded and are used without any change. The four fittings at the tops of the uprights, to which are secured the angle iron strips, are the same as are used for the feet of the uprights. These may be purchased at any plumber's supply house and are known as flanges. The only difference in them is that when used at the tops the sides are ground off, leaving a strip about two inches wide with two holes for fastening them to the angle iron members. The bolts used should fit flush inside of the angle iron and the holes for the bolts should be countersunk to have flat surfaces for the inside angle iron members to pass without binding.

LOCKING COTTER PIN.

By filing off the sides of a cotter pin to make a small catch on the end it is possible to make a locking pin. The shank of the pin should be sprung apart before inserting in the opening, and the ends will catch after the pin is pushed into the opening. This device will prove very handy where it is desirable to lock the cotter pin permanently.

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RECORD OF BUILDING OPERATIONS FOR NOVEMBER

Contracts Made and Plans Contemplated for Alterations or Erection of Garages, Repair Shops, Service Stations and New Plants.

CONTEMPLATED PLANS AND SPECIFICATIONS.

Birmingham, Ala.; Archbald-Goldstein Motors Co.; one-story garage, 75x90.

Gadsden, Ala.; Vaughn Garage Co.; one-story garage, 50x150.

Phoenix, Ariz.; C. E. Tucker; one-story garage; $7000.

Little Rock, Ark.; E. M. Rowe Auto Co.; one-story garage, 40x50.

Chico, Cal.; Allen & Davidson; one-story salesroom and service station; $50,000.

Eureka, Cal.; D. E. Frazier and W. L. Frederick; one-story garage; $7000.

Fresno, Cal.; Bottoms-Williams Motor Co.; one-story garage; $40,000.

Los Angeles, Cal.; A. M. Eckard; one-story garage, 50x150.

Pasadena, Cal.; Marshall & Custer; one-story garage, 50x200.

Santa Ana, Cal.; Orange County Garage Co.; one-story garage, 100x117.

San Diego, Cal.; James E. Collumb; one-story garage, 150x200.

San Pedro, Cal.; F. D. Foote; one-story garage; $15,000.

New Haven, Conn.; N. B. Whited; one-story garage, 60x220.

Washington, D. C.; H. B. Boyle, care H. A. Stout, Guarantee Trust building, Atlantic City, N. J.; two-story brick and steel public garage, 40x144, at 14 and 16 F street, S. E.; $30,000.

Fort Lauderdale, Fla.; W. M. Bivens; one-story garage, 50x60.

Americus, Ga.; G. Tuipiu; two-story brick garage, 41x83; ornamental front; $25,000.

Atlanta, Ga.; C. W. McClure; one-story garage; $40,000.

Forsyth, Ga.; Forsyth Auto Co.; one-story garage; $20,000.

Macon, Ga.; Kingman, Moore & Franklin; one-story garage, 55x210.

Macon, Ga.; Goldman; one-story garage, 60x135.

Savannah, Ga.; T. A. Bryson; one-story garage, 120x157.

Boise, Ida.; Sharman Auto Co.; one-story garage, 75x125; $30.000.

Rupert, Ida.; Bailey Brothers; one-story garage, 50x100.

Chicago, Ill.; J. J. Novy, 2434 S. Ridgeway avenue; one-story garage and show room, 75x125, at Ogden and Central Park avenue; $16,000.

Chicago, Ill.; J. L. McConnell, 105 W. Monroe street; one-story public garage, 50x125, 2646 Lawrence avenue; $20,000.

Chicago, Ill.; Kuther Brothers; one-story garage, 81x157, at 1130 W. Harrison street; $25,000.

Chicago, Ill.; Samuel Rosenbloom; one-story garage, 50x122; $30,000.

Chicago, Ill.; Joseph Dargulzis, 632 W. 18th street; one-story private garage, 26x51, at 18th and Ruble streets; $60,000.

Chicago, Ill.; Bird & Sykes, 2215 S. Michigan avenue; three-story garage and auto show room, 62x160, at 2210 S. Michigan avenue; $75,000.

Chicago, Ill.; Emil Krant, 3800 N. Hoyne avenue; one-story garage and machine shop, 75x100, on Claybourn avenue, south, North avenue.

Chicago, Ill.; Leslie Hughes, 4628 West Washington boulevard; one-story garage and show room, 50x90.

Chicago, Ill.; Robinson Garage Co., Inc., 6011 Rhodes avenue; one-story garage, 39x226, at 67th and Dorchester avenue.

Chicago, Ill.; Joseph Zidek, 4021 W. North avenue; one-story garage, 80x125; $25,000.

Chicago, Ill.; John Klucina, 1932 S. 57th street, Cicero, Ill.; one-story (Ford) service station, 30x100; $25,000.

Chicago, Ill.; E. J. Ohrenstein, 58 W. Washington street; one-story garage 25x100; $3500.

Chicago, Ill.; Charles Johnson, care Z. E. Smith, 305 E. 55th street; one-story garage, 75x140; Wentworth avenue, near 66th street; $25,000.

Decatur, Ill.; Oliver Brust; one-story garage, 80x110; $700.

Henry, Ill.; C. M. Lucas, 2½-story brick and hollow tile garage, 60x60; $15,000.

Joliet, Ill.; Buick Motor Car Corp.; one-story garage, 50x175.

Joliet, Ill.; Spaugler Motor Co., 614 E. Jefferson street; two-story brick and reinforced concrete garage, 50x76, tar and gravel roof; $20,000.

Robinson, Ill.; A. L. Maxwell; one-story garage and sales room; $40,000.

Clinton, Ind.; J. M. Vietti; one-story garage, 55x158.

East Chicago, Ind.; J. Hartley; one-story garage and machine shop, 78x100; $20,000.

Hammond, Ind.; John Schmuesser; one-story garage, 50x136; $22,000.

Indianapolis, Ind.; Charles E. Bacon, 11th floor, I. O. O. F. building; two-story brick and concrete garage, sales room and service station, 50x165; $20,000.

Indianapolis, Ind.; Alfred Hoberg; one-story garage, 40x195; $15,000.

Indianapolis, Ind.; Frank Hatfield Co., 533 N. Capital avenue; three-story garage and sales room at 623-27 N. Capital avenue; $150,000.

Lafayette, Ind.; Lee Van Reed, Williamsport, Ind.; two-story auto salesroom and service station, 80x180, at Seventh and Main streets; $50,000.

New Castle, Ind.; Charles Minnick; one-story garage, 82x122.

Oakland City, Ind.; Hurst & Lemanster; one-story garage and service station, 80x150; $20,000.

Wabash, Ind.; L. A. Babe; one-story garage and sales room, 66x132.

Whiteland, Ind.; Dault Whittaker; one-story garage, 60x80.

Des Moines, Ia.; Kruiderier-Cadillac Co.; one-story garage, 85x169.

Des Moines, Ia.; William Knudson & Son; two-story garage and sales room, 66x105; for Harry Sgeeu, 911 S. & L. building; $60,000.

Dubuque, Ia.; Standard Oil Co.; two-story garage and paint shop, 90x100; $50,000.

Sioux City, Ia.; Harry Longnecker; one-story garage; $40,000.

Storm Lake, Ia.; Universal Motor Co.; one-story garage and sales room, 66x132; $15,000.

Truesdale, Ia.; Ream Peterson, Alto, Ia.; one-story garage and sales room, 59x100; for Edward Spooner; $14,000.

Wapello, Ia.; Marshall Auto Co.; one-story garage, 80x80; $10,000.

Arkansas City, Kan.; Rae E. Hudson; one-story garage, 50x132; $10,000.

Arkansas City, Kan.; S. A. Waldschmidt; two-story brick and stone garage, 50x131, at 608 S. Summitt street; $15,000.

Hollywood, Kan.; G. L. Baker & Son; one-story garage, 70x130; $25,000.

Kansas City, Kan.; E. Drier & Son, 949 Armstrong avenue; two-story garage, 50x130, at 430-32 Minnesota avenue, for J. Shapiro, 1427 Commerce building; $20,000. Lessee, Buick Motor Car Co., Admiral boulevard and Harrison street.

Modesha, Kan.; Nevdesha Motor Co.; one-story garage, 100x140.

Wichita, Kan.; J. E. Petrie; two-story garage, 50x140, at Main and English streets; $30,000.

Ashland, Ky.; J. H. McCleary; two-story brick garage, 50x95; $10,000.

Bowling Green, Ky.; Davidson Brothers; one-story garage, 50x50, at 10th and Adams streets; $10,000.

Hardin, Ky.; Ross & Lentz; one-story garage; $10,000.

Lebanon, Ky.; T. M. Estes; one-story garage, 125x150; $60,000.

Louisville, Ky.; Kentucky-Indiana Motor Truck Co.; one-story garage and sales room, 50x180; $40,000.

Louisville, Ky.; Roy E. Warner & Co.; one-story garage, 50x200; $75,000.

Louisville, Ky.; K. M. Lobied, 1471 S. 18th street; one-story garage and service station, 54x125, at 18th and Hill streets; $20,000.

Louisville, Ky.; Embrey & Weir, 507 E. Broadway; two-story garage and display room, 60x200, at 845 S. Third street; $60,000.

New Orleans, La.; Lyons-Barton Co.; one-story garage; $50,000.

Patten, Me.; Ira D. Carpenter; two-story garage, 66x120; $20,000.

Baltimore, Md.; John Bridge; one-story garage, 150x500.

Baltimore, Md.; H. S. Delaney; two-story garage, 30x35.

Baltimore, Md.; H. S. Eastman; one-story garage, 100x200.

Baltimore, Md.; Hillery Auto Co.; one-story garage, 60x100.

Baltimore, Md.; Zell Motor Co.; one-story garage, 60x70.

Cumberland, Md.; Citizens Garage Co., Inc.; one-story garage, 32x105.

Cumberland, Md.; Homer J. Cordry; three-story brick and hollow tile garage, 50x82; $80,000.

Hagerstown, Md.; Louis Meyers; one-story garage, 76x200.

Hagerstown, Md.; S. J. Klinkhart, 54 W. Washington street; two-story brick garage; $25,000.

Brookline, Mass.; Abraham Snider and Mitchell Rudnick, 18 Tremont street, Boston; auto service station, Commonwealth avenue and St. Mary's street; $150,000.

Fitchburg, Mass.; Arvid Nestor; one-story garage; $10,000.

Holyoke, Mass.; White & Whickoff; one-story garage; $60,000.

Calumet, Mich.; Public Garage Co.; one-story garage and sales room; $50,000.

Kalamazoo, Mich.; Kalamazoo Hack and Buss Co., 184 W. Rose street; one-story garage and repair shop, 40x60; $70,000.

Lansing, Mich.; Lansing-Buick Auto Co.; one-story garage and sales room; $30,000.

Mt. Pleasant, Mich.; Naumes-Bumber Motor Sales Co.; one-story garage, sales room and service station, 60x132.

Sheboygan, Mich.; Clyde Milliken; one-story garage, 60x99; $10,000.

Waldron, Mich.; Barnes & McCloe; one-story garage, 50x80.

Crosby, Minn.; Maguire Brothers; one-story brick and concrete block public garage, 50x125; $10,000.

St. Paul, Minn.; Ohman & Lorenz Hardware Co., 483 S. Wabash avenue; two-story garage, 50x100; $14,000.

St. Peter, Minn.; John Dondelinger; one-story public garage, 88x150.

Greenville, Miss.; Automobile Sales Co.; one-story garage and sales room; $20,000.

Carthage, Mo.; Platt-Porter Grocery Co.; one-story garage, 37x50; $5000.

Jefferson City, Mo.; Madison Hotel; one-story garage; $25,000.

Joplin, Mo.; C. H. Sudholter, 215 W. Ninth street; one-story garage, 100x120, at Second and Joplin streets; $20,000.

Kansas City, Mo.; A. E. Hofer, 2120 E. 58th street; one-story garage, 50x80, at 5833-35 Troost avenue, for J. G. Elser, 5833 Troost avenue; $6000.

Kansas City, Mo.; Frank Bales, four-story garage, 96x120, at southeast corner Admiral boulevard and Grand avenue; $125,000. Lessee, Automobile Club of Kansas City, 1020 Oak street.

St. Louis, Mo.; Columbia Taxicab Co., 4535 Delmar boulevard; two-story garage, 138x200, at Channing and Lawton avenues; $120,000.

St. Louis, Mo.; Ollie E. Haupt Motor Co., 4129 Olive street; two-story garage, 75x154; $75,000.

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Butte, Mont.; Butte-Buick Co.; one-story garage and service station; $50,000.

Falls City, Neb.; H. J. Prithard; one-story brick and stone trim garage; $25,000.

Hastings, Neb.; O. L. D. Garage; one-story garage, 65x65; $6000.

Omaha, Neb.; John E. Wakefield Construction Co., 750-752 Branders Theater building; three-story garage and sales room, 108x184, at 27th and Harvey streets for Packard Omaha Co., 3016 Harney street; $250,000.

Valentine, Neb.; John Dambley; one-story garage, 50x50.

Atlantic City, N. J.; W. S. Higbee, 112 S. Carolina avenue; two-story garage, 42x46, at Chelsea and Pacific avenues, for Charles K. Smith, Jr.

East Orange, N. J.; Kelly Ackerson Co., 220 Main street; one-story hollow tile and stucco garage, 20x200, at 80 S. Num avenue; $30,000.

Elizabeth, N. J.; John Stamler, 207 Broad street; one-story brick and terra cotta trim auto sales room, 278-83 N. Broad street; $25,000.

Newark, N. J.; Aaron Shapiro, 768 S. 14th street; one-story brick public garage, 42x100, at 755-57 S. 13th street; $7000.

Newark, N. J.; McAllister-Carton & Stulz Corp., 1003 Broad street; one-story garage and show room, 66x380 and 21x100, at 997-99 Broad street; $125,000.

Newark, N. J.; A. I. Kirsten, 25 Ferry street; one-story cement block garage, 25x45, at 19 Mechanic street; $5000.

Newark, N. J.; New Jersey Auto Co., 17 Halsey street; two-story brick and reinforced concrete, 65x108, at Central avenue, Bleecker and Hoyt streets; $80,000.

Newark, N. J.; Samuel Solomon, 210 Belmont avenue; one-story brick garage, 45x100, at 208 Belmont avenue; $16,000.

Newark, N. J.; Charles Rosen; one-story garage, 20x100, at 14-20 Marshall street; $3000.

Newark, N. J.; State Garage Co.; one-story garage; $95,000.

North Plainfield, N. J.; Garrett & Zimmerman, 77 Summit avenue; one-story brick garage, 50x100; $12,000.

Ocean City, N. J.; H. E. Wendell, 427 Asbury avenue; one-story public garage, 72x100; $10,000.

Passaic, N. J.; Michael A. Blanda, 309 Brook avenue; one-story brick garage, 19x94; $15,000.

Passaic, N. J.; John Plarka, 53 Dayton street; one-story garage, 25x100, at Monroe and Leader streets; $8000.

Singac, N. J.; Thomas Cona Building Co., 383 Halsdon avenue, Paterson, N. J.; one-story garage and show room, for Fred Swithebach, 91 Redwood avenue, Paterson, N. J.; $7000.

Trenton, N. J.; Alexander Klinlswistein, 120 S. Broad street; one-story public garage and show room, 50x100; $60,000.

Trenton, N. J.; Montclair Garage; one-story garage; $10,000.

West Hoboken, N. J.; S. Slattkin, Adams place and Dodd street; one-story garage, rear Adams place and Dodd street; $8000.

Albany, N. Y.; Mrs. E. Sheehan, 292 Western avenue; one-story brick garage; $4000.

Albany, N. Y.; Frank P. Dolan, 462 Broadway; garage at 758-62 Broadway and through to 207-13 N. Pearl street; $75,000.

Albany, N. Y.; H. Patlen, 80 Phillip street; one-story brick garage, 75x100; $15,000.

Albany, N. Y.; J. Fulton; one-story garage; $30,000.

Brooklyn, N. Y.; Flush Becker Improvement Co., 391 Christopher street; one-story brick garage, 104x125; southeast corner Central avenue and Cooper street; $40,000.

Brooklyn, N. Y.; David Schneider, 298 Rochester avenue; one-story brick garage, 80x100, north side Broadway, west Hawes street; $[illegible]00.

B[illegible] N. Y.; Montrose Garage Co.; on[illegible]ick garage, 75x100, south side [illegible]st Leonard street;

[illegible]st Building Co.
[illegible]y brick garage, 13x74, south side Bergen street, east Underhill avenue; $15,000.

Brooklyn, N. Y.; MacCohen, 580 Wyona street; one-story garage, 17x20, west side Eighth street, north Avenue C; $5500.

Brooklyn, N. Y.; H. Tietelbaum, 147 Hawthorne street; one-story brick garage, 20x28; northwest corner Norman avenue and Oakland street; $10,000.

Brooklyn, N. Y.; Charles Ovonstein, 2179 Bergen street; one-story garage, 41x101; north side Bergen street, west East New York avenue; $20,000.

Brooklyn, N. Y.; Louis A. Sheinart, 192 Bowery, New York; one-story garage, 40x100, at 2187-89 Berger street.

Brooklyn, N. Y.; Samuel Millman, 26 Court street; one-story garage, 80x100; west side Utica avenue, south Herkimer street; $40,000.

Brooklyn, N. Y.; Isidor Polivnick, 571 Powell street; one-story brick garage, 100x150; southwest corner 18th and Prospect Park, W.; $35,000.

Brooklyn, N. Y.; Liberty Wyona Co., 106 Bristol street; one-story garage, 100x150; northeast corner Knickerbocker avenue and Moffatt street; $35,000.

Brooklyn, N. Y.; George L. Moore, 1503 Cortland road; one-story brick garage, 120x135; west side Coney Island avenue, north Ditmas avenue; $30,000.

Brooklyn, N. Y.; Rosevale Realty Co., 189 Montague street; one-story brick garage, 100x100; north side Baltic street, west Fourth avenue; $30,000.

Brooklyn, N. Y.; A. Farber, 1746 Pitkin avenue; one-story brick garage, 100x100; south side 15th street, west Eighth avenue; $25,000.

Brooklyn, N. Y.; Jennie Ferro, 601 De Graw street; one-story brick garage, 50x90; north side De Graw street, east Third avenue; $12,000.

Brooklyn, N. Y.; Jacob Klein, 13 Hertzel street; one-story garage, 50x101; south side Dean street, east Classon avenue; $15,000.

Brooklyn, N. Y.; Isidor Roth, 1515 Lincoln place; one-story brick garage, 18x18; west side Tapscott street, north Livonia avenue; $12,000.

Brooklyn, N. Y.; Harry Marcus, 237 Van Sinderen avenue; one-story garage, 100x100; at southwest corner Hopkinson avenue and Atlantic avenue; $40,000.

Brooklyn, N. Y.; John Mahnken; one-story garage, 60x100; at 20-24 Bristol avenue; $25,000.

Brooklyn, N. Y.; Franconia Realty Co., 52 Norfolk street, New York; one-story garage, 80x90; at west side Franklin avenue, south Crown street; $15,000.

Brooklyn, N. Y.; Barbara Morigle, 5 Pennsylvania avenue; one-story brick garage, 98x117; at Jamaica and Pennsylvania avenue.

Brooklyn, N. Y.; Samuel Max, 2183 Atlantic avenue; one-story brick garage, 100x100; west side Osborne street, west Riverside avenue; $40,000.

Brooklyn, N. Y.; H. J. Nurick, 772 Broadway; one-story brick garage, east side Flushing avenue, north Bedford; $35,000.

Brooklyn, N. Y.; Max Rothschild, 833 Saratoga avenue; one-story brick garage, 80x100; west side Schenectady avenue, south Herkimer street; $25,000.

Brooklyn, N. Y.; I. S. Bushey & Sons, 765 Court street; one-story brick garage, 50x100; at Court and Bryant streets; $20,000.

Brooklyn, N. Y.; Emanuels Polito, 732 Lorimer street; one-story garage, 50x100; south side Bayard, east Lorimer street; $14,000.

Brooklyn, N. Y.; Harry Schwartz, 509 Watford avenue; one-story brick garage, 18x18; east side Grafton street, south Blake avenue; $8000.

Brooklyn, N. Y.; P. J. Halloran, 385 11th street; one-story brick garage 46x100; northwest corner Carroll street, west Fourth avenue; $7000.

Brooklyn, N. Y.; Callan Brothers, 214 E. 135th street; two-story brick garage, 85x200; south 19th street, west Third avenue; $4000.

Brooklyn, N. Y.; Estate J. J. Fried; one-story garage, 127x175.

Brooklyn, N. Y.; Anita C. Jurim, 218 Schermerhorn street; one-story brick garage, 56x100; west side Warren street, west Hoyt street; $10,000.

Brooklyn, N. Y.; P. G. Gewie, 2906 W. 17th street; two-story brick garage, 50x100; north side Neptune avenue, east West 12th street; $6000.

Brooklyn, N. Y.; Emil Pemling, 1010 Liberty avenue; one-story concrete garage; $4750.

Brooklyn, N. Y.; Maurice Immerfield, 32 Barrett street; one-story garage, 18x18; east side Barrett street, north Blave avenue; $4000.

Brooklyn, N. Y.; A. Pachinsky, 395 Pennsylvania avenue; one-story garage, 34x100; north side Van Sinderen avenue, east New Lots avenue; $15,000.

Brooklyn, N. Y.; Louis Halperin, 1408 Lincoln place; one-story garage, 18x18; east side Barnett street, north Livonia avenue; $12,000.

Brooklyn, N. Y.; F. W. and E. W. Rowe, 728 Eastern Parkway; one-story garage, 100x200; east side New York avenue, south Montgomery street; $65,000.

Buffalo, N. Y.; Joseph Notario, 547 Niagara street; one-story brick garage, 32x60; at 369 Niagara street; $14,000.

Buffalo, N. Y.; J. Irwin, Ellicott square; three-story brick garage, 80x112; at 40 Swan street; $75,000.

Buffalo, N. Y.; Samuel Cohen, 321 Pratt street; one-story garage, 67x121; at 727-31 Broadway; $12,000.

Buffalo, N. Y.; George Basher, 518 Linwood avenue; one-story brick garage, 712 Michigan avenue; $10,500.

Buffalo, N. Y.; Samuel Cohn, 321 Pratt street; one-story concrete block garage, 30x40; $3000.

Edgemere, L. I., N. Y.; J. P. Powers, 220 Larkins street, Arverne, L. I.; one and two-story garage, 150x150; $25,000.

Fulton, N. Y.; H. E. Desmond, 306 Utica street; one-story concrete garage, 40x90; at 308 Oneida street; $10,000.

Jamaica, L. I., N. Y.; James Averick; one-story brick garage; $20,000.

Long Island City, L. I., N. Y.; Steinway Building Co., 106 Franklin street; one-story garage, 90x150; west side Steinway avenue, north Jackson avenue; $20,000.

Long Island City, L. I., N. Y.; Tide Water Oil Co., 11 Broadway, New York; one-story garage, 32x155; at northwest corner Greenpoint avenue and L. I. R. R.; $50,000.

Long Island City, L. I., N. Y.; Jennie Brady, 111 E. 80th street, New York; one-story brick garage, 94x96; east side Academy street, south Broadway; $2500.

Long Island City, L. I., N. Y.; Mayer Noffman, 539 N. 162nd street, New York; one-story brick garage; east side Vernon avenue, north Payntar avenue.

Long Island City, L. I., N. Y.; Louis Stevenson, 54 Pearsall street; two-story brick garage, south side Pearsall street, east Review avenue; $5500.

Manhasset, L. I., N. Y.; North Shore Garage and Trucking Co.; one-story brick public garage, 50x100; $10,000.

Middle Village, L. I., N. Y.; John Fieber; one-story brick garage, 34x60; west side Juniper avenue, north Metropolitan avenue; $3500.

New York, N. Y.; Lever & Sidway, 238 Fort Washington avenue; two-story garage, 100x165, at southeast corner Dyckman street and Avenue B; $10,500.

New York, N. Y.; Benson Realty Co., 31 Nassau street; two-story garage, 74x100; at 177-83 E. 123rd street.

New York, N. Y.; De Rose & Cavalieri, 370 E. 149th street; one-story garage, 93x102; south side 76th street, west First avenue; $22,000.

New York, N. Y.; Morris Spadek, 230 Grand street; two-story garage, 100x200; at 329-35 E. 48th street.

New York, N. Y.; John Bothwell, 30 West 139th street; one-story brick garage, 100x115; northeast corner 162nd street and Sherman avenue; $35,000.

New York, N. Y.; Albert J. Schwartz, 369 E. 167th street; one-story brick garage, 44x140; at W. Fordham and Landing roads; $12,000.

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New York, N. Y.; Julius Myer, 59 Mangiu street; one-story garage, 25x75; at 15 Broone street; $5000.

New York, N. Y.; W. Weinraub, 4440 Park avenue; one-story garage, south side 181st street, east Park avenue; $3500.

New York, N. Y.; Greenwich Association; one-story garage, 125x150.

Ogdensburg, N. Y.; George M. Murray; two-story concrete garage, 45x110; $10,000.

Peekskill, N. Y.; Peekskill Hotel Co., Inc.; three-story brick garage, 70x138; at south and Depen streets; $67,000.

Ridgewood, L. I., N. Y.; Bodler & Bieweener, 2325 Millwood avenue; one-story garage, 69x175; at Myrtle avenue and Woodbine street; $25,000.

Rockville Centre, L. I., N. Y.; Goodwin Motor Sales Co.; one-story brick and concrete garage and show room, 75x185; at Windson avenue and Merrick road.

Saranac Lake, N. Y.; Pine & Corbett; two-story brick garage, 60x90; $40,000.

Schenectady, N. Y.; C. G. Van Rensselaer, 505 State street; one-story brick and concrete block garage, 32x120; $12,000.

Schroon Lake, N. Y.; William Provencher; two-story tile garage, 20x40; $5000.

Springfield, L. I., N. Y.; William B. Jones; one and two-story brick garage, 60x125; Merrick road and Springfield avenue; $25,000.

Syracuse, N. Y.; Mrs. Minnie Jacobson; one-story garage, 99x132.

Syracuse, N. Y.; John T. Mehlek, 1229 Butternut street; one-story garage, 33x93x15; at Butternut and Griffith streets; $3000.

Troy, N. Y.; H. H. Butler, 191 River street; one-story garage, 22x40; $3000.

Utica, N. Y.; Jones Motor Car Co., 327 Bleecker street; two-story brick garage and show room, 100x140; $60,000.

Utica, N. Y.; I. R. Gardenier Motor Car Co.; two-story brick and tile garage and service station, 175x200; $60,000.

Ashville, N. C.; J. T. Bledsoe and N. T. Robinson; one-story garage, 50x140; $30,000.

Charlotte, N. C.; W. J. Dowd; one-story garage, 40x70; $10,000.

Greensboro, N. C.; R. S. Sloan Motor Co.; one-story garage and salesroom; $24,000.

Greensboro, N. C.; W. F. Pickett & Sons; one-story garage, 50x100.

Hendersonville, N. C.; Henderson Co.; one-story garage, 60x125.

Hickory, N. C.; J. S. Elliott and C. H. Geitner; one-story garage, 125x125; $25,000.

Lexington, N. C.; John A. Young Motor Co.; one-story garage, 60x157; $10,000.

Monroe, N. C.; Henderson Garage and Machine Co.; one-story garage, 40x75.

Minnewaukan, N. D.; Minnewaukan Auto Co.; one-story garage, 50x100.

Van Hook, N. D.; Hodges & Murphy; one-story garage, 44x64.

Wahpeton, N. D.; Dahl Auto Co.; one-story garage, 75x130.

Akron, O.; Frank Romark; one-story garage, 50x80; $55,000.

Cincinnati, O.; Pfaff Motor Car Co.; one-story garage; $20,000.

Cincinnati, O.; Harry Yanney; one-story garage, 62x64.

Cincinnati, O.; Samuel Zeidman; one-story garage; $25,000.

Columbus, O.; Columbus Motor Sales Co., 630 W. High street; two-story garage and salesroom, 50x265; $100,000.

Columbus, O.; Armleder Motor Sales Co.; two-story brick garage and salesroom, 60x80; at Grant avenue and Broad street; $3000.

Dayton, O.; Forchers Automobile Co.; one-story garage, 68x177; $175,000.

Dayton, O.; Air City Garage Co.; one-story garage; $100,000.

Hamilton, O.; Miami Motor Car Co.; one-story garage; $60,000.

Lima, O.; Elmer D. Webb Co.; one-story garage, 80x100.

Logan, O.; Lewis Motor Sales Co., Main and Orchard street; one-story garage and work shop, 68x75; $10,000.

Mansfield, O.; P. Gatten & Son; one-story garage, 60x90.

Marion, O.; Harruff Brothers; one-story garage; $3000.

Rittman, O.; R. Frederick; one-story garage, 50x130; $12,000.

Springfield, O.; Westcott Motor Sales Co.; one-story concrete and frame auto salesroom, 128x250; $50,000.

Steubenville, O.; H. D. Brandt; two-story commercial garage, 50x95; $35,000.

Toledo, O.; E. H. Felling, 442 S. Main street; two-story brick garage, 86x134; at 18 Adams street, for Frank G. Crane, 1114 Second National Bank building; $45,000.

Toledo, O.; Langdon & Hohly; one-story garage, 86x138; $40,000.

Washington Court House, O.; Frank Bending; one-story garage, 41x165; $10,000.

Xenia, O.; Central Garage and Taxi Co.; one-story garage, 59x127; $11,000.

Youngstown, O.; Henderson-Overland Co.; one-story garage and salesroom; $210,000.

Colgate, Okla.; Duncan Brothers; one-story garage; $5000.

Hugo, Okla.; Chandler Motor Co.; one-story garage; $35,000.

Muskogee, Okla.; Crow-Elkhart-Auburn Co.; one-story garage, 50x110.

Pawhuska, Okla.; Fred Button; one-story garage, 40x50.

Ponca City, Okla.; V. N. Souligny Motor Co.; one-story garage, 90x100; $16,000.

Shawnee, Okla.; Central Sales Co.; one-story garage and salesroom; $13,000.

Tulsa, Okla.; E. K. Porter; one-story garage; $15,000.

Albany, Ore.; J. M. Ralston; one-story garage, 55x84.

Albany, Ore.; Rousseau & Archibald; one-story garage, 100x112.

Forest Grove, Ore.; Wiles Auto Co.; one-story garage, 100x100.

Lakeview, Ore.; Southern Oregon Auto Co.; one-story garage, 90x100.

Lents, Ore.; A. Kidahl; one-story garage, 50x100.

Marshfield, Ore.; J. W. Gardiner; one-story garage, 75x145.

Portland, Ore.; Viaduct Garage; one-story garage, 100x100.

Portland, Ore.; I. B. Peters; one-story garage, 100x100.

Union, Ore.; Thomas Brashear; one-story garage, 50x100; $6000.

Allentown, Pa.; James Elite, 129 S. Seventh street; one and two-story public garage, 38x120; $20,000.

Altoona, Pa.; W. H. and L. C. Wolfe; one-story garage; $40,000.

Annville, Pa.; A. S. Keidor; two-story private garage, 50x90.

Bethlehem, Pa.; James Elite; one and two-story brick public garage, 38x120; $20,000.

Corry, Pa.; C. R. Rogers; one-story garage, 100x112.

Easton, Pa.; Albert Pepper, 223 S. Seventh street and Dr. William Thomas, 318 S. 13th street; one-story brick garage, 44x125; $12,000.

Harrisburg, Pa.; C. J. Lapsley, 206 Market streett; two-story public garage, service station and show room, 130x206; $100,000.

Johnstown, Pa.; William Detwier; 1½-story tile and stucco commercial garage, 52x62; $15,000.

Johnstown, Pa.; L. Smith; two-story brick concrete garage, 66x162; tile floor and roof; $45,000.

Lancaster, Pa.; Clergyman's Beneficial Association, 226 E. Orange street; two-story public garage, 43x100, at Grant and Jefferson streets.

Miners Mills, Pa.; Miners Hill and Milling Co., Wyoming National Bank building; one-story brick garage, 24x40; $15,000.

Philadelphia, Pa.; Charles Goetz; one-story garage, 36x92; $3200.

Pittsburgh, Pa.; L. D. Jamieson, Iroquois Apartments; one-story garage, 63x150; at 5800 Center avenue; $35,000.

Scranton, Pa.; Edward H. Davis, Union Bank building; one-story public garage, 80x150; $60,000.

Florence, S. C.; Lovejoy Service Station; one-story service station; $5000.

Lawrens, S. C.; Earl Wilson; one-story garage; $10,000.

Big Stone, S. D.; William P. Nitz; one-story garage, 48x80; $5000.

Frankford, S. D.; White Front Auto Co.; one-story garage, 50x120.

Menard, S. D.; Luckenbach Hardware Co.; one-story garage, 55x150; $15,000.

Mitchell, S. D.; C. D. Johnson Motor Co.; one-story garage, 50x142.

Rapid City, S. D.; M. Young; one-story garage, 75x126.

Rapid City, S. D.; J. L. Robbins; one-story garage, 75x136.

Rapid City, S. D.; Overland Auto Co.; one-story garage, 40x50.

Sioux Falls, S. D.; Henry Homan; one-story garage, 110x150.

Sioux Falls, S. D.; Brooks Fire and Repair Co.; one-story garage, 100x100; $100,000.

Chattanooga, Tenn.; Hughes Motor Co.; one-story garage, 69x150; $35,000.

Dunlap, Tenn.; S. J. Cannon; one-story garage, 40x60.

Kingsport, Tenn.; Kingsport Garage, Inc.; one-story garage and repair shop, 100x127.

Lafayette, Tenn.; McClellan Brothers; one-story garage; $10,000.

Livingston, Tenn.; A. G. Keisling; one-story garage, 50x80.

Loudon, Tenn.; C. H. Kimbrough; one-story garage, 47x100.

Memphis, Tenn.; H. A. White Auto Co.; one-story fireproof garage; $100,000.

Memphis, Tenn.; W. E. Grave; one-story garage; $15,000.

Memphis, Tenn.; David Derman; one-story garage; $35,000.

Tullahoma, Tenn.; A. R. Pryor, Inc.; one-story garage; $30,000.

Albany, Tex.; Knott & Little; one-story garage, 46x150; $15,000.

Brownwood, Tex.; E. M. Moon; one-story garage, 50x100.

Columbus, Tex.; Burt & Stafford; one-story garage, 80x100; $20,000.

Corpus Christi, Tex.; Reed Automobile Co.; one-story garage, 40x50; $4000.

Dallas, Tex.; J. E. Rose; one-story garage; $15,000.

Dallas, Tex.; Stutz-Nalle Motor Co.; three-story auto building, 132x132; $60,000.

Ft Worth, Tex.; J. W. Head; one-story brick garage, 90x150; $17,500.

Galveston, Tex.; Electric Garage; one-story garage; $10,000.

Greenville, Tex.; R. O. Hudspeth and Maud Burnett; one-story garage; $20,000.

Houston, Tex.; Cydesau-Manfred-Cadillac Co.; salesroom and service station, 75x250.

Menard, Tex.; Luckenbach Hardware Co.; one-story garage, 55x150.

Mercedes, Tex.; Thompson, Peters & Wright; one-story garage, 40x140.

Norfolk, Va.; David Cain; one-story garage, 75x100.

Norfolk, Va.; Charles W. Priddy; one-story garage, 27x100.

Portsmouth, Va.; L. Kootz; one-story garage, 30x36.

Petersburg, Va.; Cotton Motor Co.; one-story garage, 60x250; $30,000.

Richmond, Va.; Forbes Motor Co.; three-story concrete garage, 100x120; $100,000.

Richmond, Va.; Imperial Tobacco Co.; one-story garage, 28x102x14.

Roanoke, Va.; Tompkins Brothers; one-story garage; $5000.

Rocky Mount, Va.; Ryland Goode; one-story garage; $20,000.

Rocky Mount, Va.; Central Motor Co.; one-story garage, 80x120; $25,000.

West Point, Va.; West Point Iron Works; one-story garage, 60x190; $50,000.

Aberdeen, Wash.; J. J. Southard; one-story garage, 50x130.

Aberdeen, Wash.; Rose Garage; one-story garage, 100x130; $25,000.

Aberdeen, Wash.; Liberty Garage; one-story garage, 50x130.

Bellingham, Wash.; Smith Motor Co.; one-story garage, 110x115; $23,000.

Cashmere, Wash.; H. M. Luttrell; one-story service station, 60x100.

Centralia, Wash.; Centralia Auto Co.; one-story garage; $10,000.

Everett, Wash.; Thomas Diffley; one-story garage, 75x150.

Puyallup, Wash.; W. J. Orton; one-story garage; $10,000.

Seattle, Wash.; E. E. Siegley; one-story garage, 92x120.

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Seattle, Wash.; E. E. Siegley; one-story garage, 92x120.

Seattle, Wash.; L. M. Raymond; one-story garage, 90x100.

Seattle, Wash.; Pioneer Auto Co.; one-story garage, 50x195; $10,000.

Seattle, Wash.; Northern Auto Electric Co.; one-story service station, 60x90.

Seattle, Wash.; Hoyt Fricks, Inc.; one-story garage, 104x120; $30,000.

Seattle, Wash.; A. J. Eberhard; one-story garage, 40x110.

Seattle, Wash.; H. H. Cottrell; one-story garage, 22x40; $4000.

Seattle, Wash.; J. M. Colma; one-story garage, 139x150; $55,000.

Seattle, Wash.; F. H. Bovdel; one-story garage, 90x120.

Spokane, Wash.; Sprinkle & Co.; one-story repair shop, 50x70.

Spokane, Wash.; Scott & Kipley; one-story garage, 50x142; $6000.

Spokane, Wash.; Logan Bates Auto Co.; one-story garage and salesroom; $50,000.

Spokane, Wash.; Ahrens & Ahrens; one-story garage; $80,000.

Tacoma, Wash.; R. E. Anderson; one-story garage; $40,000.

Toppenish, Wash.; W. W. Sheane; one-story garage, 100x170.

Walla Walla, Wash.; Eugene Lennon; one-story garage; $35,000.

Wenatchee, Wash.; T. J. Henry; one-story garage, 120x125; $22,000.

Wenatchee, Wash.; T. M. Gibbons; one-story garage, 100x120.

Elkins, W. Va.; Elkins Garage Co.; one-story garage, 90x150; $75,000.

Glendale, W. Va.; Wheeling Metal and Manufacturing Co.; one-story garage; $15,000.

Huntington, W. Va.; Summers-Buick Co.; one-story garage, 45x160; $20,000.

Huntington, W. Va.; L. J. Ashworth; one-story garage, 60x165.

Keyser, W. Va.; Albert and Herman Davis; one-story garage, 30x92; $18,000.

Welch, W. Va.; Hill Motor Co.; four-story brick garage and salesroom, 75x114; concrete floor and roof; $125,000.

Wheeling, W. Va.; C. B. Robinson; one-story garage, 30x34.

Cumberland, Wis.; H. Sherman; one-story garage, 50x120.

Durand, Wis.; John Bruenn; one-story garage, 28x64.

Janesville, Wis.; B. J. Winslow; one-story brick and tile public garage, 60x90; $16,000.

Kenosha, Wis.; Kenosha Motor Sales Co.; one-story salesroom and service station, 50x127.

Lodi, Wis.; J. J. McFarland; one-story public garage, 60x90; $15,000.

Madison, Wis.; Ike Sweet, 211 Williamson street; one-story brick public garage, 35x90, at 211 Williamson street; $10,000.

Menominee, Wis.; Auto Sales Co., Menominee Falls, Wis.; two-story garage, 60x60; $10,000.

Milwaukee, Wis.; E. Miller, 514 12th street; one-story garage, 37x100; at 503 12th street; $8500.

Milwaukee, Wis.; F. H. Lindsay, 392 Lake Drive; one story garage, 20x28; $6000.

Milwaukee, Wis.; Thompson & Hariman, 400 Farwell street; one-story garage, 53x120; at 404 Farwell street; $9000.

Milwaukee, Wis.; E. J. Schaefer, 2908 Grand avenue; one-story garage, 98x57x20; $5000.

Milwaukee, Wis.; A. G. Wolff, 801 Beecher street; one-story garage, 30x120; $13,000.

Watertown, Wis.; T. M. E. R. & L. Co.; public service building, Milwaukee, Wis.; one-story brick and reinforced concrete garage, 60x80; $25,000.

CONTRACTS AWARDED.

Ashdown, Ark.; H. M. Westbrook; one-story brick garage 32x100 and salesroom, 26x100; for Ashdown Motor Co.; $20,000.

Bentonville, Ark.; Benton County Hardware Co.; two-story auto salesroom, 32x162; $25,000.

Bridgeport, Conn.; Federio Cocdrino, 39 Florence street; one-story garage, 40x100, at 2490 Main street; for John B. and Pane Schwartz, 934 Hancock street; $10,000.

Washington, D. C.; R. P. Whitty, Union Trust building; three-story garage, 100x100; for Hill & Tibbitte, 1407 H street, N. W.; $50,000.

Washington, D. C.; Fuller Construction Co.; three-story garage for Buick Motor Co.; $300,000.

Washington, D. C.; Fred Drew Co.; two-story garage, 57x125; for Edward J. Gardiner; $12,000.

Washington, D. C.; E. H. Mosher, 422 Colorado building; one-story garage, 50x205; for Rona Lawson; $60,000.

Washington, D. C.; Arthur L. Smith & Co., Woodward building; one-story fireproof garage, 84x90x70; $45,000.

Washington, D. C.; George A. Fuller & Co., Munsey building; three-story garage and show room, 74x120; for Stanley H. Hoiner.

Carlinville, Ill.; Clyde Evans, Springfield, Ill.; one-story public garage, 60x150; for Woodman Garage; $12,000.

Chicago, Ill.; Enterprise Co., 711 N. Clark street; one-story public garage, 25x100, at 113 W. Huron street, for John Thornton, 112 W. Huron street; $4000.

Chicago, Ill.; Industrial Building Co., 38 S. Dearborn street; one-story garage, 50x171, at 1425 W. Lake street, for Lyon & Healy, Jackson and Wabash avenues.

Chicago, Ill.; Harry I. Holton, 140 S. Dearborn street; one-story garage, 45x150, at 4073 Broadway; $15,000.

Chicago, Ill.; E. W. Sproul Co., 2001 W. 25th street; one-story garage, 75x119, at 3540-6 S. Ashland avenue; for William Wrigley, Jr., 3549 S. Ashland avenue; $25,000.

Chicago, Ill.; Bunte Candy Co., 730 W. Monitor street; two-story garage and machine shop, 75x125, on Spaulding avenue, near Franklin boulevard; $75,000.

Chicago, Ill.; B. & W. Construction Co., 10 S. La Salle street; one-story garage, 75x100, at Blue Island and Lincoln avenue, for A. Bishoff, 5 N. La Salle street; $30,000.

Chicago, Ill.; John R. Thornton, 115 W. Huron street; one-story garage, 22x100, at 113 W. Huron street; $6000.

Chicago, Ill.; W. H. Williams, 30 N. Wells street; one-story public garage, 97x115, at 2401-7 Logan boulevard, for T. Rada, 2401 Logan boulevard; $50,000.

Chicago, Ill.; Frank Boege, 6344 N. Clark street; one-story garage, 75x150, at 6739-43 N. Clark street; $40,000.

Galesburg, Ill.; John Dahlberg; one-story garage, 50x70, for E. L. Bryant; $10,000.

Indianapolis, Ind.; Bohannon & Cullen, 1156 King avenue; one-story garage, 38x145, at 1214 S. Eastern avenue, for Sanitary Milk Products Co.; $8000.

Indianapolis, Ind.; Lynn B. Millikan, 1556 Lemcke Annex; three-story commercial garage and sales room, 62x125, at 962 Meridian street, for University Real Estate Co., 919 Lemcke building; $100,000.

Macon City, Ia.; Hinkle & Brown; two-story garage, 48x66, for Winders & Dawson; $20,000.

Sioux City, Ia.; Pilchard Building Co., Frances building; one-story garage, 32x60, at 2029 S. Lakeport street; $3000.

Hutchinson, Kan.; J. G. Bulger; one-story garage, 50x160, for A. C. Welchon; $12,000.

Pittsburgh, Kan.; A. Messinger; one-story garage, 100x170, at 905-11 N. Broadway; $30,000.

Louisville, Ky.; C. A. Koerner & Co.; one-story garage, 30x110, for J. F. Keating.

Scottsfield, Ky.; William MacDonald, 428 Odd Fellows building, St. Louis, Mo.; one-story garage, 60x268, for Trought, Rogers & Co.; $35,000.

Shreveport, La.; W. H. Werner; one-story, semi-fireproof garage, 41x150; composition roof, concrete floor; for Yournie Estate; $18,800.

Baltimore, Md.; Price Construction Co., Maryland Trust building; one-story garage, 54x67, for Parkway Apartment Co., Union Trust building; $18,000.

Baltimore, Md.; Henry Momberger, 34 W. Chase street; three-story brick garage, 21x42, for George E. Waters; $5000.

Baltimore, Md.; Charles B. Burdette, 2019 W. Lexington street; one-story brick garage, 37x130, for Clara Kloppel.

Baltimore, Md.; C. W. Burton, 3306 Hartford avenue; two-story garage, 32x50, for William Gisriel, 1135 Valley street.

Dundalk, Md.; John Cowan & Son, 17 E. Lafayette avenue, Baltimore, Md.; one-story garage, 100x130.

Hagerstown, Md.; Harry Angle, Manila and Dewey avenue; two-story auto repair shop, 40x165, for H. E. Baker, manager Antictan Sales So.; $40,000.

Sundalk, Md.; John Cowan & Son, 17 E. Lafayette avenue; one-story garage, 100x130; $25,000.

Westminster, Md.; B. F. Shriver Co.; one-story brick, steel and concrete auto building, 60x125; slag roof, concrete floor; $20,000.

Cambridge, Mass.; Bernard Wilson, Chelsea, Mass.; two-story garage, 74x74x109, at 84 Prospect street, for Wolfson & Co., 10 State street, Boston, Mass.

Everett, Mass.; Clark & Lee, 201 Devonshire street, Boston; two-story garage and repair shop, 60x120, for A. C. and M. L. Felkin, 69 Long Wharf, Boston; $25,000.

Fall River, Mass.; Samuel Boucher, 171 Hunter street; one-story garage, 54x224; $30,000.

Detroit, Mich.; J. E. Dayton, 979 McKinley avenue; one-story garage, 30x70, at 91 Harper avenue; for Garfield Cartage Co.; $10,000.

Kalamazoo, Mich.; O. F. Miller, 139 Prospect street; one-story garage and show room, 60x200, for H. C. Howard, 301 National Bank building; $20,000.

Glasgow, Mo.; Simon Construction Co., Columbia, Mo.; two-story garage, salesroom and repair shop, 90x90; install lathes, drills, forges, welder, storage battery and vulcanizing equipment; for Nivert & Son; $33,000.

Joplin, Mo.; Wooten & Stroup; one-story garage, 50x120; for city of Joplin; $8300.

Kansas City, Mo.; Long Construction Co., 607 Rialto building; three-story auto building, 100x115, for Irwin Kirkwood.

Kansas City, Mo.; Long Construction Co., 607 Rialto building; one-story fireproof garage, 50x142, for National Bank of Commerce; $50,000.

Kansas City, Mo.; Walter Judkins, 5316 W. 42nd street; one-story garage, 21x140, for W. W. Sylvester; $8000.

Kansas City, Mo.; Max Morris, 1316 Lake street; one-story garage, 68x89, for C. T. Burnett, 3850 Prospect avenue.

Kansas City, Mo.; A. E. Hofer, 2120 E. 58th street; one-story garage, 50x80, for J. C. Elser, 5833 Troost avenue.

St. Louis, Mo.; Erbruegger & Buemer, 2909 Natural Bridge road; one-story garage, 95x177, for J. C. Roeber, care A. L. Meyer, Central National Bank building.

Omaha, Neb.; C. O. Bickel, 600 Barker block; two-story garage, 24x30, at 4124 Davenport avenue, for Miss O. Hayden; $4000.

Elizabeth, N. J.; Turner Construction Co., 244 Madison avenue, New York; one-story garage, 34x36, for United States Leather Co.; $8000.

Elizabeth, N. J.; Warren-Moore Co., 13th and Market streets, Philadelphia, Pa.; two four-story auto buildings, 120x144 and 320x400; one-story building, 320x400; reinforced concrete and steel; for Willys Motor Corporation; $4,000,000.

Newark, N. J.; Securities Investment Co., 786 Broad street; garage and show room, 558-86 Broad street; $120,000. Lessee, Franklin Motor Car Co., 35 Halsey street.

Newark, N. J.; Theobald Hermann, 570 S. 12th street, one-story garage, 51x108, at 569-71 S. 11th street, for Charles A. Scheffmeyer, 884 S. 18th street; $12,000.

South Orange, N. J.; Archibald Shiels, 347 Valley street, two-story garage, 20x224, for F. D. Barlou; $4500.

Brooklyn, N. Y.; A. Herskowitz, 2668 Bergen street; two-story garage, 50x100, for New York & Brooklyn Towel Supply Co., 218 Pearl street.

Buffalo, N. Y.; Edward Grupp, Jr., 125 Glenwood avenue; one-story garage, 55x108, at Cherry and Mortimer streets; for Charles Broitcher; $11,000.

Hempstead, L. I., N. Y.; A. C. Ansell; one-story garage, 80x80, at Fulton and Franklin avenues; for William Hutcheson; $40,000.

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New Rochelle, N. Y.; Joseph Walters; two-story garage, 24x26, for William C. Merrill, 44 Lafayette street; $5500.

New York, N. Y.; Steiner Concrete Steel Co., 105 W. 40th street; one-story garage, at 430-6 W. 57th street, for Daniel Meehan, 1966 Broadway; $200,000.

Utica, N. Y.; Jones Brothers, 116 Parkway; one-story garage and show room, 111x200, for Utica Automotive Corporation; $40,000.

Cleveland, O.; H. G. Claxton, 214 Vickers building; two-story brick garage, 54x148, at 4310 Carnegie avenue; for Stutz Motor Co., 1909 E. 13th street; $20,000.

Cleveland, O.; Van Blarion Co., 322 Plymouth building; one-story brick garage, 70x156, at 3813 Euclid avenue, for University Club; $30,000.

Cleveland, O.; Frank Vejsicky, 5942 Washington Park boulevard; one-story garage, 37x52, at 5319 Broadway, for Charles Gacha, 532 Broadway; $5000.

Cleveland, O.; C. C. Kinne, 808 Union National Bank building; two-story garage and show room, 129x190, at East 70th street and Euclid avenue; for Ellen Motor Co.; $150,000.

Dayton, O.; Ferro Concrete Co., Richmond and Harriett streets, Cincinnati; four-story garage and service station, 74x84, for H. S. Lehman.

Kent, O.; Blarcom Construction Co., 322 Plymouth building, Cleveland, O.; one-story garage, 80x160, for Mason Tire and Rubber Co.; $60,000.

Mt. Healthy, O.; Edward Honnert; one-story public garage, 36x90, for William Forbes; $6000.

North Canton, O.; O. F. Custer, 141 Smith avenue, N. W.; one-story garage, 100x130, for North Canton Auto Co.; $30.000.

Steubenville, O.; H. H. Van Horn; one-story commercial garage, 60x160, for Samuel Blum; $15,000.

Youngstown, O.; Heller Brothers Furnace Co.; two-story commercial garage, 30x150, at Rayen and Belmont avenues, for W. W. Martin, care Ralph Sarosen, 6201 Alder street, Pittsburgh, Pa.; $50,000.

Garber, Okla.; Wilcox & Bryant; one-story garage, 75x140; $50,000.

Muskogee, Okla.; H. O. Valeur & Co., 705 Phoenix building; one-story reinforced concrete garage; concrete foundation and flooring, for C. T. Grahm, 16th street and Emporia avenue; $50,000.

Oklahoma City, Okla.; Frank Kenyon, 717 N. Fourth street; one-story garage, 75x140, for Phillips Baggage and Carriage Co., 109 W. California street.

Oklahoma City, Okla.; F. A. Gross Construction Co.; two-story automobile building, 150x160, for McDaniel Automobile Co.; $100,000.

Walters, Okla.; Stimpson Motor Co.; two-story garage 68x125.

Braddock, Pa.; Nilligan Brothers, 2116 Nobel avenue, Swissvale, Pa.; one-story garage and gasoline station, 21x100, for F. G. Bischoff, 315 Braddock avenue; $10,000.

Erie, Pa.; Henry Shenk Co., 12th and Sassafras streets; one-story commercial garage, 45x100, at 2007 State street, for Marvin Griswold, 12th and Raspberry streets; $30,000.

Houtsdale, Pa.; Charles Wilcox, Phillipsburg, Pa.; one-story commercial garage, 50x100, for M. Sweeney; $15,000.

Kingston, Pa.; O. J. Behrens Sons, 170 Blackman street; three-story garage and show room, for City Auto Co.; $30,000.

Norristown, Pa.; Frank Heavener, Boyer Arcade; three-story sales and service station at 223-25 W. Main street, for Charles W. Mann Motor Co.

Pittsburgh, Pa.; D. H. Lash, 720 Grandville avenue; four-story garage, 60x135, for Pittsburgh Press; $80,000.

Pittsburgh, Pa.; J. S. Richmond, 726 Filbert street; two-story garage and service station, 60x120; Center avenue, near Cypress street; $35,000.

Philadelphia, Pa.; George W. Shaffer; two-story garage, 60x94, at 5154-60 Thompson street for Odenath & Sons; $7000.

Philadelphia, Pa.; Peter Kuhn; one-story garage, 19x74, northwest corner Kipp and Ontario streets, for Henry Pichard; $2000.

Philadelphia, Pa.; Louis Mahi; one-story garage, 18x50; north side Somerset street, west Woodstock street; $1200.

Philadelphia, Pa.; Edward M. Hunter; one-story garage at 145 N. 22nd street; $1950.

Philadelphia, Pa.; Harry Barnes; one-story brick garage at Collins and Westmoreland streets, for A. Scholer; $3000.

Philadelphia, Pa.; L. D. Stiles; one-story brick garage, north side Washington lane, west Anderson street, for George W. Anthony; $1000.

Philadelphia, Pa.; Louis Cohm; two-story brick garage at 3954-58 Girard avenue, for Sox & Lipschutz; $25,250.

Philadelphia, Pa.; George D. Evans; one-story garage at 5429 Wynnefield avenue, for John Hatton; $1600.

Philadelphia, Pa.; George D. Evans; one-story garage, 16x22, at 5425 Wynnefield avenue; for William H. Spates; $1700.

Philadelphia, Pa.; Joseph F. Driscoll; one-story garage, 18x45, rear 4412 Germantown avenue, for Augustine Conti; $2500.

Philadelphia, Pa.; Frank & Kaiser; one-story garage, 40x87, at 459-61 N. Third street, for Morris Sacks; $7000.

Philadelphia, Pa.; Philip Haibach Construction Co.; one-story garage, 60x141, at 2121-23 W. Clearfield street, for Jacob Hurning; $18,000.

Philadelphia, Pa.; I. K. Davis; two-story garage, 53x65, at 318 Chelton avenue, for Frank Dursch; $13,000.

Philadelphia, Pa.; D. J. Cannito; one-story garage, southeast corner 54th and Parrish streets, for John F. Deal; $1150.

Philadelphia, Pa.; Daniel Crawford, Jr.; 12 one-story garages, 20x22, rear 5410 to 32 Woodbine avenue; $14,400.

Philadelphia, Pa.; Louis Goldhardt; two-story garage; south side Rising Sun lane, south Princeton avenue; $9000.

Philadelphia, Pa.; J. D. Fisher; one-story garage, 50x100, at 40th and Ludlow streets, for J. C. Core.

Philadelphia, Pa.; Herman Moraner; one-story garage 14x17, at 4915 N. Sixth street; $5000.

Philadelphia, Pa.; Charles A. Car; one-story brick garage, at 2300-2-4 N. Sydenham street, for John Garrigan; $9200.

Philadelphia, Pa.; A. Raymond Raff; one-story garage, 19x22, at 406 Westview street, for Howard Story; $2000.

Philadelphia, Pa.; I. K. Davis; eight one-story garages, 13x20, west side Ogontz avenue, north 72nd street, for Oak Lane Realty Co.; $4000.

Philadelphia, Pa.; R. H. Goy; one-story brick garage, 33x100, at 2838 Watts street, for Walter Saunders; $4000.

Philadelphia, Pa.; A. J. Monaghan; one-story brick garage, 50x142, at 4643-45-47 Lancaster avenue; $8000.

Philadelphia, Pa.; Edwin Eugle; one-story garage, 18x34, northeast corner Nevada and Moyer streets, for Dr. Solberg; $2400.

Philadelphia, Pa.; Samuel Shoemaker; one-story garage, at 4728 Roosevelt boulevard; $1400.

Philadelphia, Pa.; J. S. Fisher; one-story garage at 5979 Drexel road, for Robert K. Scott; $1950.

Philadelphia, Pa.; Louis Sasinsky; one-story garage, north side Eastwick street, west 82nd street, for Island Road Bottling Co.; $5000.

Philadelphia, Pa.; I. K. Davis Co.; two one-story garages, at 6845-49 Ogontz avenue, for Dallas & Hartley; $3000.

Philadelphia, Pa.; Frank F. O'Neill; one-story stone garage, 29x50, on Moreland avenue, east Germantown avenue, for Mrs. Mary O'Neill, $3000.

Philadelphia, Pa.; S. Berger; two-story garage, 54x186, at 251 S. Fourth street, for Charles Goldman; $20,000.

Philadelphia, Pa.; Frank Mark Co.; one-story garage, 21x23, on Ninth street, south Roosevelt boulevard, for Jacob Kahm; $2100.

Philadelphia, Pa.; George H. Evans; one-story garage, at 5347 Wynnefield avenue, for Orland M. Parke; $2000.

Philadelphia, Pa.; Robert Killough; two one-story brick garages, 16x22, rear 300-2 W. Hortter street; $3000.

Philadelphia, Pa.; Mowrer Brothers; one-story garage, 20x20, Church road, south Lancaster avenue, for James H. Emack; $1000.

Philadelphia, Pa.; William Chapman; one-story brick garage, Philip street, north Cayuga; $2000.

Philadelphia, Pa.; Frank G. English; two-story garage, 56x176, Cambria street, east 12th street, for J. W. Vandergrift; $50,000.

Philadelphia, Pa.; Schaffer & Matthews; one-story garage, 72x96, at 1326-36 Fairmount avenue, for L. J. Groh; $12,000.

Philadelphia, Pa.; W. J. McElwee; one-story garage, 36x90, at 1511-13 N. Randolph street, for S. A. Carney; $2500.

Philadelphia, Pa.; A. Shestack; one-story garage, at 5242 Parkside avenue, for Fannie Gelfand; $1200.

Philadelphia, Pa.; Charles J. Platt; one-story brick garage, 16x21, at 1671 Dyre street, for Alfred Waterhouse; $1200.

Philadelphia, Pa.; A. Rosenblatt; one-story garage, 15x18, at 1926 Erie avenue, for Anna S. Goldstein; $1000.

Philadelphia, Pa.; Roland Bale, Jr.; one-story brick garage, 16x39, at 1920 E. Clementrue street, for Nathan Kravitz; $1500.

Philadelphia, Pa.; John Devine; one-story garage, 19x55, at 111 W. Seymour street, for Henry J. Spingstag; $2700.

Philadelphia, Pa.; R. Bentlenmiller; one-story garage, 20x92, northeast side 13th street, south Wagner avenue; $5000.

Philadelphia, Pa.; S. Yellin; one-story garage, 25x26, at 2317 N. Broad street, for Louis Stecker; $2500.

Philadelphia, Pa.; Samuel Rogers, Jr.; one-story garage, at 5210 Greene street; $1400.

Philadelphia, Pa.; William Adams; one-story garage, northwest corner Wiley and Leland streets; $5000.

Providence, R. I.; C. I. Bigney Construction Co., 898 Westminster street; one-story garage and service station, for Herbert A. Thayer, 404 Weybossett street; $30,000.

Marfa, Tex.; J. C. Bean; one-story garage, 75x125; tile and cement floor, for W. H. and W. K. Colquitt; $15,000.

Norfolk, Va.; Nugent Price Construction Co., 121 Taxwell street; one-story garage and salesroom, 25x110, for McClean & Cooper, Dickman building; $9000.

Petersburg, Va.; Harrison Construction Co., Mechanic building; two-story public garage, 32x120, for J. A. Danervin & Co., care Dodge Car Co., 111 W. Washington street; $25,000.

Colby, Wis.; East Stone Construction Co., 318 S. Barstow street, Eau Clair, Wis.; two-story garage, 70x100, for John Conrad; $30,000.

Milwaukee, Wis.; Charles F. Benke, 827 34th street; three-story garage and warehouse, 30x103, at 34th and North streets, for T. C. Esser, 3402 North avenue; $30,000.

NEW GARAGES OPENED.

Laurel, Mon.; Thomas and John Gray, formerly of Clark, S. D.

Forman, N. D.; Auto Service Garage, C. J. Boje manager.

Hoople, N. D.; C. F. Bierman.

Minnewaukan, N. D.; Minnewaukan Auto Co.

Aberdeen, S. D.; Thomas Anderson, M. N. Christensen and S. F. Foss; automobile paint shop, Overland building.

Crocker, S. D.; Charles Peterson, Regnier building.

Midland, S. D.; C. R. Eakright, Boyd Blacksmith shop.

Mobridge, S. D.; Darling garage.

Athelstane, Wis.; Fred Seterwal; automobile repair business.

Centuria, Wis.; G. A. Anderson.

Stoddard, Wis.; Henry A. Robertson, reopens garage.

Viroqua, Wis.; E. E. Mull; automobile repair shop.

Watertown, Wis.; Deaking Brothers; West Main and Washington streets.

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NEW CONCERNS RECENTLY INCORPORATED

Monthly Record of New Business Houses for which Charters Have Been Issued in the Various States and Classified According To Nature of Business.

DEALERS IN AUTOMOBILES, MOTOR TRUCKS AND TRACTORS.

Dover, Del.; General Motor Finance Co.; $100,000; to deal in and with motor trucks; G. M. Barrett, M. B. Butler, M. M. Lucey.

Dover, Del.; Automobile Power Co.; $1,600,000; L. P. Barrett, J. A. Massen, R. W. Plummer.

Dover, Del.; Highlander Motor Sales Co.; $150,000; to deal in automobiles and motor trucks; R. E. Maloney, A. M. Twony, F. A. Reilly.

Dover, Del.; Sunshine Motor Co.; $1,000,000; L. B. Phillips, M. S. Anderson, J. Baynes.

Dover, Del.; Time Motor Sales Corporation; $100,000; to buy and sell automobiles.

Hartford, Conn.; The L. and H. Motor Co.; $50,000; Frederick W. Lycett, Thomas W. Campbell, Charles B. Beach, Goodwin B. Beach, Alexander W. Creedon, 103 Oak street.

Chicago, Ill.; Greene-Kaughman Motor Co.; $50,000.

Boston, Mass.; Dorchester Motor Co.; $50,000; to deal in automobiles and motors; William G. Seavy, Jr. and Alexander W. Wright.

Jersey City, N. J.; Massoline Motor Car Co., 75 Montgomery street; $100,000; to conduct a general automobile business.

Elizabeth, N. J.; Hurbut Motor Car Co.; $25,000; to conduct a general automobile business.

Keport, N. J.; N. J. Motors Sales Co.; $10,000; to deal in automobiles; O. Linthwaite, F. A. Fenton, W. F. German.

Newark, N. J.; Enterprise Auto Co., 1207 South Broad street; $25,000; John A. Thiele, Charles B. Ogden, Blanche H. Edwards.

West Hoboken, N. J.; Dimes Trucking Co.; $25,000; E. E. Dittes, G. F. Dittes, T. E. Sexton, North Bergen.

Newark, N. J.; Newark Automotive Collateral Co.; $250,000; stocks, bonds and securities.

Binghamton, N. Y.; Russell Auto Sales Co., Inc.; $30,000; T. I. Russell, R. H. Moody, M. W. Browning.

Brooklyn, N. Y.; Gate Motor Co., Inc.; $5000; Max H. Mintzer, Jacob Bonemone, Henry Romer, 11 Foxhall street.

Brooklyn, N. Y.; Hayes-Woodside Co.; $10,000; sales agents for motor trucks; E. Hayes, M. E. and L. R. Woodside, 116 McDounough..

Brooklyn, N. Y.; Grove Motor Sales Co.; $5000; E. and F. J. Rothschmitt, Jr., Ridgewood.

Brooklyn, N. Y.; L. and T. Motor Car Corporation; $5000; to deal in automobiles; Max Lifshitz, Joseph A. Teperson, 234 New Jersey avenue.

Brooklyn, N. Y.; Ort & Otto Co., Inc.; $5000; to make automobiles, boats and airplanes; J. Ort, F. and K. Otto, 1862 Stockheim street.

Brooklyn, N. Y.; The President Auto Co.; $24,000; H. J. Pergament, D. I. Samuels, S. M. Samuels.

Brooklyn, N. Y.; Standard Auto Delivery Inc.; $10,000; F. S. Taggart, T. J. Kitts, F. G. Boffy, 357 Bond street.

Brooklyn, N. Y.; Trigoboff & Krauss Auto Trucking Co., Inc.; $1000; Nathan Trigoboff, Jacob Krauss, Sadie Eisman, 803 Hart street.

Buffalo, N. Y.; Chambers Motor Co.; $40.000; R. G. Kindel, M. E. Merwin, C. H. Chambers.

Buffalo, N. Y.; The H. B. Loveland Co.; $30,000; to deal in automobiles; H. B. Loveland, E. C. Jessop, J. V. Downey.

Buffalo, N. Y.; Ostendorf Motor Car Co.; $100,000; G. Ostendorf, T. S. Clark, A. W. Haffner.

Buffalo, N. Y.; Swit Automotive Corporation; $50,000; W. Hershaft, J. J. Akston, L. L. Lewis, Jr.

Buffalo, N. Y.; Vanduzen Motor Sales Co.; $10,000; S. P. Millener, H. R. Bernhartt, J. R. Vandusen.

Geneva, N. Y.; Finger Lakes Motor Co.; $5000; Mathilda E. Bennett, Harry W. Bennett, Lottie Delaney, 29 Park avenue.

Mineola, N. Y.; Allied Automotive Corporation; $250,000; J. F. Egan, W. E. Kisselburg, E. E. Gilman, 149 Broadway.

New York, N. Y.; B. F. T. Auto Corporation; $30,000; John J. Finkel, G. Tinfowitch, J. Bellon, 711 Union avenue.

New York, N. Y.; Continental Body Corporation; $25,000; to deal in automobile and aircraft bodies; J. M. Sheehan, H. R. Frost, 52 Broadway.

New York, N. Y.; Flato Co., Inc.; $1200; to conduct an automobile business; Isidor Flato, Sam G. Flato, Mamie Flato, 334 Amsterdam avenue.

Syracuse, N. Y.; James F. Fynmore Co.; $25,000; to deal in motorcycles; J. F. Fynmore, E. B. Salmon, Jr., J. H. Wilson.

New York, N. Y.; G. M. S. Motor Sales Co.; $25,000; R. L. Jagocki, I. Gelin, H. Wendt, 99 Nassau street.

New York, N. Y.; Lang-Warden; $20,000; to deal in motor vehicles; C. E. Lang, J. K. Warden, C. L. Briggs, 267 W. 70th street.

New York, N. Y.; Mitchell Automotive Co.; $20,000; G. I. Mitchell, B. K. Strader, H. A. Pratt, 50 Church street.

New York, N. Y.; M. S. Motor Corporation; $5000; M. Heiff, H. S. Zuckerman, R. J. Wittstein, 916 Stebbins.

New York, N. Y.; S. F. T. Auto Corporation; $30,000; J. Bellom, 711 Union avenue; A. N. Solomon, J. J. Finkel.

New York, N. Y.; Superior Motor Trucking Corporation; $12,000; S. Kiphis, A. Dranoff, S. Cohen, 624 East Sixth street.

New York, N. Y.; United Motors Distributing Corporation, Inc.; $50,000; H. Weiss, A. C. Schwarz, F. R. Rozar, 249 West 59th street.

New York, N. Y.; Vera McCord Production, Inc.; $50,000; S. B. Howard, Robert K. Thistle, George V. Rielly.

New York, N. Y.; Washington Heights Motor Sales and Service Co.; $20,000; D. K. Brown, A. B. Vanderhoof, W. H. Maass, 2687 Heath avenue, Bronx.

Rochester, N. Y.; H. D. S. Motor Sales, Inc.; $40,000; H. D. Smith and G. C. Lehmann.

Rochester, N. Y.; Hone & McLeod Co.; $10,000; A. B. Hone, R. L. Downie, W. McLeod.

Rochester, N. Y.; Mason-Hildebrandt Co.; $10,000; A. F. Mason, H. F. Hildebrandt, T. C. Nixon.

Rome, N. Y.; Overland Rome Co.; $10,000; to deal in motor vehicles; E. L. O'Donnell, F. R. and C. M. Shoemaker.

Plattsburgh, N. Y.; Taxker Automobile Co.; $10000; H. W. Gage, J. W. and S. B. Taxker.

Schenectady, N. Y.; Burtiss Motor Sales Co., Inc.; $100,000; to conduct a motor car business; J. W. Smitley, M. R. Burtiss, N. C. Barron.

Cleveland, O.; Special Auto Service Co.; $100,000; L. R. McCleary.

Connellsville, Pa.; Metropolitan Motor Co.; $30,000; C. S. Ruse.

Harrisburg, Pa.; Harrisburg Motor Co.; $10,000; W. K. Thrush.

Lewiston, Pa.; Miller Motor Co. of Lewiston; $500,000; Wilhelm Holger, Arthur J. Adria.

Canonsburg, Pa.; Murdock Motor Co.; $5000; John H. Weimer.

Providence, R. I.; The Sharrets Motor Corporation of Rhode Island; $50,000; to engage in the automobile business in all its branches; Joseph J. Sharrets, Robert G. Sharrets, Herbert M. Sherwood.

Chattanooga, Tenn.; Hamilton Motor Co.; $25,000; S. E. Boody, George W. Harvey, L. T. Prigmore, O. M. Prigmore, Claude Thompson.

Nashville, Tenn.; Jerry Auto Shop; $5000; Jerry R. Peon, Ellis Soper, R. W. Storrs, Jack Clay, E. J. Hamilton.

Amarillo, Tex.; Johnson Joiner Co.; $50,000; to deal in automobiles; C. L. Johnson, A. W. Joiner and J. C. Cornelius.

Chattanooga, Tenn.; Shelton Motor Sales Co.; $10,000; P. B. Whittaker, J. L. Faust, M. N. Whittaker, N. C. Gladish, John B. Hyde.

Galveston, Tex.; The Hagerstrom Co.; $45,000; to deal in automobiles and supplies; John Hagerstrom, Elmer Sisco, Edward Hess.

Houston, Tex.; Bonner Motor Car Co.; $5000; R. L. Young, J. J. Bonner, C. J. Doubek.

Nacogdoches, Tex.; Lee Motor Co.; $10,000; W. W. Lee, F. B. Subliett, C. A. Hodges.

NEWLY ORGANIZED MANUFACTURERS OF CARS, TRUCKS AND TRACTORS.

Dover, Del.; General Motor Truck Co.; $100,000; F. R. Hansell, E. M. Macfarland, J. Vernon Pimm.

Dover, Del.; Smith Springfield Corporation; $1,000,000; to manufacture automobile bodies; T. L. Croteau, P. B. Drew, H. E. Knox.

Wilmington, Del.; Georgia Apperson Co.; $100,000; W. F. O'Keefe, George G. Steigler, J. H. Dowdell.

Wilmington, Del.; Kansas City Truck Co.; $1,000,000; to manufacture tractors, trucks.

Wilmington, Del.; Moller Motor Co.; $500,000; to manufacture automobiles and all kinds of motor vehicles.

Wilmington, Del.; Pan-American Tractor Co.; $100,000; to manufacture tractors and automobiles.

Wilmington, Del.; Savidge Tractor Co.; $1,000,000; C. L. Rinlinger, C. H. Blaske.

Chicago, Ill.; Boring Tractor Corporation; $1,000,000.

New York, N. Y.; Owen Magnetic Car Corporation; $10,000; W. U. Goodbody, H. B. Leart, R. M. Owen.

New York, N. Y.; Vim Motor Truck Co.; $10,000; F. P. Butehorn, R. S. Baker, E. S. Hawley, 50 Vanderbilt avenue.

New York, N. Y.; Walters Sales Co.; $50,000; to manufacture motor trucks and automobiles; F. L. Tuttle, A. M. Hardes and A. Neuman, 145 Nassau street.

Galveston, Tex.; Sherman Automobile and Tractor School; $5000; Lee Simmons, H. F. Kellems, H. W. Head.

PARTS AND FITTINGS MAKERS.

Dover, Del.; Federal Battery Service, Inc.; $3,700,000; Richard B. Owen, M. E. Jones, William H. Benjamin.

Newark, N. J.; New York Motor Car Device Co.; $100,000; W. O. Huguley, G. A. Knillschritt, Herbert Knillschritt.

New York, N. Y.; Stanley Steel Welded Wheel Corporation; $6,000,000; T. L. Croteau, H. E. Knox, P. B. Drew.

Rochester, N. Y.; The Inter-State Machine Products Co.; $50,000; to deal in automobile parts and factory supplies; M. C. Armstrong, J. and F. C. Buckley.

Cleveland, O.; Perfection Auto Body and Radiator Repair Co.; $10,000; Jacob Leh.

GARAGES AND REPAIR SHOPS.

Camden, N. J.; Automobile Garage and Storage Co.; $125,000; to deal in automobiles; J. M. Carroll, J. A. Whitney.

Newark, N. J.; Elizabeth Avenue Garage, Inc., 225-227 Milford avenue; $10,000;

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Xavier S. Schmidt, Amelia Wilkie, Hugh M. Wilkie.

Brooklyn, N. Y.; Empire Boulevard Garage Corporation; $7500; C. J. White, M. Heitler, W. Schneberg, 696 Georgia avenue.

Brooklyn, N. Y.; Twin Star Garage; $12,000; L. Schwardron, E. M. Maltz, H. A. Berger, 1085 Eastern Parkway.

Fredonia, N. Y.; The Harris-Bigler Garage Co.; $10,000; D. M. Harris, F. A. and L. V. Bigler.

New York, N. Y.; Brick Garage Co.; $25,000; M. Knapp, J. Breger, J. Schein, 334 East 15th street.

New York, N. Y.; Hygrade Garage Corporation; $5000; R. Dundy, M. Greenberg, M. Federer, 76 West 113th street.

Yonkers, N. Y.; Woodlawn Garage, Inc.; $50,000; J. T. Montalto, G. A. Valente, J. L. Feraca, 214 East 107th street.

Cleveland, O.; Ninth Garage Co., increases from $700,000 to $2,300,000.

Portsmouth, Va.; Portsmouth Reo Motor Corporation; $5000; to conduct an automobile sales and garage business; R. G. Edgerton, president; Larcy L. Redd, vice president; J. B. Wicks, secretary-treasurer; A. W. Anderson, Victor Branch directors.

ACCESSORIES, EQUIPMENT AND SUPPLIES.

Hartford, Conn.; The Holcomb Tire Service; $50,000; Ernest A. Holcomb, Albert Wurtz, Lucy C. Bausmantia.

Dover, Del.; Puncture Proof Pneumatic Tire Protector, Inc.; $75,000.

Dover, Del.; Record Tire & Manufacturing Co.; $5,000,000; P. B. Drew, T. Croteau, H. E. Knox.

Dover, Del.; Schenly Tire Manufacturing Co.; $25,000; to manufacture tires, tubes; Clyde A. Dunn, B. Whitman Smith, H. R. Smith.

Dover, Del.; Triangle Tire & Rubber Corporation; $2,000,000; T. L. Croteau, P. F. Crew, H. E. Knox.

Newark, N. J.; Assembled Tire Corporation; $100,000; T. P. Edwards, H. S. Baker, Roselle and D. L. Page.

New Brunswick, N. J.; Burke Tire Service Co.; $25,000; J. B. Burke, W. D. Danberry, M. A. Harkins.

Brooklyn, N. Y.; The Brooklyn-Warwich Auto Service and Supply Co.; $5000; general hacking business; M. Rigberg, J. F. Storff, J. Davison, 344 Broadway.

Brooklyn, N. Y.; Standard Auto Delivery, Inc.; $10,000; F. S. Taggart, T. J. Kitts, F. G. Boffy, 347 Bond street.

Brooklyn, N. Y.; United Tire Stores, Inc.; $5000; M. R. McCullough, S. Jarvis, G. A. McLaughlin, 680 West End avenue.

New York, N. Y.; Collins Tire and Rubber Co., Inc.; $5000; Joel Jacobs, Sydney Bernheim, Walter Loewenthal, 1877 Broadway.

New York, N. Y.; Concourse Auto Supply Corporation; $5000; B. Komarrow, N. Berk, J. Lichenstein, 831 Mamida street.

New York, N. Y.; Continental Auto Tire Co., Inc.; $5000; E. B. Grubel, J. P. Newman, E. Myers, 80 Maiden lane.

New York, N. Y.; Continent Tire & Rubber Co.; $5000; Joel Jacobs, Sydney Bernheim, Walter Loewenthal, 1877 Broadway.

New York, N. Y.; Eureka Rubber Cement Co.; $50,000; W. F. Lee, I. M. and L. M. Halpern, 2803 Heath avenue.

New York, N. Y.; Harlem Auto Supply Co.; $25,000; M. Hedolsky, A. and B. Klepper, 342 Bowery.

New York, N. Y.; Needham Tire and Rubber Co., New York, Inc.; $100,000; H. A. Rambonnet, G. J. Constable, E. C. Klesper, 967 St. John's Place, Brooklyn.

New York, N. Y.; Paige Sales Co.; $100,000; to deal in motor vehicles and accessories; H. M. and E. L. Jewett, H. Stewart, Rochester.

New York, N. Y.; Rubes Auto Accessories Manufacturing Co.; $100,000; D. A. Posner, C. Cobb, W. G. McIvor, 233 Broadway.

New York, N. Y.; Victory Auto Truck, Inc.; $60,000; to manufacture automobile accessories, trunks, bags, leather goods; H. Alexander, H. J. Ries, A. Mayer, 220 West 98th street.

Dallas, Tex.; Everready Tire Service; $3000; T. W. Hunter, J. T. Cowans, G. S. McGhee.

OVERSIZE TIRE TABLES.

Oversize tires, designed primarily for exceptional and hard service, have come into general favor among owners of medium and large capacity passenger cars, because of their extra strength, easier riding and longer mileage that may be expected from them. They are popular also because in the opinion of many owners they add to the appearance of the car.

Some users of oversize tires think that a tire with increased cross section diameter, but with no increase of diameter measured through the hub from outer edge to outer edge of tire, is an oversize. This is a mistake. In other words, if the regular size tire is 34x4, the oversize is not 34x4½, but 35x4½. Both diameters must be increased or the bead will be strained in putting the tire on the rim.

Firestone gives the following table to show the proper regular and oversize tire for a given rim:

Rim	Regular Tire	Oversize Tire
28x3	28x3	29x3½
30x3	30x3	31x3½
30x3½	30x3½	31x4
32x3½	32x3½	33x4
32x4	32x4	33x4½
34x4	34x4	35x4½
32x4½	32x4½	33x5
34x4½	34x4½	35x5
36x4½	36x4½	37x5

The government standard oversize scale, which has been adopted by tire manufacturers, sets a maximum and minimum air capacity for each oversize. The table given above applies to those tires which, like Firestones, give the maximum of air capacity for each oversize.

WHITE COMPANY TO VOTE ON INCREASE.

The directors of the White Motor Co., Cleveland, O., have called a meeting of stockholders for Dec. 12 to vote on an increase of capital stock from $20,000,000 to $25,000,000.

The regular quarterly dividend of $1 a share, payable to stockholders of record Dec. 15, has been declared.

GOODYEAR COMPANY INCREASES STOCK.

The Goodyear Tire & Rubber Co., Akron, O., has increased its capital from $100,000,000 to $200,000,000.

INCREASE IN STUDEBAKER EARNINGS.

Not long ago President Erskine of the Studebaker Corporation, South Bend, Ind., stated that that concern was in stronger financial condition than ever before and that its cash in bank, sight drafts outstanding and investments in government and marketable securities totaled nearly $15,000,000. This is within $8,000,000 of Studebaker's net working capital as of the close of last year and compares with $4,652,126 representing its cash and investments as of Dec. 31 last. At that time the company's current assets totaled $36,944,571 and its total current liabilities were $14,127,549, leaving net working capital of $22,817,022.

The phenomenal growth in the earnings of the Studebaker Corporation over the past three months is revealed in the fact that net earnings after all charges and taxes in the third quarter of this year were equal to the net earnings of the first and second quarters combined. Report for the third quarter shows net earnings of $3,300,000, or $11 a share on the common after all charges and allowances for federal taxes. For the nine months ended Sept. 30 net earnings after all charges and taxes allowance were $6,600,000, or $22 a share on the common.

It is expected that total production for this year will exceed 40,000 cars. The company's additional plants at South Bend will be completed by January next and by April shipments of cars should be well under way. The schedule of production for 1920 calls for 25,000 cars from the South Bend plants and 50,000 from Detroit, which it is estimated will place Studebaker's sales well over $100,000,000.

LOCKPORT CO. TO MAKE AUTOMOBILE GEARS.

Arthur H. Dittmer, formerly of Detroit, Mich., who recently resigned as director of production and purchases of the Covert Gear Co., is reported to have closed a deal whereby he becomes owner of the old Mansfield Glass Co. property at Green and Grand streets, Lockport, N. Y. The consideration is said to have been about $7000.

Mr. Dittmer is organizing a company, capitalization of which will be $150,000, to make gears for automobiles. The company will erect a large plant on the property bought by Mr. Dittmer. At the outset, it is proposed to employ upwards of 150 men. This number will be increased to 400, according to Mr. Dittmer.

HAMILTON TIRE & RUBBER CO. ORGANIZED.

The organization of the Hamilton Tire & Rubber Co., under the laws of Michigan has been announced. All the directors are Detroit business men and the officers are: President, Andrew J. Little; vice president, Manuel Munoz; secretary, Edward A. Crowther.

Mr. Munoz, an expert in the manufacture and sale of tires and accessories, resigned from a position in New York to come to this new company and will have an active interest in its management. The capital is $50,000.

VOLUNTARILY INCREASES PAY OF WORKMEN.

The Hoffman Brothers Motor Works, Elkhart, Ind., has voluntarily increased the pay of its 68 workmen 10 per cent.

When the new addition to the factory is completed 25 men will be added to the force.

The annual pay roll is now $150,000.

WAR STORY OF THE RED CROSS.

Following is the war story of the American Red Cross told in round numbers:

Contributions received (material and money), $400,000,000; Red Cross members: Adults, 20,000,000; children, 11,000,000, 31,000,000; Red Cross workers, 8,100,000; relief articles produced by volunteer workers 371,577,000; families of soldiers aided by home service in United States, 500,000; refreshments served by canteen workers in United States, 40,000,000; nurses enrolled for service with army, navy or Red Cross, 23,822; kinds of comfort articles distributed to soldiers and sailors in United States, 2700; knitted articles given to soldiers and sailors in United States, 10,900,000; tons of relief supplies shipped overseas, 101,000; foreign countries in which Red Cross operated, 25; patient days for soldiers and sailors in Red Cross hospitals in France, 1,155,000; French hospitals given material aid, 3780; splints supplied American soldiers, 294,000; gallons of nitrous oxide and oxygen furnished French hospitals in France, 4,340,000; soldiers served by Red Cross canteens in France, 15,376,000; civilian refugees aided in France, 1,726,000; American convalescent soldiers attending Red Cross movies in France, 3,110,000; wounded soldiers carried by Red Cross ambulances in Italy, 148,000; children cared for by Red Cross in Italy, 155,000.

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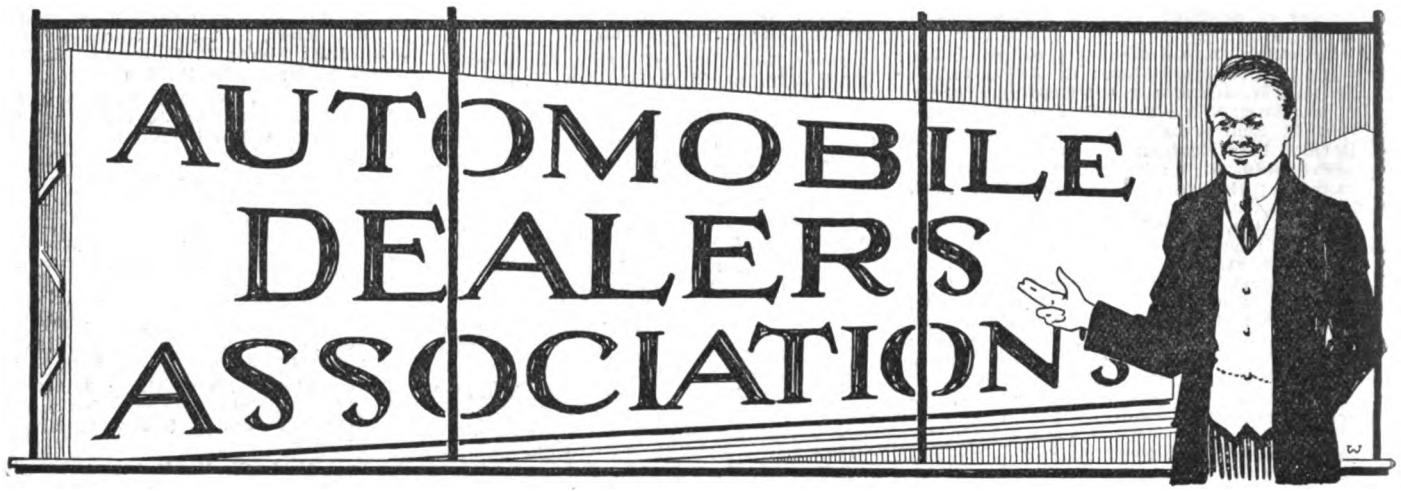

The New Jersey Automobile Trade Association at a recent meeting passed resolutions, through its board of trustees, extending its heartiest congratulations to its former president, George E. Blakeslee of Jersey City for the successful conclusion of his efforts as campaign manager for Edward I. Edwards, who has just been elected governor of New Jersey. It was also resolved that it is the earnest wish of the association that the aims of both Mr. Blakeslee and Governor-elect Edwards for an adequate and complete system of hard surfaced highways such as will once more place New Jersey within the ranks of good road states be fulfilled.

How a dealers' association may prove of great value to its members is indicated by the following action taken at a recent meeting of the Louisiana-Mississippi Automotive Trade Association:

Adopted standard form sales contract.

Authorized employment of strong legal counsel to solve knotty problems for members.

Movement started against fraudulent advertising.

Began plans to clean up the business by eliminating curbstone and dishonest dealers.

Received real suggestions for solution of used car problem.

Made plans for energetic campaign along many lines for the benefit of the industry and the investigation of many complaints.

A Warehousing Corporation is being organized at Pittsburgh, Pa., to erect a fireproof storage house on the site of the former Luna park recreation resort, which will be used by automobile dealers. The building will be six stories and have 500,000 feet of floor space, with sidings from two railroads. The estimated cost of site and building is given as $900,000.

The Portland Garage and Repairmen's Association of Portland, Ore., is soon to have a venison banquet. This association now has nearly 200 members and is adding to this every day.

The Motor Car Dealers' Association of Los Angeles, Cal., was incorporated in December, 1909, the incorporators being Ralph Hamlin, A. M. Young, Earl C. Anthony, William E. Bush, Don Lee, J. S. Conwell and Robert Atkinson. A few years previous to the formation of this association several of the leading dealers of Los Angeles affiliated as "The Licensed Dealers' association," for the purpose of holding automobile shows, race meets, etc. The Los Angeles association has always prided itself in being connected with affairs worth while and always loaned a hand to all real racing events such as the Los Angeles to Phoenix and Santa Monica road races, and the Altadena, Box Springs and Redlands hill climbing contests. One of its real accomplishments has been its many well conducted and most successful automobile shows. The memberhip today includes 54 of the prominent dealers of Los Angeles, who all believe in joining any good sport that is vital to the sustaining of the interests of the industry, but the association is devoting its chief endeavors at the present time along legislative lines. It is loaning its support in behalf of the National Highway movement and is also affiliated with the National Motor Car Dealers' association. It is felt that such an association as this is one of the main spokes in the wheel towards bringing about state and national legislation that will help to put the automobile business on a sound footing and bring to end for all time the hazards that exist through legislation that affect and might destroy the automobile business. Last, but not least, it is considered that the benefit of a dealers' association is to enable the members to get better acquainted with their competitors, and that if this is practised the whole automobile industry will get on a business basis more quickly than by any other method. The present president of the association, Ralph Hamlin, is now holding the office for a second time, his first term being the year it was incorporated. The other officials are: Vice president, F. S. Albertson; treasurer, L. V. Starr; secretary, H. J. Coger; attorney and assistant secretary, Dave F. Smith; other directors, P. H. Greer, H. L. Arnold, Earle C. Anthony. Mr. Greer is a director from the Los Angeles association to the National Dealers' association.

The Automobile Business Association of Grand Rapids, Mich., adopted its constitution and by laws May 15, 1919. It is a social and beneficial organization formed for the purpose of its members becoming better acquainted and cooperating with each other for the betterment of trade purposes and methods, the dissemination of valuable and useful information, to oppose hostile and procure the enforcement of just laws and ordinances and to eliminate all forms of graft and subscription lists, and to further the development of the automobile industry; also to improve trade relations and methods by pointing out and endeavoring to correct trade abuses and to gather information for the purpose of establishing a credit bureau by accurately compiling the credit rating of customers of the members of the association, and furnishing to members a copy of the list so compiled. The fee for admission is $150 and the yearly dues are $25. Any individual, copartnership or corporation is eligible to active membership which is engaged in any or all lines of automobile or kindred business in Grand Rapids and vicinity. The association holds a show at the western Michigan fair in September of each year and also another in February, both of which have proved to be successes financially and otherwise. Through these shows the association is able to pay the expenses of the organization and to refund the members anywhere from 50 to 95 per cent. of the money they put into the show in purchasing space. The present officers are: President, W. K. Philp; vice president, G. A. Beelby; treasurer, J. A. Abfalter; secretary, M. D. Elgin; directors, W. L. Peiter, B. W. Olin, R. E. Becker, A. Gezon, P. M. Hutchings, C. P. Palmer.

A State Trade Association is being agitated for the State of Oregon, it being pointed out that there are many matters, action on which would be of value to automobile dealers generally all over the state which cannot be secured in the absence of such a state organization. This includes legislation, roads and highways, laws regarding car thievery, protection to tourist and motorist from unscrupulous repairmen, trade discounts on parts, tire discounts, etc.

The Rubber Workers' Club of Portland, Ore., has affiliated with the Portland Garage and Repairmen's association.

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FISK TIRES

FISK TRADE is permanent—that sums up its strength. Fisk tires are visibly desirable. They show it—in ***size, detail*** of workmanship, ***good looks.*** And they are generous in excess mileage.

There is a Fisk Tire for every demand—each full value for its cost.

Our dealer-proposition is attractive.

The ideal of the Fisk Rubber Company is "to be the best concern in the world to work for and the squarest concern in existence to do business with."

Sold Direct to Dealers and Manufacturers.

There is a Fisk Branch within 24 hours of all dealers.

Time to Re-tire?
(Buy Fisk)

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Automotive MOSCO Equipment

BEAMOLITE SPOTLIGHT

The spotlight that sells at sight. Distinctive and an ornament on any car. Made for owners who seek the greatest utility and service.

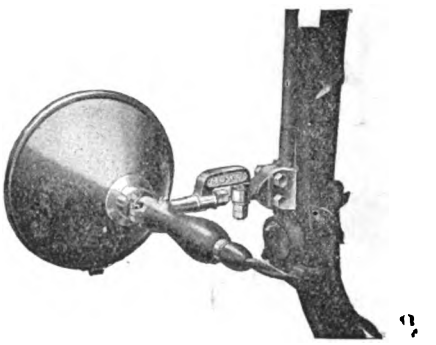
The bracket is of Universal type, made from non-rusting metal, heavily nickel plated and so designed and made that it "stays put" in any position.

The reflector is made of brass, silver plated, on nickel and highly finished. It affords maxmium lighting effect, and can be thrown in any direction (even backward).

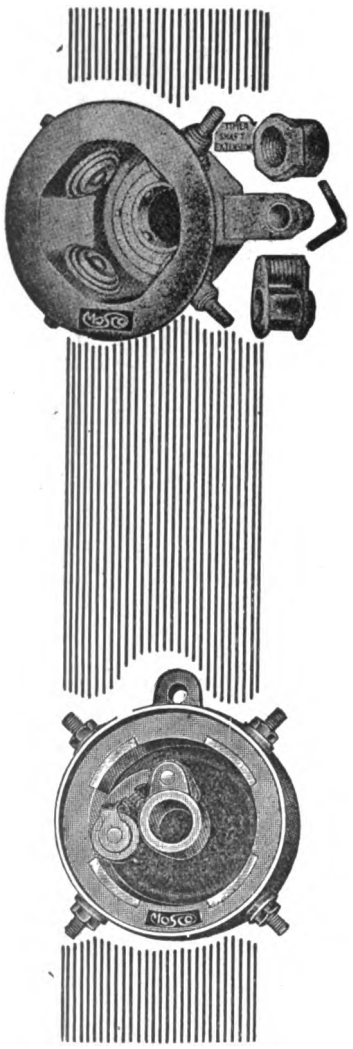
The focussing adjustment is simple and positive. The switch is of the lasting and practical type, and operated by a turn of the handle. The one convenient and safe switch in emergency use. The switch being placed inside of the handle, cannot be effected by water, dirt or weather.

It can be easily and quickly removed from the bracket when there is need of a trouble lamp. The bulb can be quickly replaced by removing the rim screw.

The Beamolite is custom made, quality equipment. Strongly constructed, giving a powerful light and so refined in appearance that it lends dignity to any car. All metal parts are heavily nickel plated, aside from the outside of the reflector, which is finished in two coats, black enamel baked on.



PRICE WITH 12 FT. HEAVY DUPLEX CLOTH COVERED CABLE, $15.00.



IMPROVED BEMUS BALL CONTACT TIMER FOR FORD CAR

The BEMUS is the IDEAL TIMER for the FORD high speed, short stroke engine, because form of contact is the only one which is correct both electrically and mechanically. This is made of a hardened tool-steel brush coming in contact with steel balls which are kept in proper position by means of a spring with plug on the end pressing against them. The impact of the brush causes the balls to turn so that a fresh surface is presented for each contact.

The brush comes in contact only with the four balls, touching no fibre or insulation. This is a decided improvement over the ordinary type timer, where the roller is constantly wearing grooves in fibre ring which holds contacts. The balls are so located that each has a track of its own on the brush, this insuring a maximum amount of wear.

MOUNTING is direct on the time shaft by means of an extension piece which is screw threaded on to shaft, and runs in ball-bearing placed in recess of Timer's shell. This means that each of the balls is equi-distant from the brush. RESULT—absolute precision of timing. Easier starting, smoother running, longer life and saves coil points.

EASIER STARTING—The chief cause of starting trouble in the Ford car is the presence of a body of hardened oil on the flat contact segments of the ordinary type timer, which prevents passage of current from the brush until continued turning has scraped off the grease. In the BEMUS the use of balls for contacts eliminates this source of trouble, as but little oil is used and the balls cannot retain more than the slightest film on their surfaces. Made of Heavy Nickel Plated.

PRICE, $3.00.

MOSCO No. 200 TIMER FOR FORD CAR

The case is made of extra heavy pressed steel, finished in aluminum. Gray bone fiber is used for raceway, with steel inserts dovetailed in. The threaded terminals are insulated by fibre washers all the way through to contact points, thus removing cause of short circuiting.

A timer universally used. Demanded wherever Ford cars are used. While sold at a low price, it affords dependable service and in efficiency is in keeping with all Mosco products. This Timer can be recommended and sold with a service guarantee that will satisfy any purchaser.

PRICE, $1.50.

Send for the Mosco 1920 catalogue and discount sheets. The full line of Mosco specialties is shown. A postal will bring a copy.

MOTOR SPECIAL

MANUFAC

WALTHAM

Automotive MOSCO Equipment

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Automotive MOSCO Equipment

FRONT APRON FOR FORD CARS

For 1917-18-19-20 Models Only.

This apron makes a wonderful improvement in the appearance of the Ford Car, and for that reason alone is worth the cost, but it does more than that.

IT PREVENTS MUD FROM CLOGGING RADIATOR.
ITS SHAPE INDUCES A LARGER VOLUME OF AIR TO PASS THROUGH RADIATOR AND REDUCES RISK OF OVERHEATING.
IT KEEPS LAMPS CLEAN.
IT PREVENTS VIBRATION OF MUD GUARDS.

Made of heavy steel, finished with two coats black enamel and baked. Furished complete with bolts, nuts and washers. Easy to attach.

PRICE, $6.50 EACH. $7.50 WEST OF MISSISSIPPI RIVER.

THE MOSCO VALVE GRINDER

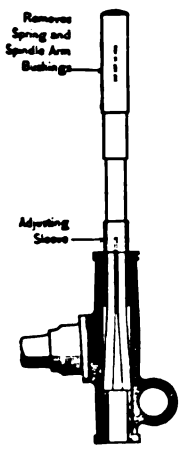
It renders valve grinding an accurate mechanical operation rather than a guesswork hand job.

It has been found that a much more rapid motion can be obtained with the Mosco Grinder than with the ordinary tool, resulting in a very superior finish on the seats.

It is guaranteed in every respect. It is offered not only as a tool, but as a QUICKER, SAFER and BETTER METHOD of valve grinding.

PRICE, $2.00.

MOSCO JIFFY BUSHING REMOVER



For Ford, Dodge, Dort, Chevrolet, Saxon, Overland and all Cars, Trucks and Tractors having ½" spindle bolt.

Made of steel, case hardened.

Indispensable to repairman and owner who does his own work.

Pays for itself in a few minutes.

The only tool now in use that will remove steering knuckle, spindle arm and spring bushings.

PRICE, $1.50.

"TUWAY" COMBINATION DASH LAMP AND PLUG SOCKET

The "TUWAY" dash lamp affords a combination of refinement and utility which places it in a class by itself. Its pleasing design makes it an ornament to any car, and this design has the added advantage of giving a greater distribution of light from the same candle power bulb than any other lamp made. In addition it has the exclusive feature of a socket into which to plug trouble lamp, cigar lighter, etc., without interfering in any way with the light of dash lamp. The switch is very conveniently placed in the lamp bracket.

The Tuway is made of brass heavily nickel plated and comes complete with bulb and all necessary screws, bolts and nuts for attaching to either wood or metal dash. This is a superior quality item, a sure seller and much in demand.

PRICE, $2.50 EACH.

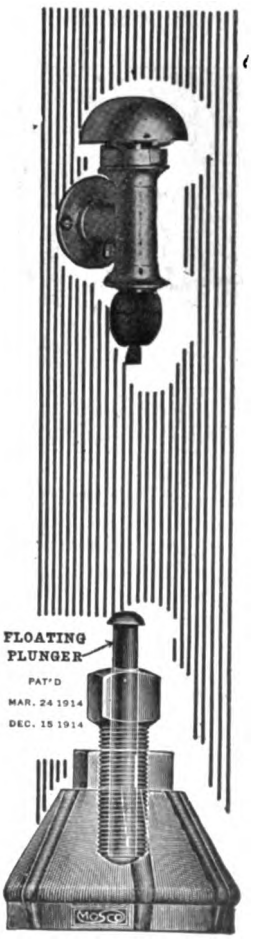
MOSCO FLOATING PLUNGER WHEEL PULLER

Starts a "Frozen" or "Stuck" wheel instantly. Strike the plunger, turn the screw, strike again and the wheel comes off without injury to hub threads, spokes or axle.

Made for 200 models of 45 popular makes of cars.

JOBBERS AND DEALERS—

The 1920 line of Mosco Specialties includes only items that are known and used by owners wherever cars are sold. Your orders should be placed promptly. The Mosco National Advertising Campaign is now in full swing. Aside from constant sales, good margins and satisfied customers, there are other reasons why you should stock the full Mosco line. Full information at request.



TIES COMPANY
TURERS
MASS.

Automotive MOSCO Equipment

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TIRE INDUSTRY AND TRADE

IDEAL TIRE AND RUBBER LETS NEW PLANT CONTRACT.

The Ideal Tire & Rubber Co., through D. C. Hathaway, general sales manager, announces that ground has been broken for a large addition to its present plant. Contracts amounting to $6,250,000 are already on hand, and it has become imperative that this new unit be rushed to completion. The Ideal plant is now running three eight-hour shifts and employs about 450 men.

"Our present splendidly appointed factory with modern equipment and floor space of about 65,000 feet," said Mr. Hathaway, "is now turning out approximately 1000 tires and 800 tubes per day. We have on contract for the coming year 48 large distributors, in addition to having a wide distribution of dealers, making it necessary to increase our production capacity to at least 2000 hand made tires per day.

"As a step toward service to our distributors and dealers, we have recently perfected the Greyhound cord tire, into which has been built all the efficiency, quality and skill that have earned for the Greyhound fabric tires their great popularity. The Greyhound cord tire with its new tread designed to skillfully hold the road, is a marvel in super size and construction and is indeed the ideal of all cord tires."

Tire dealers throughout the country are now handling Greyhound tires and a large export trade has already been secured through C. O. Brandes, export manager.

The Smith Rubber and Tire Co., Inc., Passaic, N. J., has broken ground for a large tire plant, to be located at Garfield, N. J., 10 miles from New York city, where it will manufacture only cord tires, the same being an invention of Fred W. Smith, Rutherford, N. Y. The company announces that it expects to sell to the automobile owner a cord tire for the price for which is now paid for fabric tires. The directors are: Mayor John H. McGuire, Passaic, N. J.; Winfield Clearwater, president of the Secaucus National Bank, Secaucus, N. J.; Thomas A. Hopkins, Passaic; Dudley Gordon, Passaic, and Fred W. Smith, Rutherford.

The Lee Rubber Tire Co. has decided to increase the number of shares outstanding from 100,000 to 150,000. Of the new stock 40,000 shares have been underwritten by New York investment bankers and will be offered to stockholders at $33 per share. The amount realized from the sale of this stock will increase the company's working capital by $1,500,000, wipe out the indebtedness to banks, provide funds for construction and add several hundred thousands of dollars to the cash assets. The remaining 10,000 shares will be offered to employees under a profit sharing plan.

The American Tire Association, operating a large wholesale agency, has decided to open headquarters in Memphis, Tenn. S. Maurice Cohn and Max I. Cohn, both of Chicago, are the proprietors. The firm will have 10 men travel throughout the South, and may erect a factory in Memphis.

The G. E. Blaylock Tire and Rubber Co., Baltimore, Md., has been incorporated with $750,000 capitalization. The incorporators are G. E. Blaylock, A. G. Blaylock and Clarence C. Erdman. The new company is the outgrowth of G. E. Blaylock, Inc.

The F. L. Wiswall Tire Co., Boston, has been incorporated with $50,000 capitalization by Frank L. Wiswall, Clifton S. Wiswall and David J. Malone.

The Goodyear Tire & Rubber Co. announces that Douglas Fairbanks has ordered the first set of Goodyear cord tires to be built at the California plant of the company. "Doug" wrote a letter to F. A. Seiberling, president of the Goodyear company, congratulating him on his selection of California as the location of the

new factory. "Your foresight and industrial vision and the commanding position your company holds in the business world," he wrote, "have a tremendous influence upon the prosperity and development of this part of our country, which we all love so much."

The St. Louis Tire Dealers' Association has been organized with these officers: President, Joseph Roberts; vice president, Maurice Altheimer; treasurer, E. G. Hefter; secretary, Robert E. Lee; sergeant-at-arms, Arthur Fishell; directors, Joseph Sacks, Art B. Mooney, I. Reifier and J. P. Hartmann. Dues will be $25 annually for active members and $15 for tire manufacturers represented at St. Louis, who may be associate members. There are approximately 125 tire dealers in the city.

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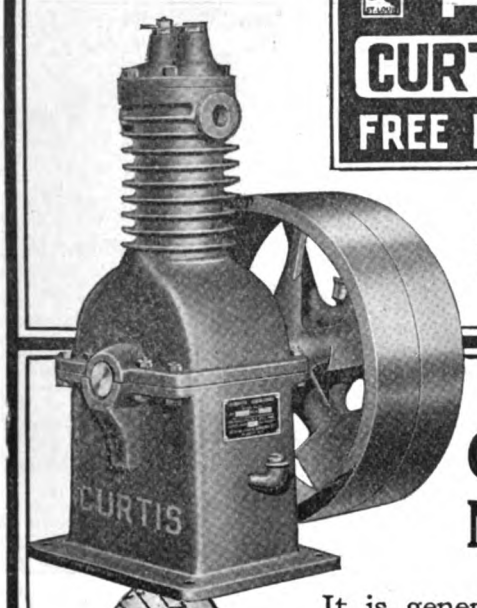
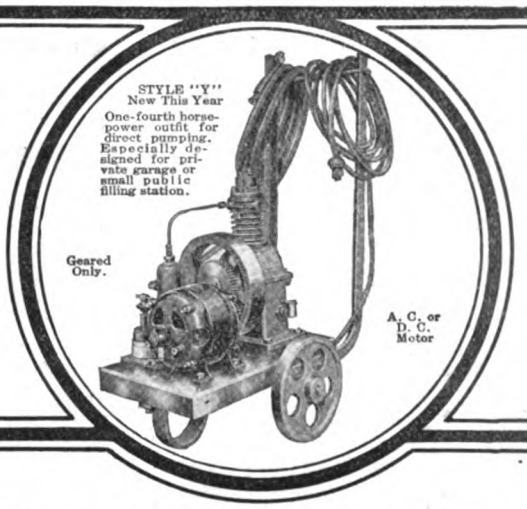


FREE
CURTIS AIR
FREE FROM OIL

The Curtis Sign is 10x14 inches —baked enamel on steel. Furnished FREE with every Curtis Garage Air Compressor—can not be had in any other way.



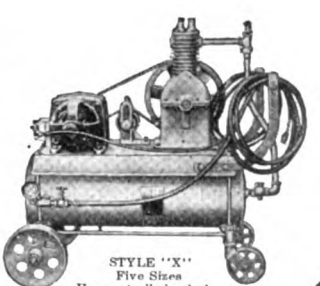
Curtis Free Air Service Brings You New Patrons and Increased Profits

It is generally recognized that compressed air to fill tires frequently carries oil and that this oil has a deteriorating effect on inner tubes. For this reason motorists are discriminating in their use of "free air service"—and are on the lookout for the Curtis sign because they know that Curtis Air is free from oil. It may be that the installation of the CURTIS outfit will be the beginning of a new era of profit-making for you.

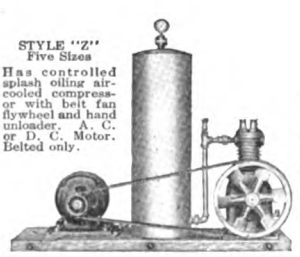
Curtis Air—Free From Oil

Curtis Air Compressors, through a patented construction, prevent oil from getting into the air line—therefore the air delivered is clean, pure and free from oil. The many other exclusive points of superiority, together with the simplicity, sturdiness and dependability of Curtis Compressors make them the popular choice everywhere. With the two new outfits illustrated—Style "Y" and Style "Z"—the Curtis line is now complete, offering a suitable compressor to meet every requirement. Ask your jobber or write us for illustrated literature describing the different sizes and types of outfits.

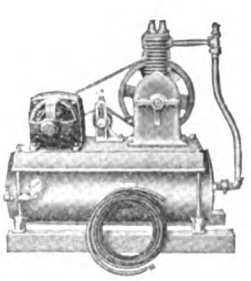
CURTIS PNEUMATIC MACHINERY CO.
1621 Kienlen Avenue St. Louis, Missouri
Branch Office: 531-A Hudson Terminal, New York City


STYLE "X"
Five Sizes
Has controlled splash oiling air-cooled compressor, with belt fan flywheel or with cut flywheel gear. A. C. or D. C. motor. Belted or geared.

STYLE "Z"
Five Sizes
Has controlled splash oiling air-cooled compressor with belt fan flywheel and hand unloader. A. C. or D. C. Motor. Belted only.



STYLE "Y"
New This Year
Five Sizes
Has controlled splash oiling air-cooled compressor, with belt fan flywheel or with cut flywheel gear. A. C. or D. C. motor. Belted or geared.



Curtis Pneumatic Machinery Co.
1621 Kienlen Ave.
St. Louis, Mo.

Gentlemen:
Please send me full details on Curtis Air Compressors — your proposition and prices.

Name_____
Address_____
Jobber's Name_____
Address_____

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RAPID GROWTH OF GASTINE CO.

The story of the discovery of the principle involved in Gastine, the product now being manufactured by the Gastine Co., Bridgeton, N. J., and its subsequent development by I. W. Goldberg, the general manager of the company, is an unusual one.

Mr. Goldberg, who had previously been graduated at the West Jersey Military academy and had matriculated at Jefferson Medical college, on the day before his appointment for appearance before the dean of that college in Philadelphia, conceived the idea which he afterwards developed into the product which is now being marketed as Gastine. Mr. Goldberg's experience with automobiles, on which he was constantly at work, together with his previous years of the study of chemistry and physics, were a great help in his experiments. Like all owners of automobiles a few years ago, Mr. Goldberg found it was sometimes a job of almost half an hour to get his car started in the morning, and this imbued him with the thought that there should certainly be some sort of chemical or mixture which, combined with gasoline, would obviate this trouble. He commenced his experiments with the low grades of gasoline which were in use at that time, and they continued until 1915, when Gastine was perfected and put on the market in a local way.

He found motorists skeptical of the claims made for it and some even thought it would prove injurious, and it was an up-hill fight to get Gastine into the hands of the consumer at first. But as he was convinced of the merits of his discovery, Mr. Goldberg was undaunted and persisted in his efforts to gain recognition for it, until now he is in a position, with an efficient corps of assistants, to supply the demands of a market that has been increasing very rapidly for the past two years.

The officials of the Gastine Co. consist of the following: General manager, I. W. Goldberg; field manager, Gordon Patterson; heads of advertising department, P. S. Foster and Roger Thompson Butts; head of export department, Frederick J. Werner.

Foreign branches are being opened in London, England, Buenos Aires, Argentina, Australia and Paris, France, as well as in Montreal, Quebec.

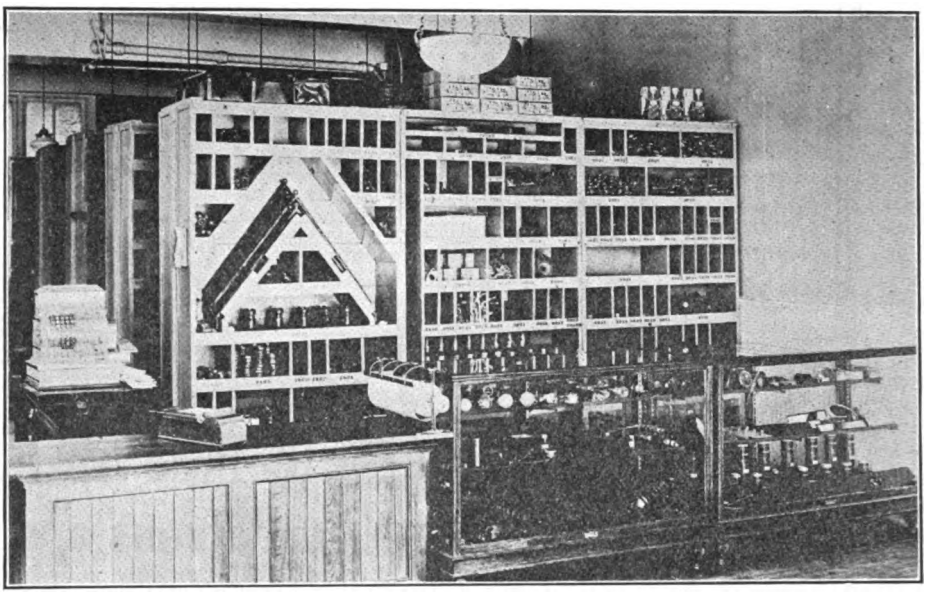
The company is now negotiating for the construction of a new plant at Bridgeton, which will give it adequate manufacturing and office facilities.

EMPLOYEES TAKE $7,000,000.

President F. A. Seiberling of the Goodyear Tire & Rubber Co., Akron, O., announced at a meeting of the stockholders of that company that 17,011 employees had subscribed for $7,000,000 of the new issue of $40,000,000 preferred stock.

The stockholders at the meeting approved a proposal to increase the capital stock of the company to $200,000,000, half common and half preferred. Only $40,000,000 of the preferred stock is to be issued at present.

Steere-Kitson Servistock System for Ford Parts



Ford Parts Department, Motor Sales Co., New Bedford, Mass., Showing Steere Servistock System.

THE very latest device for saving time and labor in the Ford service station is the Steere Servistock system, designed by H. A. Steere of the Steere-Kitson Co., Detroit, by whom it is manufactured.

The Steere idea is to have all the parts stored in units numerically arranged, following the Ford parts list, each number having a bin by itself. The bins are built in proportion to the size of the part and quantity of parts required for a month's business.

The use of this system will enable the employment of less expert help in the stock room, because the stock clerk need not necessarily know the difference between a stud and a bolt, yet if he can read numbers he can fill a stock order. The units are arranged so as to minimize the walking distance in filling an order. For instance, take the filling of a parts order on a rear axle job, which is one of the most common: These parts would come in adjacent units which carry the complete rear axle assembly, and would be located near the shop service window. The units carrying parts for less common jobs are placed correspondingly further away.

The system is primarily a time saving proposition for Ford dealers, in speeding up work on the floor and handing out parts over the counter as well as in ordering from the factory and taking parts inventory. The units themselves make a very attractive appearance in the stock room, giving it an efficient, business-like atmosphere.

The Steere Servistock parts system is merchandized exclusively through the Fairbanks Co., New York. These units are shipped ready to put into stock, each one being a complete cabinet in itself, substantially constructed and attractively finished in dado gray, with the numbers stenciled in black unless otherwise specified. The standard 12-unit system, having a $5000 stock capacity, is quoted at $425 f. o. b. Detroit; the 28-unit system, with $25,000 capacity, $695; the 42-unit system, with $50,000 capacity, $1125.

NEW MOTOR IN $1,000,000 PLANT.

The Twin-Energy Motors has been incorporated at Albany, N. Y., and will build a $1,000,000 plant for the manufacture of a new type of heavy oil motor by William H. Schneider, an automotive engineer formerly in the employ of the Ford Motor Co.

Plans are being drawn for a plant with a floor area of five acres to be erected at North Albany, and it will be three stories in height and will employ 250 hands.

The Twin-Energy motor has on tests developed a greater mileage to a gallon of gasoline, it is claimed, than any motor now on the market, almost doubling the efficiency of the engine. A novel feature of construction is that the automobile motor comprises only 16 moving parts, as against more than 100 in some other motors. The stationary type has only six moving parts. The engine will be manufactured in automobile, stationary, aircraft, tractor, truck and marine types.

Mr. Schneider, the inventor, has lived in Albany for eight years. During the war he served in the radio laboratories. The certificate of incorporation named Mr. Schneider, Oscar L. Perrault and Harold T. Cooper as the principal stockholders, and the directors named were Lawrence L. Perrault, Stephen V. Ryan, A. V. Clement and J. Howard Proper, all of Albany.

IOWA LEADS IN MOTOR VEHICLES.

Iowa still leads the United States in the number of motor cars owned there in proportion to the population. About one machine to every seven persons is the ratio there.

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NEW FIRE EXTINGUISHER CO.

Harrison H. Boyce of the Moto-Meter Co., Inc., Long Island City, N. Y., has formed the Boyce-Veeder Corporation, having its factory and office in Long Island City, for making and marketing of an automatic and hand operating fire extinguisher especially applicable to motor cars, trucks, tractors, aeroplanes and other automotive vehicles.

The new company will operate under the Erwin patent. Associated with Mr. Boyce will be Paul L. Veeder, an attorney well known in both New York and Chicago, and also James A. Abeles, former vice president and general manager of the Motor Car Equipment Co., and more recently organizer of an eastern concern representing Beckley-Ralston Co. of Chicago.

Offices have been opened in the Queen's Subway building, Long Island City, and it is stated that production will be in full swing by Jan. 1. Mr. Boyce plans to divide his time between the new organization and the Moto-Meter Co.

NO CHANGE IN GARFORD.

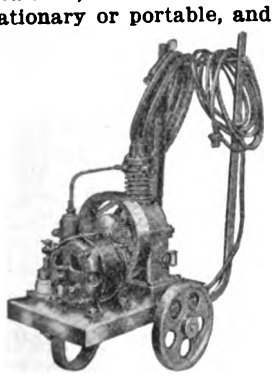
The Garford Motor Truck Co., Lima, O., states that the rumor that has been circulated to the effect that John N. Willys of the Willys-Overland Co., has acquired a controlling interest in the Garford company, is without foundation. The Garford company advises that neither Mr. Willys nor the Willys-Overland Co. is financially interested in that company.

The statement continues that on Jan. 13, 1915, the interests of the Willys-Overland Co. and all other interests in the Garford plant were purchased by the present Garford organization, since which time the present management has been in charge. The Garford Motor Truck Co. states that it is an independent corporation and has no affiliation with any other automobile or motor truck interests.

PORTABLE CURTIS COMPRESSOR.

The latest addition to the line of compressors, manufactured by the Curtis Pneumatic Machinery Co., St. Louis, Mo., is the style Y, ¼ horsepower outfit, especially designed for private garages or small garages and filling stations.

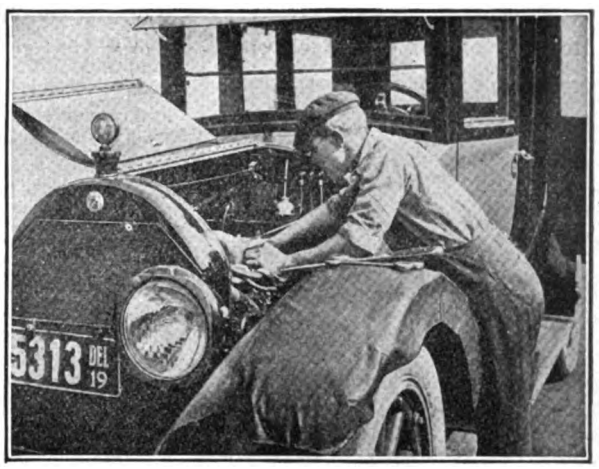
The style Y outfit has the controlled splash oiling system, and many other exclusive Curtis features, and can be furnished either stationary or portable, and comes geared only. This outfit is not intended for continuous duty or pumping into a tank, but is a special purpose machine, convenient and inexpensive, at the same time dependable.



The Timken Detroit Axle Co.'s issue of $5,000,000 preferred stock is offered to investors at 100 and accrued dividends.

NEW COVERING WHICH PROTECTS FENDER DURING REPAIRS

PROPRIETORS of garages, the opinions of many car owners notwithstanding, do not like to be called upon to make frequent embarrassing apologies for scratching, marring and otherwise blemishing of the varnish on their fenders, hoods and car bodies while undergoing repairs in their shops.



New Fender Protector for Use While Car Is Undergoing Repairs in Garage.

The accompanying illustration shows what a new fender protector looks like. It is made of a leather substitute consisting of a strong cotton fabric base coated with pyroxylin "dope." It has a pocket along the outside edge into which the edge of the fender is inserted. A flap on the cover runs down on the inside in such a way that the fender is entirely covered while the mechanic is leaning over it to work inside the hood. Thus the buttons on his clothing cannot scratch the varnish, nor is any harm done if he drops a tool or lays it down on the fender.

ROEDDING SIGNAL TAIL LIGHT,

It is well understood that a majority of rear end collisions of motor cars are due to the inability of the driver of the machine in front to clearly tell the driver of a car following just what he intends to do. The method of signalling by the extended arm is confusing, and sometimes the driver of the front car is compelled to apply the emergency brake and to bring his car to a sudden stop without being able to take his hands from the steering wheel. The result is that the driver behind has no warning and consequently has no chance to avoid a collision and possible injury to himself and the occupants of his car.

One of the newest automobile accessories is designed to eliminate this danger. It is the Roedding signal tail light, which is manufactured by the Grand Rapids Brass Co., Grand Rapids, Mich. This flashes the proper signal in large, clear, unmistakable letters, whether it is stop, left, right or back, on a plate, 10 inches by 3½ inches, on the rear of the machine. A 2½-inch disc, attached to the steering wheel, controls all signals, and without taking his hands from the steering wheel the driver can make his intentions immediately understood from the rear and can also give his undivided attention to the roadway ahead.

The Roedding signal operates by electricity from battery or cells. It is water proof, dust proof and fool proof and can be quickly installed to any make of car. When the car is moving forward the red light only shows.

BAY STATE PUMP REMOVES.

The Bay State Pump Co., Boston, Mass., has moved to 564 East First street, South Boston, Mass., King terminal.

BETLEHEM MOTORS DEALERS AND DISTRIBUTORS.

The Bethlehem Motors Corporation, Allentown, Pa., appointed the following distributors and dealers in October:

Distributors—J. M. Hutton, 753 West Jackson boulevard, Chicago; A. H. Koenicke, 718 Texas avenue, Houston, Tex.; Roemer Motor Car Co., Huntington, W. Va.; C. E. Morse, Marianna, Fla.; Hemming Wagon Works Co., Meridian, Miss.; Manypenny-Scott Motor Co., 908 North Broad street, Philadelphia; T. E. Knowlton, Syracuse, N. Y.; City Garage, Tupelo, Miss.

Dealers—Farm Power Machinery Co., 550 East Main street, Rochester, N. Y.; John Pembroke, Monticello, Ill.; Nelson Brothers-Strom Sales Co., Racine, Wis.; Dray's Auto Exchange, Chilicothe, O.; F. D. Hawke, Waynesville, O.; Morse-Lymen Auto Sales Co., Flint, Mich.; Auto Sales Co., Greenville, Miss.; S. H. Heavrin & J. J. Trefz, Owensboro, Ky.; Sandlin Supply Co., Richmond, Ky.; Dykes Hardware & Furniture Co., Delhi, La.; Union Sales Co., Bridgeport, Conn.; Peak's Garage, Selma, Cal.; Climax Motor Sales Co., Wilmington, Del.; Standard Auto Co., New Kensington, Pa.; J. L. Maxwell, New Castle, Pa.; Walter's Garage, Coraopolis, Pa.; Clackmas County Tractor & Auto Co., Oregon City, Ore.; John C. Signor, Rosebury, Ore.; Stanley Chapman, Winnemucca, Nev.; A. T. Henninger, Belleville, Ill.; V. J. Trares, Edwardsville, Ill.; National Trail Garage, Highland, Ill.; G. C. Williams, Corso, Mo.; J. W. Bandy, Hayti, Mo.; McCoy & Rogers, Perry, Mo.; Mason Transfer & Storage Co., Windsor, Me.; Fidelity Motor Co., Enid, Okla.; D. C. Welch, Lawton, Okla.; R. D. Henderson, Anderson, S. C.

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PREST-O-LITE CONVENTIONS BEING HELD IN PRINCIPAL CITIES.

To put storage batteries in the public utility class, the Prest-O-Lite Co., New York, has arranged a series of educational conventions for its distributors, which are being held at New York, Boston, Richmond, Atlanta, Indianapolis, Chicago, Omaha, Kansas City and Dallas.

F. A. Wilson-Lawrenson, Vice President Prest-O-Lite Co.

"Efficient Service to Motorists" is the slogan back of these meetings, and officials of the company state that next year will see some radical improvements in storage battery service from coast to coast. Conservation is one keynote of the lectures given by the expert engineers of the Prest-O-Lite factories.

Properly cared for and adjusted, a battery should last at least two years and, to quote F. A. Wilson-Lawrenson, vice president of the Prest-O-Lite Co., "with a wide educational campaign showing motorists how to prolong the life of their lighting and starting equipment and efficient service stations along the road, the reliability of the storage battery will be taken as much for granted as the telephone or electric light.

"The importance of this cannot be over-estimated when the affairs of so many millions are greatly affected by the automobile. Fatal delays and dim lights will soon be a thing of the past, for millions who drive their own cars insist on improved service conditions and they are going to get them."

OFFICE ON PACIFIC COAST.

The Black & Decker Manufacturing Co., Baltimore, Md., maker of electric air compressors, has opened an additional office on the Pacific coast, at 201 Maynard building, Seattle, Wash., in charge of A. E. Nordwall, well known in that section among the automotive trade. Mr. Nordwall will have charge of the distribution of Black & Decker products in the State of Washington, working under the direction of the main Pacific coast office, 918 Hearst building, San Francisco.

ANDERSON ELECTRIC EXPANDS.

The phenomenal growth of the Anderson Electric Specialty Co., Chicago, maker of "autoreelite," and other electrical specialties, is indicated in the recent announcement that it has leased from the Ilg Electric Ventilating Co. the six and seven-story and basement building, 100 by 100 feet, at 154-160 Whiting street, on the north side of that city, affording 75,000 square feet of floor space. This lease is for a period of 15 years, at a total rental of $315,000.

As soon as the Anderson company takes over this new building the manufacturing capacity will be increased about 500 per cent. It will be equipped with the latest type of machinery and will have every modern appointment and convenience known to present day industrial plants, adequately providing for the increased expansion and continued success of the company.

The Anderson Electric Specialty Co. began business under its present management only three years ago, then occupying 3000 square feet of floor space at 562 West Van Buren street, later expanding to its present quarters at 118 South Clinton street. The officers are: President, E. G. K. Anderson; vice president and general manager, B. J. Grigsby; treasurer, J. A. Johnson; secretary, O. E. Grigsby; assistant secretary-treasurer, N. A. Engstrom. At the present time B. J. Grigsby, the vice president and general manager, is in Europe on business in connection with the development of the company's export trade.

J & B CO. INSURES EMPLOYEES.

Realizing that the success of a business depends largely upon the spirit of co-operation of those in its service, and also that the success of each individual depends upon the maintenance of this spirit in business relationship, as a practical demonstration of this idea, the J & B Manufacturing Co., Pittsfield, Mass., maker of electrical and ignition specialties, has arranged a system of life insurance for the benefit of its employees, without expense to the individual.

The following is the schedule, which is figured on the basis of length of service: Under one year, $500; over one year and under two, $700; over two years, $900. This amount will be increased $200 annually on the anniversary of the employee's entry into the employ of the company, until the policy has reached $1500.

The present officers of the J & B Co. are: President, Edward B. Jacobson; treasurer and general manager, George H. Southard, Jr.; sales manager, Floyd A. Knight; assistant treasurer, Raymond D. Tufts.

MOTOR CO. SUES RAILROAD.

The Memphis Motor Transportation Co., Memphis, Tenn., has brought a suit against the Memphis Street Railway Co. for $2500 damages for the wrecking of a truck operated by the Transportation Co., by being run into by a street car.

COMFORT SECURED WITH CAR HEATERS.

Comfort being one of the principal features that appeal to the owner of the motor car, the question of furnishing heat for the car in cold weather has a direct bearing on this phase of use, and a reliable heater is certain to have a strong appeal to car owners and prospective owners.

One of the noticeable points of motor car production this season is the trend towards equipment with car heaters, and this is indicated from the fact that 28 manufacturers are supplying all or a part of their lines this season with the Perfection motor car heater, made by the Perfection Heater and Manufacturing Co., 6545 Carnegie avenue, Cleveland, O.

Closed cars have always been sold on the basis of comfort and all-year use, but two manufacturers, who for the past two years have supplied their closed cars with heaters, have gone a step farther this season and are equipping their complete line, including all open-body models, with car heaters.

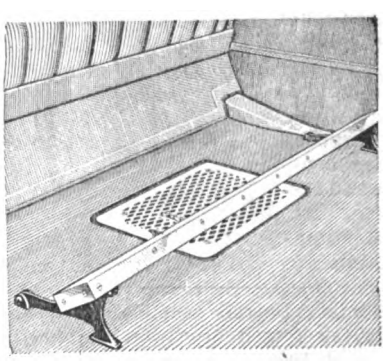
This season there is a big shortage reported in closed car production, and it has developed a serious situation for dealers who have an abundance of closed car prospects and an alarming scarcity of closed cars to sell. Dealers may thus find a new field here for the use of car heaters, inasmuch as in many cases they may be able to induce the prospect to accept a touring car equipped with well fitting curtains and a heater as a substitute to meet the shortage.

There is also a vast number of motor car buyers who cannot afford to pay the additional price of a closed car, but whose needs require a car the year round. In such cases car heaters should also make a strong appeal.

SINCLAIR OIL'S INCREASED FACILITIES.

The Sinclair Consolidated Oil Corporation has closed contracts for building steel storage tanks, docks, pumping facilities, etc., on its property at Tremley Point, Staten Island Sound, and will start fuel oil deliveries in New York harbor at an early date on contracts already closed.

An English syndicate has purchased all of the 16,000 reserve motor vehicles from the American Third Army at Coblenz, Germany.



Type A Perfection Heater.

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TANKS

The tightest, safest, strongest tank it is possible to construct by any known method. Process originated by us over twenty-five years ago.

We also make a special portable emergency tank for filling tires. Throw it in your emergency car and take it with you.

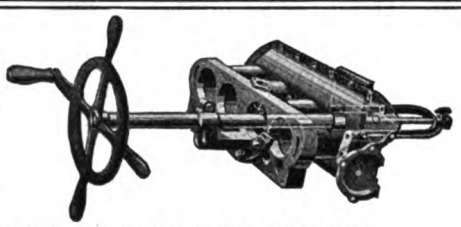
Gasoline and Oil Storage Tanks and Pumps

AIR-TIGHT STEEL TANK CO.

Main Office and Works

PITTSBURGH, PA.

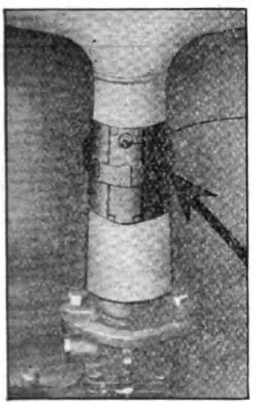
Repairmen, Listen!



Patented May 19, 1914; Dec. 15, 1914; June 20, 1916; June 26, 1917.

The Heiser Improved Cylinder Reboring Tool for FORD MOTORS is the only reboring Tool in the world that is self-sharpening. It is the only tool that rebores between centers—this insures a finished cylinder, square with the crankshaft, round, straight, true and free from taper. It is adjustable and the only tool that will rebore different sizes without losing the adjustment. **The best mechanic in the world can't build reputation without proper TOOLS and EQUIPMENT. THE HEISER IMPROVED CYLINDER REBORING TOOL makes good shops out of poor ones and better shops out of good ones. Write today for full particulars.**

HEISER SPECIAL TOOL CO., 216 Rogers Bldg., Kingston, Mo.



Starts Any Cold Motor In a Jiffy

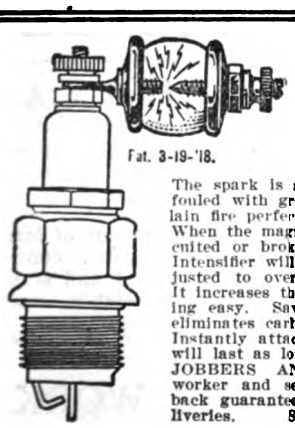
Attaches to the Intake Manifold or Carburetor. Current from battery to a resistance coil in a Heater warms the air inside the intake, causing the gasoline to **vaporize** and **ignite** with **first turn-over** of the motor. Same heating principle as used in the electric flat iron. Gives same results as pouring hot water on the manifold.

Electric Intake Heater assures easy and quick starting on the coldest winter day, **and saves drain on the battery.** No priming. No delays. Operates from dash switch. Easy to attach. **No drilling or tapping or alterations.** Entirely out of the way. Always ready and perfect in performance.

If your car has storage battery, write for descriptive matter today. **$3.50**

Dealers and agents: Get our proposition.

Electric Intake Heater Co. 130 Cortland St. Jackson, Mich.



It Finds Ignition Troubles

Attached to Any Plug
Stops All Spark Plug Trouble

Universal and Marvel Spark Plug Intensifiers

The spark is **always visible.** It will make a plug fouled with grease or carbon or with broken porcelain fire perfectly.

When the magneto is not working, a wire short circuited or broken, or the battery out of order, the Intensifier will prove it at a glance. It can be adjusted to overcome almost any ignition weakness. It increases the voltage and spark and makes starting easy. Saves in oil and gas. Adds to power, eliminates carbon and preserves plugs.

Instantly attached to any screw terminal plug and will last as long as the car.

JOBBERS AND DEALERS—This is a wonder worker and sells at a glance. Sold on a money back guarantee. Liberal discounts and prompt deliveries. *Send for full information.*

UNIVERSAL MFG. and SALES COMPANY

554 West Harrison St. Chicago, Illinois

THE L & L SLIP-ON ONE-PIECE TRANSMISSION LINING

FOR FORD CARS

The L & L Transmission Lining is the practical and economical solution of all Ford Transmission problems. It is more practical, economical, lasting and satisfactory in service. The L & L Slip-On One-Piece Lining is made of the best braking material that can be made.

Any one can put them on. The saving in both time and labor is more than 66% when compared with the three-piece lining, and aside from that it slips into place, requires no rivets, felt gaskets or skilled repairer to adjust. The L & L Lining positively eliminates all clatter and vibration, does not glaze, stick, grate or slip. It brakes and holds and the efficiency continues until completely worn through. The economy lies in longer service life, saving in repair bills. Use means satisfaction and minimum transmission troubles.

JOBBERS AND DEALERS

Our proposition is extremely attractive. **The L & L Lining is already a big feature item with all who stock them. The demand is heavy and constant. The trade discounts are worth while. We offer something better than what was the best. Full details and trade discounts at request. Write today.**

L & L Automobile Accessories Corporation

135 CHURCH ST. HARTFORD, CONN.

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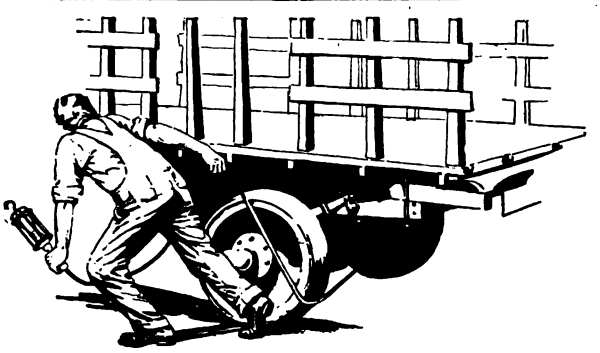
Treat it rough!



DURACORD EXTENSION LAMP

YOU can pull the cord on a Duracord Extension Lamp around corners without fear of damaging it. The cord is genuine Duracord, the portable electric cord with a heavy *woven* fabric covering—*not braided.*

Laboratory tests as well as actual use have conclusively proven that Duracord will outlast ordinary braided cord many times over.

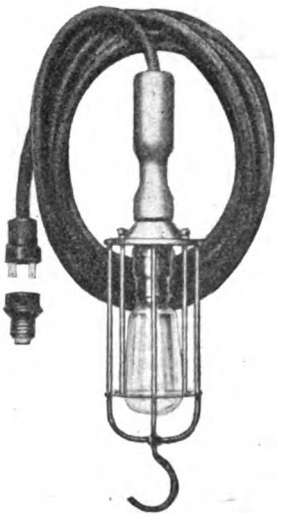
There is no metal to cut through the insulation or scratch polished surfaces as on a steel armored cable. The cord is gripped in the lamp by a patented "holdfast" fitting that *won't* pull out. The guard is strongly made and protects the bulb to an exceptional degree.

This lamp in your garage or shop will mean the end of time-wasting tinkering with poorly constructed lamps and unsatisfactory cords.

Each lamp complete, all wired up ready for use with 20 feet of genuine Duracord. Packed in an individual box.

Priced as following (excluding bulb)

Light weight	*$5*
Heavy duty, as illustrated,	*$6*
Vapor proof	*$8*



TUBULAR WOVEN FABRIC CO., Pawtucket, R. I.

Labor-Savers for Ford Service Stations

Machines and tools which will save time and increase profits wherever Fords are repaired:

Bearing Burning-in Machines
Engine and Axle Stands
Bearing Boring Machines and Re-Babbitting Jigs
Cylinder Reboring Machines for Fords and Fordsons
Power Grinders
Bench Motor Clamps
Rear Axle Pinion Gear Presses
Pinion Gear Pullers
Valve Port Renewing Tools
Speed and L Wrenches
Tow Bars
Combination Electric Drills and Valve Grinders
Visible Measuring Gasoline Pumps,
and many other special tools and machines
Engine Testers
Emergency Wheel Clamps
Rear Axle Sleeve Pullers
Transmission Reaming Machines

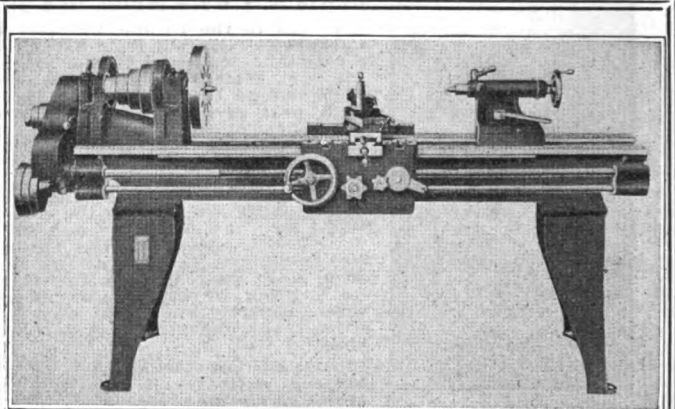
Write for Catalogue 8, just issued.

The FAIRBANKS Company

Administrative Offices—New York.

Branch Houses in Principal Cities.

The FAIRBANKS Company O.K.



UNION LATHES

MANUFACTURED BY

UNION LATHE WORKS, York, Pa., U. S. A.

This lathe is especially designed for garage and machine shop work. It is well constructed and can be obtained at a moderate price.

Obtainable in various sizes with equipment of large and small face plate, follow rest, tool post, center, double friction counter shaft (see cut) rod and screw feed and all necessary change gears, wrenches, etc.

Write for complete descriptive literature and prices.

THE UNION LATHE WORKS

York, Pa., U. S. A.

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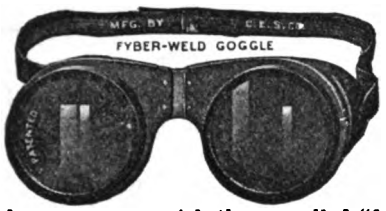
GOGGLES FOR WELDERS.

Fitted with "Essentialite" Lenses.

THE FIBRE WELD.



Frame: Vulcanized fibre, non-conductor of heat and electricity, non-inflammable and infusible not affected by moisture, leather center, ventilated side pieces, adjustable elastic head band. We have demonstrated conclusively that with these lenses we vanquish the so-called "fatigue-weariness" and headaches caused by Ultra Violet and Infra Red rays. Circulars and prices at request. Price each, prepaid, $3 pr.

Manufactured by

CHICAGO EYE-SHIELD COMPANY

2800 Warren Ave., Chicago, Ill.

SCAIFE COPPER-BRAZED AIR TANKS

are positively guaranteed to hold air indefinitely without loss of pressure.

(117 years old. Founded 1802)

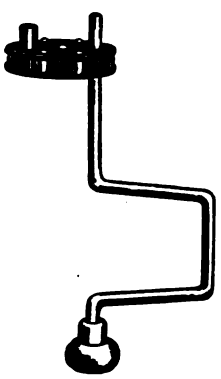
WM. B. SCAIFE & SONS CO.

First Nat. Bank Bldg., Pittsburgh, Pa.
26 Cortlandt St., New York, N. Y.
38 So. Dearborn St., Chicago, Ill.

SCAIFE GASOLINE STORAGE OUTFITS

ARE IDEAL FOR PRIVATE GARAGES.

Send for catalogue.



UNIVERSAL Offset Speed WRENCH

Pat. Pend.

Removes the FORD FOURTH CONNECTING ROD NUT in three minutes. Made strong—all steel, 3-inch offset. Send prepaid for $5. Ask your jobber. If he can't supply you, write us.

Sawyer Sales Company
581 Terminal Building
LINCOLN, NEBRASKA

For Ford and Metz Cars

Anderson Automatic Air Adjuster

It will add to mileage and greatly increase the power.

With a low throttle the engine will run strong and smoothly.

It will make a high grade efficient carburetor out of an old one.

In a few weeks it will save more in gas than what it costs.

List Price $6.50

DEALERS: This is a quick, sure seller, and the discounts are liberal. Write for facts.

Above shows attachment on a Ford carburetor.

ANDERSON & CO.
Waltham, Mass. *Manufacturers*

GENEROMETER

The new and practical generator testing instrument. It will locate shorts and grounds in generator armatures where most of the trouble is of a Lighting System. You will need this instrument if you want to be 100% efficient in your electrical repair work. Further particulars upon request.

PAUL G. NIEHOFF & CO., INC.
232 E. Ohio Street, Chicago, Ill.

Niehoff Laminated Magnetizer

This is the most scientific and practical Magnetizer ever constructed. It will magnetize any size magnet from a Ford to all the various other magnets used on the different cars today. Due to the fact that it generates an enormous amount of magnetism, with a pulling power of about 75 pounds, you can more quickly remagnetize a magnet, and, therefore save much current. All magnetizers are subject to considerable wear. The faces will wear down according to their use. The top pieces of our Magnetizer are especially hardened and also detachable so that when worn down they may be replaced at a very small expense. We have two types; one for 6 volt storage battery and another for 110 volt D. C. current. Write for further information.

PAUL G. NIEHOFF & CO., INC.
232 E. Ohio Street, Chicago, Ill.

The Automobile Journal

A magazine that is read by more than 20,000 car owners every issue.

It Will Interest You—

Send for sample copy. **Times Bldg., Pawt., R. I.**

NEW DEPARTURE BALL BEARINGS

Strength
Stamina
Service

The New Departure Manufacturing Co., Bristol, Conn.
Conrad Patent Licensee

VULCAN

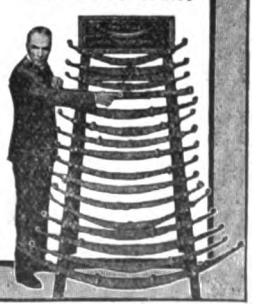
This is the VULCAN nameplate

When Springs Break, put on

VULCAN
The Replacement Spring

This display rack FREE with first order.

Best known for
Best Quality—
Best Service—
Best Profits—



Jenkins Vulcan Spring Co.
Factory
RICHMOND, IND.

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TRADE OUTLET

PURITAN NEWS

EVERYDAY BARGAINS IN AUTOMOBILE PARTS AND SUPPLIES — EVERYTHING FOR YOUR AUTO, ANY TIME.

TRY PURITAN WAY—IT PAYS.

STARTING BATTERIES NEW AND GUARANTEED

6-volt, 80 ampere.....$25.00
12-volt, for Dodge and Maxwell..... 36.00

KHAKI TOPS
Suitable for

MAXWELL, DODGE, CHEVROLET 490, BRISCOE. ALL NEW AND COMPLETE WITH CURTAINS AND DUST BOOTS—While they last $25.00

LIGHTING GENERATORS

6-volt Wagner for Saxons.....$20.00
6-volt Menominee for Fords and other light cars..... 23.00
6-volt Auto-Lite..... 15.00

STARTING MOTORS

6-volt Wagner for Saxons.....$20.00
6-volt Bijur with Bendix Drive..... 15.00
6-volt Ward-Leonard with Bendix Drive.. 15.00
6-volt Detroit with Bendix Drive..... 15.00

MOTOR GENERATORS

6-volt Detroit with Bendix for Saxons...$20.00
Delco 25.00

COILS

Bosch Dual type "A".....$10.00
Connecticut 6-volt..... 8.00
Atwater-Kent type C. C. 6-volt..... 5.50
Replacement Coils for All Cars.

DISTRIBUTORS

Connecticut 4-cyl.....$10.50
Atwater-Kent type C. A., 4-cyl..... 10.50
Atwater-Kent K-2, 4-cyl..... 10.50
Atwater-Kent K-2, 6 cyl..... 10.50

FOR FORDS

Speedster Bodies.....$60.00
Speedster Fenders—set of 4..... 10.00
18-inch Steering Wheels..... 2.75
Honeycomb Radiators..... 20.50
Electric Lighting System, complete with Battery, Generator, Electric Side and Tail Lamps, etc..... 17.50

RIMS AND WHEELS

We have an enormous stock of all makes and sizes of demountable rims and wheels—have them right in stock, and can make immediate shipment.

Write for prices

RADIATORS

Brand new Honeycomb Radiators for all makes of cars; guaranteed to be right. No matter what car you may need a Radiator for, write us for prices.

SPRINGS

New Springs for all cars—Write for prices.

ALL PARTS FOR ALL CARS.

Puritan Machine Co.

1104 Puritan Blvd. Detroit, Mich.

EASTERN BRANCH

245 W. 55th Street, New York, N. Y.

Every Ford Owner Should Read "TRANSFORMING THE FORD." Tells how to secure smooth, positive brake action that no car can excel. A little "transforming" and your car will glide to a quiet, quick stop without the annoying, irritating clatter that you now experience. It will go into low or reverse without jumping or jerking and you can pick up speed with all the smoothness and ease of a high-priced car. All accomplished without additional expense and the result is a clear saving of 75 per cent. in one direction alone. "TRANSFORMING THE FORD" tells how it's done. Send for your copy this very minute. IT IS FREE. **Cormack & Co., 500 Fifth Ave., New York City.**

SALESMEN to sell first class Air Pump to garages in New York and adjoining cities. Address Piston, Accessory & Garage Journal.

Send it to Detroit

MAGNETOS.

Bosch DU4 Variable spark.....$30.00
Bosch DU-4 set spark..... 25.00
Bosch D4 and Dr4..... 25.00
Bosch D6 and Dr6..... 30.00
Splitdorf 4 cyl. Dixie, high tension 25.00
Splitdorf 4 cyl., Models A, T, X and D..... 10.00
National 4 cyl. low tension..... 8.00
Briggs 4 cyl. low tension..... 8.00
Remy 4 cyl., type R L..... 15.00
Simms SU4 high tension..... 22.00

GENERATORS.

Deaco 6 volt.....$12.00
Auto Lite 6 volt..... 15.00

COILS.

Splitdorf T S type.....$10.00
Splitdorf box type..... 6.00
Bosch type A..... 10.00
Remy box coils..... 6.00
Remy type LC and LH..... 8.00
Briggs box coils..... 6.00

DETROIT MAGNETO REPAIRS ARE BETTER.

WE REPAIR any make magneto, coil, lighting generator or starter and give 24 hours service. Member Detroit Automobile Trade Association.

Detroit Magneto Exchange

192 Grand River Ave. Detroit, Mich.

GARDNER *thermostat*
CARBURETOR

SIMPLICITY, DURABILITY, EFFICIENCY, ECONOMY

WHY?

THE THERMOSTAT TELLS

Highest Mileage, Easiest Starting, Most Power, Smoothest Running, Quickest Get Away, Simplest Construction

FORD MODEL $10.00 RETAIL

Gardner Carburetor & Brass Works, Detroit, Mich.

AUTO SAVE 50-90% FOR 400 CARS **PARTS**

POPE, PACKARDS, PIERCE, BUICK, STEVENS-DURYEA, KNOX, OVERLAND, ETC.

Motors,	$25.00 up	Presto Tanks,	$4.50 up
Magnetos,	4.00 up	New Spotlights,	2.00 up
Carburetors,	3.00 up	Generators,	10.00 up
Rear Axles,	15.00 up	Gears,	1.00 up
Front Axles,	5.00 up	Bearings,	1.00 up
Cylinders,	5.00 up	Radiators,	10.00 up

$12 Diamond Bumpers.....$5.50

Jobbers in Bankrupt Auto Supplies.

BRIGHTMAN AUTO EXCHANGE

321 Windsor Ave., Hartford, Conn.

Auto Mailing Lists

Send for our free complete Price List covering Auto Dealers, Owners, Ford Dealers, Truck Dealers and Owners, Garages, Auto Mfrs. and etc., any state.

A. F. WILLIAMS, Mgr. of List Dept.
168 W. Adams St., Chicago. Franklin 1182.

Does your Motor Lack Compression? Pump Oil? Develop a Piston Slap? Consume too much oil? Carbon frequently?

The cure is:—

Regrinding the cylinders and properly fitting new oversize pistons and piston rings.

When writing for prices state make and model of car. SPECIAL PRICE ON FORD CYLINDERS.

Crankshaft GRINDING.

Try STERLING SERVICE.

Write us today.

Sterling Engine Co.

337 So. Clinton St. Chicago, Ill.

BOUGHT AT AUCTION.

75 6-cylinder Motors, new, each	$100.00
50 4-cylinder type U Lycoming Motors, new.....	95.00
Ford Speedster Bodies, upholstered	40.00
51 Delivery Wagon Bodies, panel sides, each.....	40.00
Radiator Hose, all sizes, per foot	.20
Retreaded Tires, all sizes, assorted, each.....	8.50
Running Board Tire Pumps.....	1.75
All sizes Inner Tubes.....	1.00

AUTO AUCTION COMPANY.

726 W. Jackson Blvd., Chicago, Ill.

Scored Cylinder Repairing Outfits For Sale

Our process is a new Nickel and Silver soldering process; no heat is necessary; same Pistons and Rings can be used and experience is not necessary; information gladly given; complete outfit $15. A big money making proposition. Address The Wizard Cylinder Repair Co., 53 People's Bank Bldg., Wilkes-Barre, Penn.

AUTO PARTS.

50% to 90% Off List.

24 Hour Service. Unlimited Stock.

Pope-Hartford, Columbia, Reo, Overland and 200 other makes.

Motors,	$20.00 up	E. Presto Tanks,	$4.00
Magnetos,	$3.50 up	B. Presto Tanks,	$4.75
Cylinders,	$3.00 up	Bearings,	50c up
Springs,	$1.00 up	Rims,	$1.00 up

1000 Other PARTS Bargains.

If you want any part not listed here, **Write Us—We Have It.**

Conn. Auto Parts Co., Inc.

18-20 Morgan St., Hartford, Conn.

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TRADE OUTLET

TIRES AND TUBES

Demonstrating and Factory Repaired.

Economy, Quality, Price. All Standard Makes.

No Junk. Satisfaction Guaranteed.

Size	Tires	Tubes
30x3	$5.00	$1.35
30x3½	6.00	1.45
32x3½	6.50	1.50
31x4	7.25	1.65
32x4	8.00	1.60
33x4	8.75	1.70
34x4	8.75	1.70
36x4	$9.00	$1.75
34x4½	9.25	1.75
35x4½	9.50	1.80
36x4½	9.75	1.85
35x5	10.50	2.00
37x5	11.00	2.20

Write for Prices on Odd Sized Tires. TERMS: $1.00 deposit with each tire ordered, balance C. O. D. subject to inspection. Specify style of rim to avoid delay. Although used tires are not guaranteed for any definite number of miles, **we guarantee our tires** to give the best service in proportion to the prices paid, or reasonable adjustments are made.

LIBERTY TIRE CO., 2119 So. Michigan Ave., Dept. I, Chicago, Ill.

TIRES

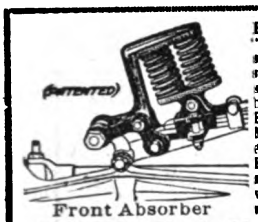
JOB LOTS

Obsolete, Surplus Stocks and Factory Seconds

WRITE—CALL

BROADWAY TIRE JOBBERS

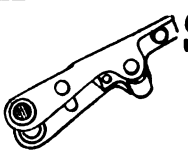
250 West 54th Street **New York**



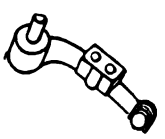
FOR FORD CARS. "Champion" Shock Absorbers. The perfect spring suspension. Absorbs all jar and rebound. Easy to attach. Fully guaranteed. Makes Fords ride as easy as any $5000 car. Ford dealers, agents and owners, this ad is worth $10 to you. Ask why. Write today.

Champion Shock Absorber Sales Co., Inc., Indianapolis, Ind., Mfrs.

CHEMIST AMAZING DISCOVERY.
25 Miles on One Gallon Gas.
MOTOROL, 25 to 50% more miles per gal. 25 to 35% more power.
Means faster ignition, uniform combustion, no carbon deposits, less wear and tear on motor, higher test of gasoline. Agents Wanted. **One Dollar Postpaid.**
AUTO PRODUCTS CO., Dept. 70, 226 W. 128th St., N. Y.



Superior Parts and Brushes



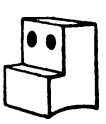
FOR ALL

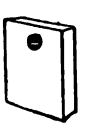
Ignition and Starting Lighting Systems

Used for Years by the Best Repair Shops Everywhere

"They Last Longer but Cost Less"

Write for Catalogue





Specialty Manufacturing Co.

637 Massachusetts Ave., Arlington, Mass.

JACKSON PARTS

ALL YEARS and MODELS

Prompt and Satisfactory Service Guaranteed.

Jackson Motor Service Co.

Brighton District, Boston, Mass.

Atwater-Kent Sales Co.,

of New England

883 BOYLSTON ST., BOSTON, MASS.

Official

SALES AND SERVICE

For New England.

Complete stock of parts always on hand.

Write for Price List.

—CLASSIFIED ADVERTISING PAYS—

Advertise the bargains that you have to offer.

8000 Buyers Read MOTOR TRUCK.

SALESMEN AND DEALERS—A million Ford owners are waiting for you to show them the only safety steering attachment; takes that jerk out of the Ford steering wheel and makes it steer like a Packard; pays for itself in tire saving; put it on your car and dozens want it; if you have small capital and can put canvassers out to sell the owners, selling yourself to the trade, you can make a small fortune. Write today. **Saxton Auto Accessory Co., Inc., 347 Fifth Ave., New York City.**

LOZIER OWNERS—Why buy counterfit repair parts. We have all **Original Parts.** Made from original Patterns. Order from headquarters.

LOZIER MOTOR CO.
Fort and 6th Sts., Detroit, Mich.
Service Stations—E. A. Cornely, Inc., 1445 Bush St., San Francisco, Cal. Lozier Motor Co. of New York, Inc., 47th St. and 11th Ave., New York City.

AUTO PARTS—At Your Own Prices. We can supply parts for nearly every make of car. 648 Packards, Interstate Fours, also Truck parts. GMC and other makes.

Write us for Parts. We have them.

STRANDWAY AUTO PARTS CO., 193-195 H. St., South Boston, Mass.

FOR SALE—A new Roof Type B, 16 Valve Cylinder Head with Miller Carburetor, at a bargain. The S. L. Crosby Co., Bangor, Me.

Classified Advertising

BRINGS BIG RETURNS

20 Cents a Line, Seven Words to Line.

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VALVE REGULATES TIRE AIR PRESSURE

When Enough Air Has Entered Auto Tubes, Invention Warns.

An automatic pressure regulator for automobile tires, wherewith an exact and even pressure can be maintained without bother or guess work, has just been put on the market. It is manufactured by the Automatic Safety Tire Valve corporation.

Motorists welcome the new device as the invention that solves the difficult problem of maintaining fixed tire pressure. Although this is essential to the economical operation of the car and of vital importance to the motorist, it has been hard to accomplish without considerable trouble. The ordinary tire gauge is bothersome to use regularly. Rocking the car or kicking the tires to determine the air pressure in the tires is unreliable, at best, and often starts a break in the tire fabric.

The new automatic pressure regulator is permanently attached to each tire valve in place of the dust cap. It is adjusted by means of a movable collar, calibrated to read pounds of pressure. When the tires are inflated the regulator automatically shuts off the air when the set pressure is reached, at the same time giving warning by a distinctive whistling sound. This whistle is caused by the excess air escaping through a port in the side of the regulator.

In construction the automatic pressure regulator is much like an ordinary tire gauge. The movable collar around the top, with which it is set for any desired pressure, controls a ball and spring valve inside which will admit no air after the set pressure is reached. The excess air, whistling through the escape port, gives audible evidence that the pressure is right.

After the regulator is once attached and set it needs no further attention. When the tire is to be inflated the hose connected is attached in the usual manner. At the whistle warning the air hose is removed and the motorist goes on his way, secure in the knowledge that all of his tires are properly inflated.

As a large percentage of tire troubles is due to incorrect inflation, the importance of the automatic regulator is easily seen. To get the fullest possible mileage and ensure freedom from usual tire troubles, each tire must have the correct air pressure—not once or twice a week but all the time. With the automatic regulator this is possible. Results of its use are seen in fewer blowouts, greater mileage to the gallon of gas, longer tire life with greater total mileage for each tire, and lower repair bills.

Newspaper Clipping Showing How The Press Heralded the

Whistler
TRADE MARK
"IT WHISTLES WHEN IT'S HAD ENOUGH"

The appearance of the Whistler attracted attention all over America. Newspapers, magazines and trade papers endorsed it and hailed it as a distinct boon to the motorist.

Any product which receives such a welcome is sure of a permanent and growing success. The results so far have convinced us that the Whistler will make money for all who handle it.

UNIVERSAL BATTERY CLIPS

Made of steel – Lead coated

Note the Improvements!

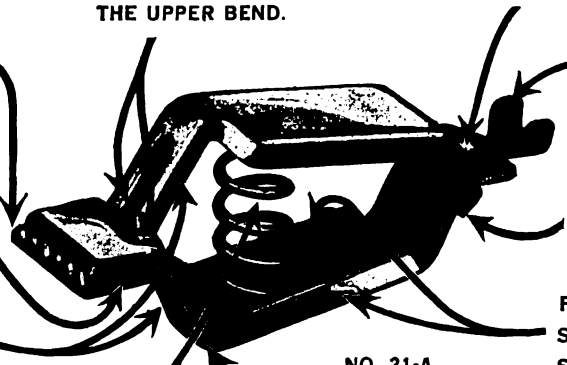
TEETH OF JAWS WHICH BITE THROUGH CORROSION ON DIRTY BATTERY TERMINALS AND MAKE A GOOD CONTACT.

HUMPS IN THE METAL TO REINFORCE THE NECK AT THE UPPER BEND.

CONTACT SCREW, WITH UNDER-CUT HEAD, TO HOLD THE LEAD OR JUMPER WIRE.

JAWS WHICH OPEN 1½ — AMPLE TO TAKE THE LARGEST BATTERY TERMINALS.

LIPS TO CLAMP DOWN ON THE INSULATION OF THE LEAD OR JUMPER WIRE TO RELIEVE THE CONDUCTOR OF STRAIN.



CHANNELLED NECKS WITH U-SECTION OF GREAT STRENGTH.

DOUBLE-LIPPED HINGE WHICH PREVENTS THE JAWS FROM OFF-SETTING.

FLANGES WHICH RE-INFORCE THE SIDE MEMBERS AND RETAIN THE SPRING IN PLACE.

NO. 21-A

LEAD COATED HELICAL SPRINGS OF OIL TEMPERED WIRE WITH AN 18 POUND BITE, TO HOLD JAWS ON BATTERY TERMINAL. READILY RENEWABLE.

FLANGE WHICH RE-INFORCES THE NECK AT THE LOWER BEND.

A SAMPLE, POST-PAID FOR 15¢ IN STAMPS.

R. S. Mueller & Co.
431 High Ave. Cleveland, Ohio.

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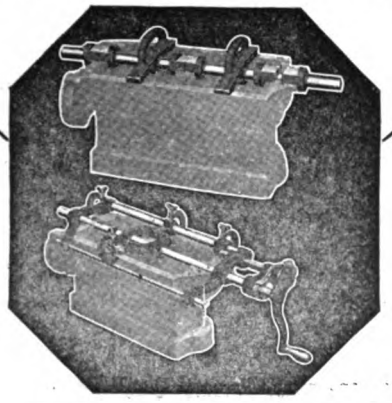
YOU CAN DO THIS WORK

DON'T send away a Ford or Fordson block when it comes in for main bearing replacements.
Have a Universal Main Bearing Replacement Equipment ready to do the job quickly and accurately in your own shop.
The job is easy to do—can be done quickly. The finished work is absolutely accurate and the profits are big, both in money to you and satisfaction to the customer.

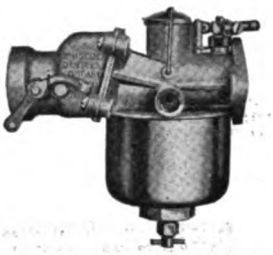
See current issues of Auto Trade Directory and Chilton's Directory for list of jobbers carrying stock. Write for catalog.

The Universal Tool Company, Incorporated
435 Woodward Ave, Detroit, U. S. A.
Manufacturers of Universal Cylinder Reboring Tools and Main Bearing Replacement Equipment for Fords and Fordsons



SCOE CARBURETOR

MAKES A FORD RUN LIKE A SIX



SAVES ITS COST IN 60 DAYS

Any dealer who puts a Scoe Carburetor on one Ford, opens for himself a neat and profitable line of business.

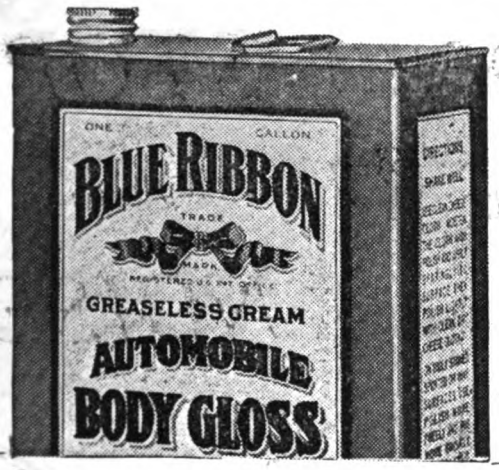
Simply because this carburetor enables the Ford engine to perform as nothing else can or will.

Write us to send you the Scoe on our 30 Day Trial Plan. Pay half the net—$4.25—on receipt of the carburetor. Put it on a customer's machine and check up its performance for 30 days.

Then pay the balance, or ask a refund, and we will make it without a question.

That surely is a fair offer, and hundreds of dealers have proved it so.

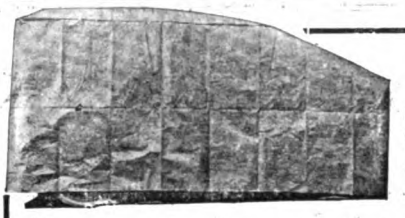
BRISCOE DEVICES CO.
PONTIAC, MICH.



KEEP THE BODY OF YOUR CAR *SHINING* LIKE A MIRROR

No Grease to Catch Dust
Does Not Coat the Finish
Best Furniture Polish Made
Use With Spray if Desired

International Metal Polish Co.
INDIANAPOLIS, INDIANA



KENNEDY AUTO STORAGE COVERS

"Wrap Up" Your Cars When Not in Use

When you store your car for a season, don't let its polish be dimmed by dust, and its metal tarnished before it gets out of the garage. Cover it at once with a KENNEDY AUTO STORAGE COVER, and it will remain as clean and bright as washing makes it, until the cover is removed, next day or next season.

Protects the limousine all summer, or touring cars through the entire winter season. No cost but first cost. Never wear out if care is taken in handling. Insist that your garageman use them.

Popular for Use and Sale in Every Garage

Garagemen—Charge extra for storing with KENNEDY AUTO STORAGE COVERS. Service your patrons are glad to pay for. Many will demand it.

Made of strong, heavy paper, reinforced to prevent tearing. Protects a car against dirt, dust and moisture. Prevents polished portions from tarnishing and keeps finish from checking in cold weather, and also prolongs the life of the tires by excluding the light. Furnished for 5 and 7 passenger gasoline cars, electrics and Ford cars. Good profits in retail sales and service use. KENNEDY COVERS can be sold at a season when trade on other accessories is usually light.

Write for Free Illustrated Literature.

The Kennedy Car Liner & Bag Co., Shelbyville, Ind.

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Hall Motor Co.

AUTHORIZED Ford AGENT
THE UNIVERSAL CAR

SERVICE AND PARTS

916-918 W. UTICA ST., Cor. BRAYTON
BUFFALO, N. Y. Bell Tupper 4666

August 11, 1919.

The Stenman Electric Valve Grinder Co., Inc.,
43 Southbridge St.,
Worcester, Mass.

Gentlemen:-

Replying to your letter of August 9th, would say it affords us much pleasure to send you our check to cover the cost of the Electric Valve Grinder sent to us for trial a short time ago.

We have no hesitation in stating that we have tried three or four other different makes of grinders, and consider yours much superior to any of them. Its smooth, velvety action enables us to make a much nicer job than any other valve grinder we have tried.

HHK/FM Yours very truly,

HALL MOTOR COMPANY,
By Harry A. Hall

The moral from the above letter, is that you insist on getting a "Stenman" and accept no other. "As good or better" has not yet been made. Your jobber can supply you—if not—write to —us. Circulars on request.

Made under U. S. Patents 876,449 1,313,490. Others pending.

"Will Pay 300%"

The Stenman Electric Valve Grinder will pay 300% yearly on the original cost where it is used to grind but one set of valves a week. If used more the returns will be proportionately greater.

"They Serve Best Who Are Best Equipped To Give Service"

The Stenman Electric Valve Grinder is the greatest time and labor saving tool that ever went into a repair shop. It is eight times quicker than hand work and does a better job. Thousands are already in use and you can depend on this wide use as a guarantee of its worth. Order one today from your jobber. It will have practically paid for itself before the bill is due.

Price $40.00—F. O. B. Factory

Stenman Electric Valve Grinder Co.
Makers of the Original Electric Valve Grinder
Worcester, Mass.

Copyright 1919 by Stenman Electric Valve Grinder Co.

STOP! STOP!! STOP!!! STOP!!!! STOP THAT NOISE

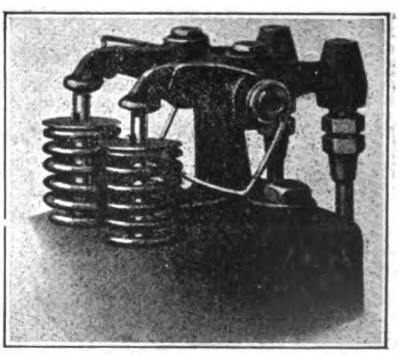
GET YOUR SHARE OF THIS *PROFITABLE* BUSINESS

You never handled an accessory that sells so easily and so rapidly as KHK Motor Silencers.

Our dealers are reordering with remarkable rapidity.

Buick, Chevrolet, Oakland, Oldsmobile and Scripps Booth owners are buying KHK Motor Silencers with a minimum of sales effort on the part of the dealer and his clerks, because they meet a distinct need.

KHK Valve in Head **MOTOR SILENCERS**



are guaranteed to eliminate from 75% to 90% of that annoying clacking noise caused by the action of push rods and rocker arms in valve-in-head motors. They add pep to the operation of these motors.
It is distinctly to your advantage to know the details of our effective selling and advertising plans.

KAY H. KAY CO.

967 WOODWARD AVE., DETROIT, MICHIGAN

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GREB AUTOMATIC GRIP PULLER
BEACH PATENT

A Combination of 2 or 3 Arms.

Gear Pulling Made Easy

The GREB AUTOMATIC GRIP AND GEAR PULLER gets a job done quick and without danger or damage. This means larger profits and quicker work.

Scientifically designed, well made, quick acting, strong, simple and trouble-proof. Adjusts itself instantly to work—locks in any desired position.

We also make the GREB RIM TOOL and GREB AUTO LOCK.

TWO SETS OF ARMS
Senior Size—Capacity 1" to 10" and 1" to 18"
Junior Size— " 1" to 4" and 1" to 7"

10 DAYS TRIAL

If your jobber does not have them, we will send you one. Try it ten days. If not satisfactory return it to us and we will refund your money.

THE GREB CO.
202 State Street, Boston, Mass.

JEFFERSON AUTOMOBILE IGNITION COILS

Small Stock For Fitting All Cars

Because of flexible caps, terminals and brackets these coils are adapted to all ignition systems. You are required to carry only a very small stock. Consequently, your investment is unusually small and at the same time you can fit all makes of cars.

JEFFERSON

Coils are famous for their long life, dependability and uniformly high standard. Order your stock at once.

Send for Coil List

showing list of all cars that are Coil-Equipped and the types of Jefferson Coils and Brackets to be used as Replacements.

Jefferson Electric Mfg. Co.
429 S. Green Street
Chicago, Ill.

VICTORY

Complete Automatic Compressor Unit

ACE OF ACES

GLOBE TYPE B—Original Two-Stage Garage Compressor. Saves power, time and money.

WONDERFUL new system of AUTOMATIC LUBRICATION insures Oil-Free Air, provides abundant and continuous lubrication and wastes NOT AN OUNCE of lubricant.

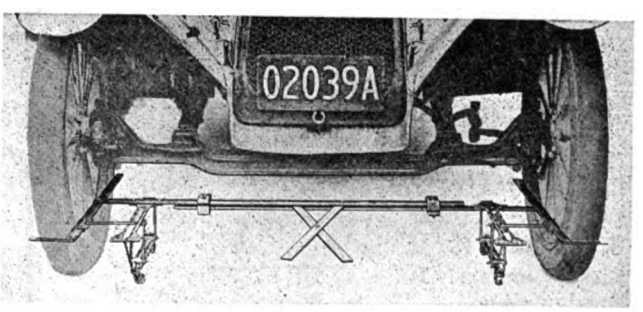
Automatic Pressure Unloader protects belts, fuses and motors.

15 Sizes and Styles of LAST WORD Equipments from which to select.

Desk C.
Globe Manufacturing Co., Battle Creek, Mich., U.S.A.

Duby's Wheel Gage

A positive instrument which tells instantly if wheels are out of line. Can be used on either front or rear wheels and adjusts itself instantly to any car regardless of the size of wheels or tires. The Pointers register on the dials in plain view of the operator.



With this device ten cars can be tested by one man in less time than two men could test one car by the old method. Price to garages and service stations $15.00. Special discount to jobbers.

J. F. DUBY
11 River St., Mattapan, Mass.

(When Writing to Advertisers, Please Mention the Accessory and Garage Journal.)

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Figures Don't Lie!

The Crankshaft of a Ford car runs at 1,250 revolutions a minute.

The Camshaft makes 625 revolutions during the same period.

The Roller used inside the Timer makes 2,500 revolutions—4 times as much as the camshaft.

Is it any reason that there is an abnormal wear on this —the most important part of the Timer?

The McCULLOCH WIPE CONTACT, being designed in the form of a triangle does away with this extraordinary wear on the roller and for that reason it is **guaranteed to run at least 30,000 miles."**

SELLS FOR 60c.

SPECIAL PROPOSITION TO DEALERS AND JOBBERS.

WRITE FOR PARTICULARS AND DEALERS' HELPS.

This contact slides around with the same rotation or speed as the camshaft—making no revolutions at all—and will not only wear the contacts and insulations down equally and evenly, but will clean the beds and assure perfect transmission.

It saves 2,500 revolutions every minute that the Ford is being used.

It functions the same as the old style roller, but slides instead of rolls.

When it 'hits' a bump or 'strikes' a ridge it will not jump, but will turn on its end and continue as before.

There is not a chance of a misfire.

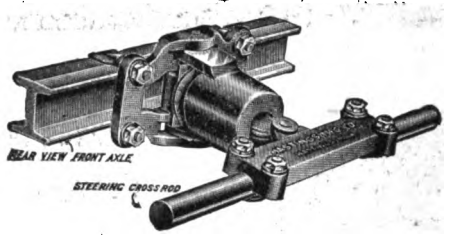
Made by the manufacturers of McCulloch Products for Fords.

McCULLOCH TIMER GRINDER

McCULLOCH MFG. CO.
216 High St.,
Boston, Mass.
Specialists in Ford Ignition.

McCULLOCH TIMER FOR FORDS

The Hastings Stabilizer



For Safe and Steady Steering of FORD Cars

MAKES all the difference in the world in the "feel" of the car under you.

Takes up all the lost motion and looseness of the steering mechanism. Makes long drives seem short—no aching arms and fatigue. Permits full sweep of the wheels.

Adds no appreciable weight to the car.

Out of sight and out of the way.

Easily attached to front axle and steering rod by bolted clamps. Any garage man can attach in a few moments.

Fully guaranteed.

Send for descriptive folder and discounts to Ford and Accessory Dealers.

HASTINGS

MANUFACTURING CO.
Hastings, Mich.

ANNOUNCEMENT

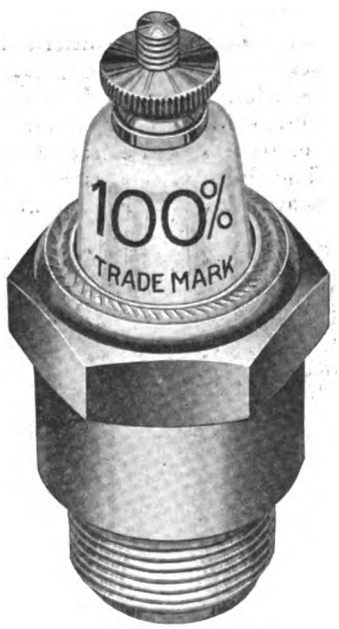
The Furber Company is Now Prepared to Distribute Its

100% Spark Plug Nationally

Jobbers & Dealers

There Is No Other Spark Plug Like It. It Sells in a Big Way. It Is 100% Efficient.

Ask us for Prices and Discounts



$1.00

THE FURBER COMPANY

614 Washington St., Lynn, Mass.

BUNTING BEARING BRONZE B.B.B. CO. No. 1

Same quality as our finished bronze bushings and bearings used by manufacturers the country over. Your repair stock is not complete without it.

All leading jobbers Ask for catalog N

The Bunting Brass & Bronze Co.

727 SPENCER STREET
TOLEDO, OHIO.

CORED BARS

STOCK SIZES

PIECE NO.	Outside Diameter	Inside Diameter	Length	Approx Weight
A	1	½	12	2
B	1¼	½	12	3½
C	1½	¾	12	5
D	1¾	¾	12	7
E	2	1	12	8½
F	2¼	1¼	12	10
G	2½	1½	12	11½
H	2¾	1¾	12	12¾
I	3	2	12	13¾
J	3¼	2¼	12	15½
K	3½	2½	12	17
L	4	3	12	21
M	4¼	3¼	12	20

WELDERS!

There's economy in using the best fluxes you can find for particular welding jobs. Insure better and stronger welds, more easily and more rapidly made, by using

ANTI-BORAX COMPOUNDS

For Acetylene, Gas and Electric Welding

Anti-Borax WELDING FLUX

Best on the market for all grades of iron and steel. Weld at lower heat. Leave no scale. They cleanse the molten metal, assist fusion and improve the quality and appearance of your work. Guaranteed to give perfect satisfaction or your money refunded.

Write for sample and price list.

ANTI-BORAX COMPOUND CO.
FORT WAYNE, INDIANA

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NEW YORK
AUTOMOBILE REPLACEMENT
IGNITION COILS

New York Automobile Replacement IGNITION COILS

New York Automobile Replacement Ignition Coils have actually put hundreds of the smaller Garages and Service Stations in business—and are today the most treasured line of the largest Service Stations throughout the U. S. The explanation is simple. Most drivers have learned that the best car and engine fitted with the highest grade carburetor and workmanship cannot deliver its full power, smoothness or service unless the Ignition Coil delivers more than "just a spark."

Weak, partly broken down coils spoil owners' pleasure and temper, also your reputation, and the car's utility. A special New York Coil engineered to suit the exact requirements of each car manufactured—that will fire the poorest gas—that positively will not "miss" at highest engine speeds and rival magneto ignition is available.

They are installed with no trouble in ten minutes, as they positively fit each other. Fifteen years of successful coil building experienced by an organization of Ignition Specialists, is the reason a car owner always agrees when told he needs a New York Coil.

More real profit, less come backs and easier made sales than any article you ever handled.

NEW YORK COIL COMPANY

338-340 Pearl Street New York, N.Y.

Adapted to any engine. Leaves both hands free to remove the key or pin.

MERTZ VALVE SPRING RELEASE

The Mertz is no ordinary make shift tool. There are no chains, notches, levers or springs. It is special tool equipment made for a distinct use and a guaranteed high quality product. The Mertz is easy and simple to operate. It locks automatically to any length. It will not bend the valve stems. It will easily compress the strongest valve spring made. It is unbreakable, very light and occupies but a small space in the tool chest or box. For emergency service it can be used as a clamp in general work and when tires or tubes are being repaired.

IT SAVES TIME, LABOR AND EFFORT. A TOOL FOR SHOP AND CAR.

To operate, place the Fork of the Release straddle of the Valve Stem under the spring. The self-centering gauge at the top of the Fork makes it adjustable to any valve spring seat. The hand screw is then turned and the arm becomes instantly locked. The valve head is positively held down in place while the spring rises. All other operations are as positive.

Mertz products are a good line for any dealer to sell. Utility tools that serve and save and are sold at the right price and afford the trade the right profit.

List Price, $2.00. Jobbers and Dealers Discounts at Request.

H. B. MERTZ CO.

1408 Rutherford Ave., Pittsburgh, Pa.

BE-BE-CO. Motor Specialties

Made to a quality that affords superior results.

Leather Top Dressing
Mohair Top Dressing
Cushion Dressing
Top Lining Dye
Seat and Slip Cover Cleaner
Body Polish
"Red Fox" Motor Car Soap
O-So Easy Hand Soap
Tire Paint
Rim Paint
Patching Cement
Gasket Cement
Carbon Remover
Tar Remover
Nickel Polish
Brass Polish
Vulcanizing Cement

Sold in varying sized container or bulk with unconditional guarantee of replacement if in any way defective.

Catalogue and discount sheets at request.

BOSTON BLACKING CO.

EAST CAMBRIDGE Third Street MASS.

(When Writing to Advertisers, Please Mention the Accessory and Garage Journal.)

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GET A WATERHOUSE WELDING OUTFIT AND WATCH YOUR BUSINESS GROW

Boost your profits—Swing the big profitable welding business to your shop. Thousands of repairers are doing it and most of them use a Waterhouse outfit.

Time is money and a Waterhouse Welding Outfit saves the time as well as labor. It affords utility great enough to meet any shop requirement, yet no shop is too small to own one.

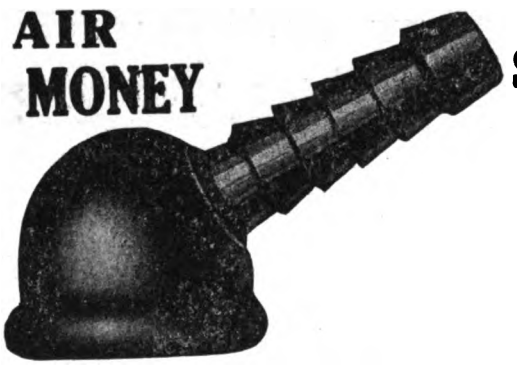
The great difference in welding outfits is all in favor of the Waterhouse. That means quality, utility, long service life, simplicity, dependability, low first cost and the best and most complete welding apparatus ever offered to the trade.

Write for descriptive catalogue, or better still, tell us your requirements. Do it today. We can supply the exact outfit for your needs.

All Waterhouse outfits are guaranteed.

WATERHOUSE WELDING COMPANY, 3 PELHAM STREET, BOSTON, - MASS.

FREE AIR COSTS MONEY



when the customers for whose convenience you provide an air station forget to turn off the flow after they have filled their tires.

Guard against this waste by attaching a

Schrader Universal Inflating Valve

to your air hose.

Thanks to this appliance your bottled air locks itself into the tank the minute it is taken off the tire-valve. You turn on the air by pressing the nozzle of the inflating valve against the tire-valve and you turn it off by removing the device from the tire-valve.

Made to fit any diameter of hose from ¼ in. to ⅝ in.

PRICE $1.50 in U. S. A.

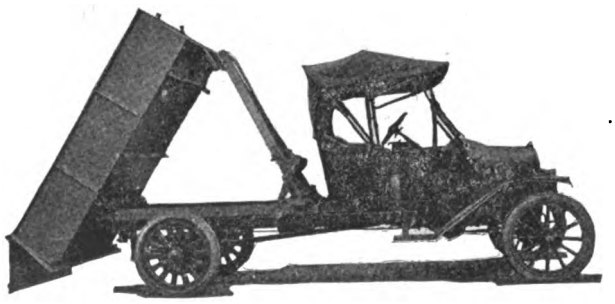
Manufactured by **A. SCHRADER'S SON, Inc.**
800 Atlantic Avenue, Brooklyn, N. Y.

Schrader products were awarded a Grand Prize and two Gold Medals at the Panama Pacific International Exposition. "There's a Reason."

THE PEERLESS HAND HOIST

Single Cable Quadruple Worm Gear Drive

For Any Make or Type of Truck.



A wonder in efficiency and speed. It will fit any chassis and body. Weighs but 200 pounds. Simple, fool proof, wholly dependable and will last for years in the hardest service.

Any one that can drive a truck can hoist the heaviest load to 30 or 50 degrees in the longest body in less than two minutes. The smaller the body and load the quicker the action.

But two gears are used, quadruple worm and gear (both machine cut) and housed to protect from dirt and dust. The single cable makes an even pull. Compact and can be installed without drilling holes in chassis frame. The body hitch is also furnished.

We specialize in building all-steel bodies for any need.

Write for complete information.

THE AUGLAIZE MOTOR CAR CO.

NEW BREMEN **OHIO**

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Which Garage Man Gets The Money?

If you can repair and adjust Electrical Equipment, you will get the cream of the garage business. With the increasing demand for service of this sort, you must equip to handle the business, or lose it to your more enterprising competitor.

Weston

Model 280

GARAGE TESTING INSTRUMENT

is your one great and urgent necessity to enable you to locate electrical troubles quickly and apply the proper treatment to remedy them. Its possession will place you a long way ahead of your competitor not so equipped.

This instrument is extremely accurate, durable and serviceable. It is the most practical electrical equipment you can install.

The Weston Company is pre-eminent throughout the world in the production of highest grade Electrical Precision Instruments.

Prompt Shipments from Stock—Order Now!

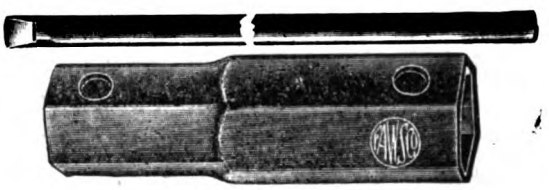
WESTON ELECTRICAL INSTRUMENT CO., 103 Weston Ave., Newark, N. J.

Branch Offices in the Larger Cities.

FAWSCO SPARK PLUG WRENCHES

FAWSCO

TUBULAR DRAWN STEEL



These wrenches are the highest grade coppered and nickel steel. Made in standard combinations of sizes. Complete with Bessemer steel pin.

No. 29x31—For ⅞ & 15/16" Plug Shells	Each,	$0.45
No. 29x33—For ⅞ & 1" Plug Shells	Each,	.45
No. 29x37—For ⅞ & 1⅛" Plug Shells	Each,	.45
No. 31x37—For 15/16 & 1⅛" Plug Shells	Each,	.45

Packed in individual boxes.

Ask for Circular.

27 WARREN ST. NEW YORK CITY — **J. H. FAW, Inc.** — **918 Hearst Bldg. SAN FRANCISCO**

VAN BRIGGLE CARBURETOR

ECONOMY AND SIMPLE SERVICE.

The Van Briggle Carburetors with the Airplane Principle are well and favorably known throughout the United States. They are saving gasoline and giving steady, efficient service for many enthusiastic motorists.
Special models, packed ready to install, for the Dodge, $18.00; for the Maxwell, $15.00, and Ford, $10.00. Cars or trucks.

VAN BRIGGLE SHOCK ABSORBER

ROAD COMFORT—LOWER UPKEEP.

Van Briggle Shock Absorbers are in demand.
The Ford owner has found that Van Briggles really save his car frame and motor, as well as adding much pleasure and comfort to driving.
For Ford touring, roadster, sedan, coupe and light delivery, $18.00 a set. Installed in less than an hour. Do not crimp the leaves of the car spring.

VAN BRIGGLE MOTOR DEVICE COMPANY

INDIANAPOLIS, U. S. A.

GUARANTY MOTOR REPAIR ARM

(Patent No. 1,289,100, Dec. 31, 1918)
Note the date

"Scientifically made in Rights and Lefts, extended prongs provide greatest bearing service and strength reinforcement; saves time and expense. A wrench and a few minutes make a permanent repair. Loosen 6 bolts, tighten nuts, don't disturb motor."

Price $1.50

GUARANTY MOTORS COMPANY

436-38 MASSACHUSETTS AVE. CAMBRIDGE, MASS.

Manufacturers of the Well-Known GUARANTY LINE

GUARANTY Internal Drive Units for converting pleasure cars into trucks, GUARANTY Power Hoists, Pliable-Drive and Extended Frames for Ford Worm-Drive Trucks, Repair Arms, etc.

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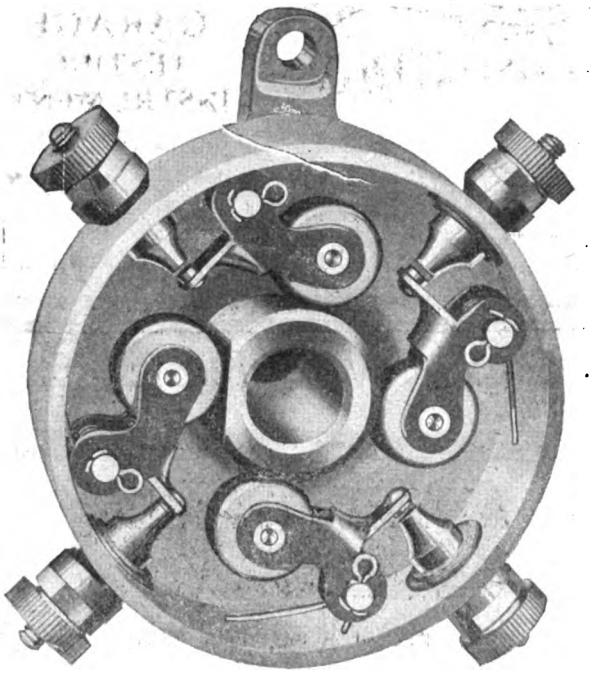
Revolutionizing Timer Manufacture



DUNTLEY
MAGNETO BREAK
TIMER

Here is the Timer for Ford motors that overcame all the causes of timer troubles.

It requires no lubrication.

It has no sliding or whirling contacts to become rough and wear out or to skip and jump over metal segments, or become insulated with oil.

It provides an individual magneto break for every cylinder.

It is equipped with genuine Tungsten Points that will not pit, corrode or burn out.

It is guaranteed for 50,000 miles—more than 10 times the life of the ordinary timer.

The tremendous sales record it has made is proof of its economy and efficiency on Ford or Fordson Tractor motors.

Write us today for all the particulars.

J. W. DUNTLEY
1003 Michigan Ave., Chicago, U. S. A.

Security Auto Lock

Affords every protection to Ford car owners that a perfectly designed and extremely well made lock can give. While neat and attractive it is built very strong. In operation it is positive and the car can be left with a feeling of confidence that no one but the owner can use it.

It is the original loose wheel lock for Fords.

It is approved by underwriters.

It will reduce insurance premiums 15%.

When locked the car cannot be towed.

List Price, $6.00

It makes the Ford thief-proof

Anyone can easily install the Security in ten minutes. No drilling, filing, sawing or chiseling necessary. It is made of solid brass. Nickel plated finish.

TO DISTRIBUTORS

When this lock is shown no other will satisfy Ford car owners. It sells at sight. Our trade discounts are liberal and our proposition will interest any one that can sell high grade car protection at a moderate price. ***Write for details today.***

Security Auto Lock Co.
414 N. PAULINA ST., CHICAGO, ILL.

EQUIP YOUR GARAGE with PARO SHOP EQUIPMENT

OUR

EKERN'S PORTABLE WORK BENCH AND ENGINE STAND

EKERN'S MOTOR STAND (Portable)

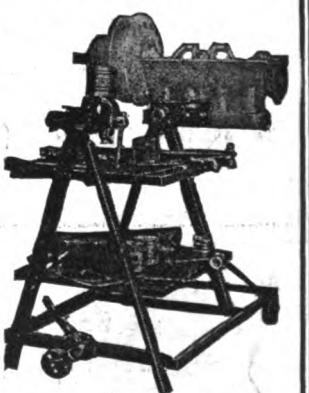
EKERN'S SHOP BENCH MOTOR SUPPORT (attachable to a shop bench)

Are all specially designed for Ford Motors.

The Ford engine block is secured to either one of the above devices, by two cap screws that hold the water inlet connection. The engine can then be held in any desired position.

By using an Ekern Axle Attachment with either of the above devices, you can convert them into axle repairing stands for any make of automobile axle.

We have other devices. Send for catalog.



List Prices	Without Axle Attachment	With Axle Attachment
Shop Bench Motor Support	$10.00	$16.00
Motor Stand	$20.00	$26.00
Work Bench	$40.00	$46.00

1412-14 South Michigan Boulevard, Chicago, Ill.

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UNIVERSAL

"THE HEART OF YOUR
STARTING AND LIGHTING SYSTEM"

Insist upon the **best** for your car. Universal Batteries are built right—built to wear. Their strength is in the plate—extra hard, yet porous—insuring greater endurance and capacity.

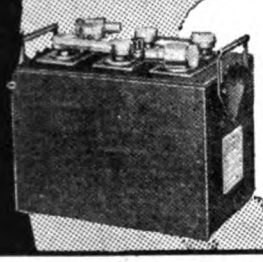
There is a Universal Battery for every make of car—and a repair part for every make of battery.

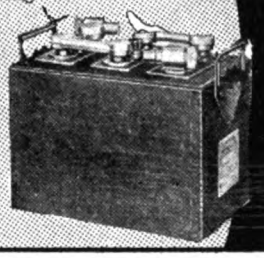
Investigate **Universal Batteries.**

UNIVERSAL BATTERY COMPANY
3420 South La Salle Street
Chicago, Illinois

Dealers: We have an attractive proposition for you. Drop us a line today for details.

BATTERIES





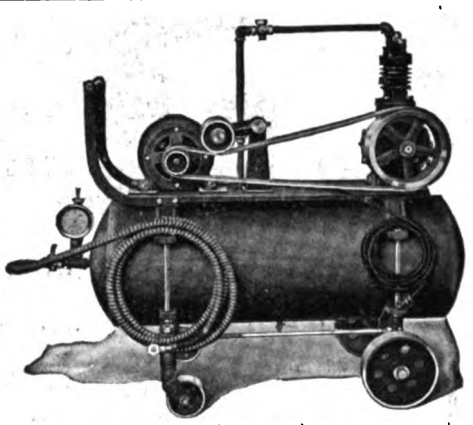
GARDNER AIR PUMPS

Result of 50 years manufacturing experience.

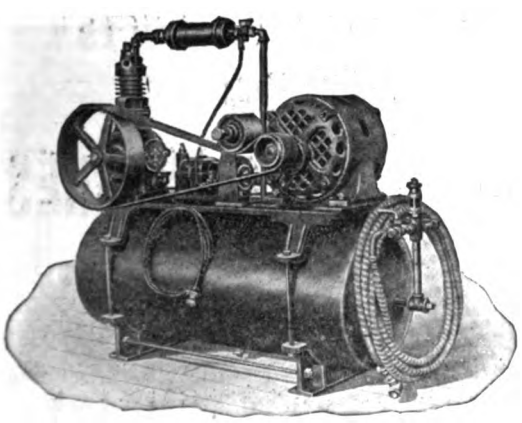
An inefficient air pump makes your air service expensive. It hurts the quality of your service.
Makes a customer dissatisfied and hurts your business generally.

Install a GARDNER

It will pay for itself in a short time.
It is simple, rugged and efficient.
The fact that many filler stations supplying hundreds of car owners daily use the Gardner air pump is proof that experience had demonstrated it is economical.



GARDNER AIR WAGON



GARDNER AUTOMATIC UNIT

Made in Single and Two Stage Types

Variety of sizes ***Prompt shipment***

There is a Gardner Air Pump to meet the demands of every garage no matter how large or small.

Ask your jobber for prices.

THE GARDNER GOVERNOR COMPANY

138 Williamson Street, Quincy, Ill.

Garage Department

(When Writing to Advertisers, Please Mention the Accessory and Garage Journal.)

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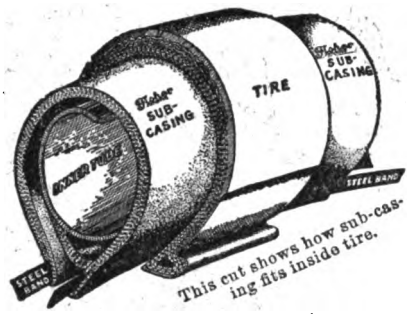
All the Mileage There Is in the Tire



This cut shows how sub-casing fits inside tire.

is assured by the use of

THE *FISHER* PATENTED "RIM GRIP" SUB-CASING

Built to conform strictly to the design and workmanship of standard tires; it is the only device of its kind holding the air independent of the tire, offering unusually efficient means of relief.

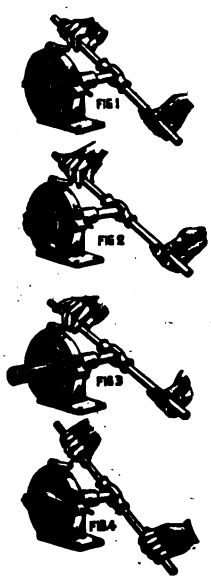
Tires equipped with Subcasings can be worn down to the last layer of fabric and the Subcasing transferred to another tire.

Proof of their superiority will be evident when the results of actual tests are noted.

Dealers Write For Our Attractive Proposition

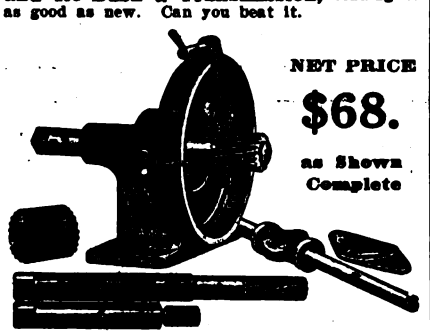
THE FISHER RUBBER CO., 1815 St. Clair Ave., Cleveland, O.

FORD REPAIR MEN Cut Your Labor Costs to Just One-Third What They Now Cost You by Ordinary Methods and Do the Work Better Than the Best Job You Ever Sent Out.



This great saving of time means a big additional profit, but is now a loss. There is BIG MONEY in Ford repairing if you have efficient tools that save time and eliminate guesswork and experts. The two outfits listed here will save their cost on a very few jobs and enable you to render the quickest possible service to your trade.

TRANSMISSION REAMING MACHINE reams every bushing in a Ford Transmission to a perfect fit and alignment, so the gears mesh perfectly on their pitch diameter and run without noise or excessive wear. Impossible with any other tool equipment ever offered. **30 Minutes to Completely Overhaul and Re-Bush a Transmission,** making it as good as new. Can you beat it.

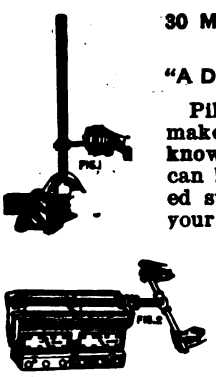


NET PRICE

$68.

as Shown Complete

Main Bearing and Connecting Rod Aligning Reamer



30 Minutes to Fit Perfectly All Main Bearings and Connecting Rods.

"A DAY'S JOB DONE IN HALF AN HOUR."

Pilots guide the reamer. No chance to make mistake. Far superior to any other known method. Motors put up this way can be started by hand. I have only a limited supply of this material on hand. Send your order promptly to avoid disappointment. One per cent discount if you mention this magazine. Send for catalogue of other special tools, reamers, etc.

Price $28.

I Make the BEST HONEYCOMB RADIATOR at any price.

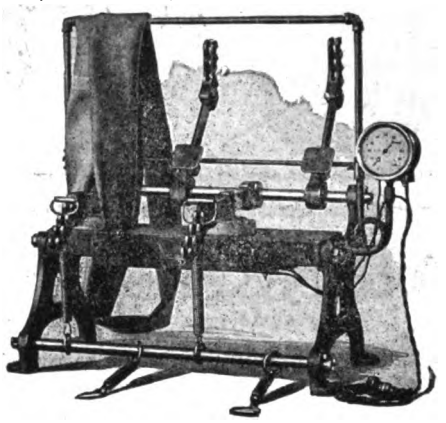
K. R. WILSON

10-16 LOCK STREET BUFFALO, N. Y.

Heintz Automatic Electric-Steam Vulcanizer

Generates steam by electricity, eliminating all fire and flame. When the desired amount of steam is generated the current is automatically turned off, then on again when the pressure falls a pound or two, in this way maintaining a perfect uniform working temperature.

ALWAYS SURE OF A PERFECT CURE.



USED AND RECOMMENDED BY THE LEADING TIRE MANUFACTURERS AND TIRE REPAIR SCHOOLS.

Write us for descriptive data.

JAMES C. HEINTZ and COMPANY

2069 East 9th St., Cleveland, Ohio.

"OHIO CARBON PRODUCTS"

"OHIO"

BRUSHES

GARAGEMEN TAKE NOTICE

Write for Our No. 6 Car List for Information on New Cars

FOR AUTOMOBILE STARTING MOTORS AND LIGHTING GENERATORS

THE OHIO CARBON COMPANY

1900 FULTON PLACE, CLEVELAND, O.

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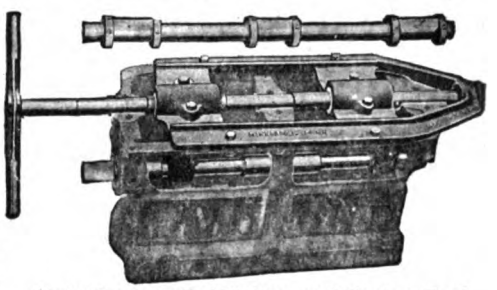
STORM

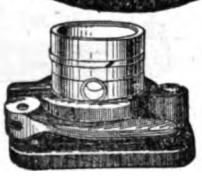
Repair Shop Tool Equipment

Modern, accurate and time-saving tool equipment in your shop will draw trade and make money for you. Every piece of Storm Equipment is necessary to good, efficient work, and will pay for itself.

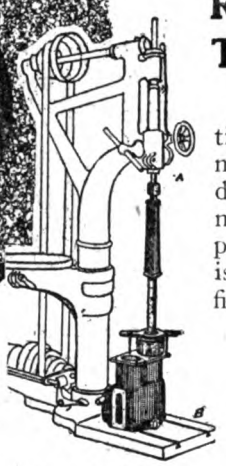


Main Bearing Babbitting and Boring Tool.

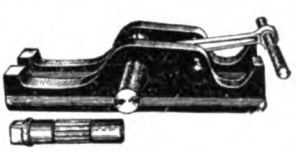
Write for Bulletin P 42



Storm Piston Vise



Storm Cylinder Reboring Machine



The Storm Connecting Rod Bearing Reamer, Jig and Straightening Gauge

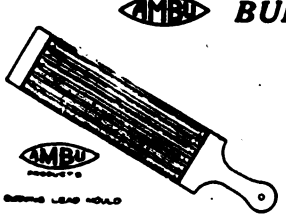
STORM MFG CO.

406 Sixth Ave. So., Minneapolis, Minn.

Prices Reduced

The great demand for these three battery shop labor savers has resulted in greatly increased production. Because of this condition we have been able to reduce our manufacturing costs materially—and we are passing this saving to our customers in lowered prices—a novelty in this day of rising costs.

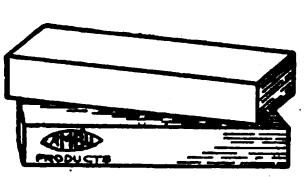
AMBU BURNING LEAD MOLD



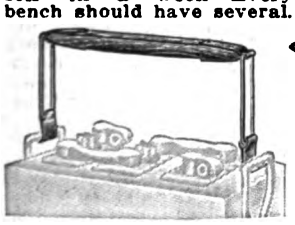
A simple handy mold to put all scrap lead and shavings into usable form. Makes burning lead easy to handle. Pays for itself in saved metal in a few weeks. Used in pairs—one cools while the other is filled. Large shops can use several. Single $1.50. Pair $2.50.

AMBU BATTERY TURN TABLE

A roller bearing turn table of hard-wood that makes it easy to get at every side of a battery. Not only speeds up work but saves lifting and turning the heavy battery when burning in plates, sealing or repairing battery.
Only $2.50 and pays for itself in a week—Every bench should have several.



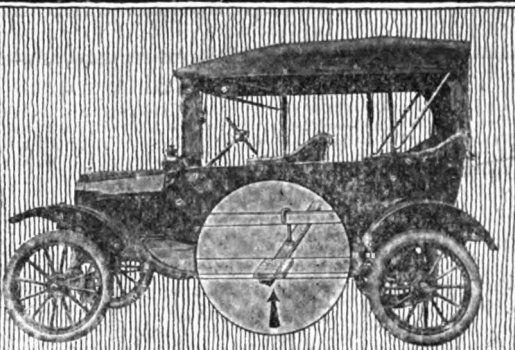
BATTERY TURN TABLE



AMBU BATTERY CARRIER

Carry a battery like a suitcase. One man easily carries two batteries. Ideal for lifting batteries from car or replacing.
Price only $1.50 each; per pair $2.50.
Order from your jobber or direct.

American Bureau of Engineering
109 E. 16th St. *APPLIANCE DIVISION* Chicago
Makers of the Famous AMBU Trouble Shooter



Dow Auto Body Brace
For Ford Cars

A real seller with the jobber and dealer.
Worth its weight in gold to the Ford owner.
Quantity sales with large profits.
Write for quotations and our Agency.

Dow Wire and Iron Works, Incorporated
Louisville Kentucky

DOW LOUISVILLE

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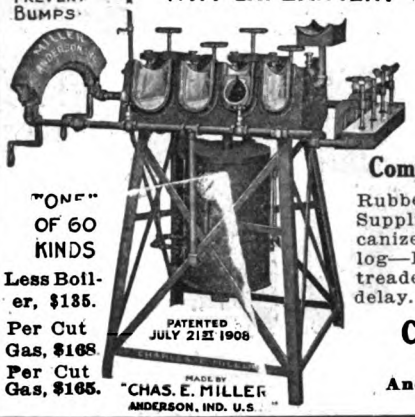
USE MILLER'S WHY EXPERIMENT



"ONE" OF 60 KINDS

Less Boiler, $135.
Per Cut Gas, $168
Per Cut Gas, $165.

Extra Ply Tires, Tubes, Vulcanizers
60 kinds.

6 kinds Wrapping Machines—Tire Building Stands—Air Pumps—Repair Stocks—Reliners—Steam Boilers.

Complete Tire Shop Outfits

Rubber Workers Tools and all Supplies—Boot and Shoe Vulcanizer—FREE 84-page Catalog—Four Cavity Ribbed Retreader. Write today. Don't delay.

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1402 Meridian St.,
Anderson, Ind. U. S. A.

For sale by accessory and hardware dealers or by MAIL POST-PAID 50c EACH

RAIN-SNO CLEAR VIEW WINDSHIELD CLOTH

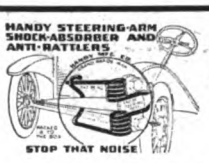
PREVENTS ACCIDENTS

Just RUB IT OVER THE GLASS and RAIN or SNOW cannot collect to obstruct the vision.

INSIST UPON THE "RED CLOTH"

Which is guaranteed to give continuous use for one year or money refunded. Made only by

SUFFOLK MANUFACTURING CO., INC., DEPT. D.
60 LONG WHARF BOSTON, MASS.



HANDY LINE OF ANTI-RATTLERS

The Handy Line of Anti-rattlers.
Tie Rod, Brake Rod, Steering Arm, Big Brake Rod, Throttle and Gas Anti-rattlers.

All Leading Jobbers have them.

If your jobber or dealer cannot supply you promptly write direct.

HANDY MFG. CO. 17 LIBRARY ST. Grand Rapids, Mich.

KEEP SPRINGS GREASED
KNOWLSON SPRING SPREADERS

No. 1. $1.75

Both Guaranteed.
Either or Both Delivered.
Your Money Back if You Want It.

They Fit Any Spring. Easy to Operate. Both Drop Forged.

Nickel-plated and polished.

100% EASIER RIDING.

SQUEAKING STOPPED.
Spring Breakages Eliminated.
Use a Heavy Grease (not oil) for real results.

DON'T RUIN YOUR SPRINGS BY NEGLECTING THEM!

No. 3. $1.25

Gun metal yoke, screw and handle nickel.

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are listed in our Catalog of 99% guaranteed Mailing Lists. It also contains vital suggestions how to advertise and sell profitably by mail. Counts and prices given on 9000 different national Lists, covering all classes; for instance, Farmers, Noodle Mfrs., Hardware Dlrs., Zinc Mines, etc. *This valuable reference book free.* Write for it.

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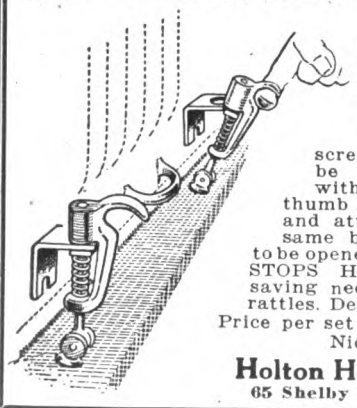
The MANLEY GARAGE AND SHOP EQUIPMENT

Every garageman and repairman should get our catalog. You'll find in it just the time and labor savers you need, and their prices will astonish you by their moderateness.

Send for your copy of this catalog today

MANLEY MFG. COMPANY
York, Pa.

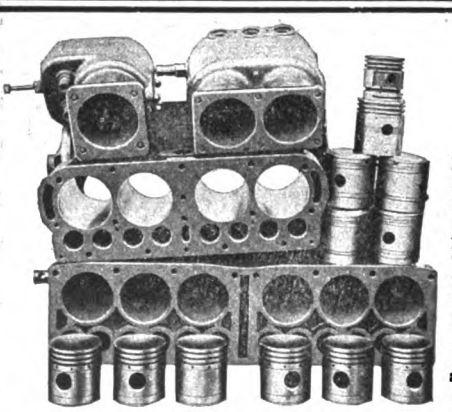
ALL CHEVROLET AND BRISCOE CARS
NEED A SET OF
Holton Hood Clips



This is a spring clip that takes the place of those slow, troublesome thumb screws on engine hood. Can be installed in one minute without tools by removing thumb screw from swing bolt and attaching HOLTON clips to same bolts. Enabling the hood to be opened and closed in one second. STOPS HOOD RATTLES, a time saving necessity, never slips, never rattles. Dealers write for proposition.

Price per set of 4, Black.....$2.25
Nickel Plated.....$2.75

Holton Hood Clip Company
65 Shelby Street, Detroit, Mich.



Cylinder Grinding

Regrinding the cylinders, fitting new oversize pistons and rings on your Automobile, Truck, or Tractor, will restore the motor to its original efficiency. Write today for full particulars and standard price list.

Kemp Machine Works, 1213 So. Franklin St., Muncie, Ind.

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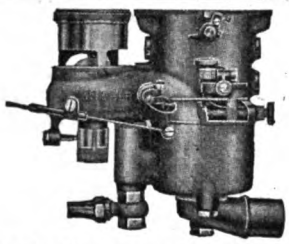
SHALER 5 MINUTE VULCANIZER

The Easy Way to Mend Tubes

The Shaler makes perfect tube repairs in 5 minutes. Works automatically—without fail. Burns non-flaming chemical fuel. Makes a permanent "feather-edge" repair, stronger than any "stuck on" patch. Cannot injure tubes. Fits tool box. Saves tubes—saves repair bills.

Complete Outfit $1.50—at All Dealers. Price slightly higher west of the Rockies and in Canada. The outfit includes—the vulcanizer, 12 patch and heat units, 6 round for punctures and 6 oblong for cuts. Extra patch and heat units—round or oblong, 75 cents a dozen.

C. A. SHALER COMPANY, 259 Fourth Street, Waupun, Wisconsin



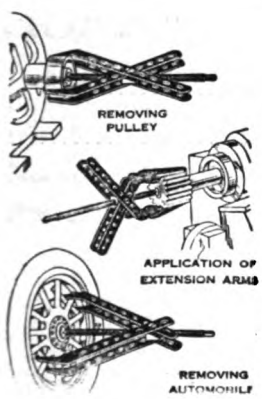
YOUR CUSTOMER HAS BEEN LOOKING FOR SUCH A CARBURETOR FOR A LONG TIME

More Mileage—More Power—More Speed

Get him to try it for 15 days. Satisfaction guaranteed.

WEBBER MANUFACTURING COMPANY

Factory: 66 Stanhope Street, Boston, Mass. New York Branch: 1765 Broadway



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GEAR AND WHEEL PULLER

Pulls any gear, wheel or pulley anywhere in a jiffy. Built on the only correct principle. Produces maximum efficiency with minimum effort. Can't twist off or let go. THE HARDER THE PULL—THE TIGHTER THE GRIP. Reduces operating cost and increases the earning capacity of any Repair Shop. Made from best grade drop forge steel. Almost unbreakable. Adjustable up to 13 inches diameter. Satisfaction guaranteed or money refunded. Order or write for details today. Price complete with extension arms, $11.00.

Liberal Discounts to Dealers.

Premier Electric Company

3811 Ravenswood Ave. Chicago, U. S. A.

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XXX GASOLINE HOSE XXX

THE FABRIC TAKES ALL STRAINS

All strain is taken by the tough fabric cover of Triplexd.

The flexible metal lining cannot be damaged.

The fabric, woven tightly over a rubber intermediate layer, binds the hose into a leak-proof unit.

Triplexd Pump Hose is guaranteed for one year's service.

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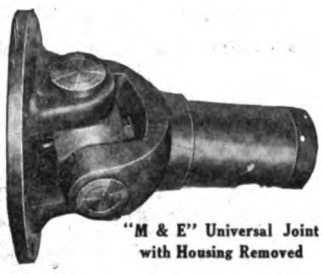
The metal protects the rubber from gasoline or oil.

"M&E" Universal Joint

(Patented)



"M & E" Universal Joint with Housing Removed

Great Strength with Lightness

Simplicity of Design

Perfect Lubrication

Dependable and Flexible

Consult our Engineering Department for Details

MERCHANT & EVANS Co

NEW YORK PHILADELPHIA WHEELING
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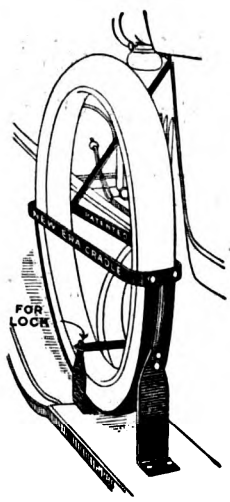
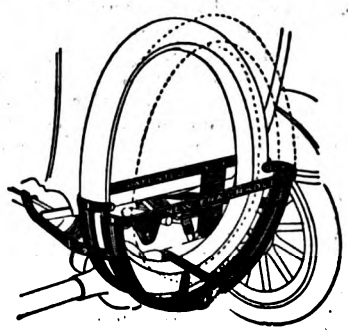
Popular Priced

New Era Cradle *Tire Carrier*





This popular priced Tire Carrier takes 30x3½ inch tires, plain or non-skid, and rigidly fastens to the side or rear of all Ford models—will not rattle—and holds the tire snugly in place.

It takes but a moment to unfasten the NEW ERA Cradle Lock and lift out the tire.

You should stock up with this popular carrier

PRICES

No. 208—Single-Side,	$4.20	No. 326—Double-Rear,	$7.35
No. 327—Double-Side,	6.30	No. 207—Single-Rear,	5.25

NEW ERA SPRING & SPECIALTY COMPANY

1177 Hamilton Ave., Grand Rapids, Mich.

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Reflexions of No-trouble ignition. An unretouched photo of the plug referred to below.

Do the Business in 1920 which other Reflex Dealers did in 1919

REFLEX Spark Plugs sell because of an undisputable past record of giving trouble-free ignition. In recent advertising the story of Reflex Spark Plugs which have gone two, three and five years—often without cleaning—has been told motorists who buy from you. For instance, the plug illustrated above has delivered for two years without even being cleaned.

Such results will mean business for you in 1920. Consider it as well as the fact that the Reflex proposition is profitable.

Will you write for a few details of what other dealers have done with Reflex Sparks Plugs? It's none too early to be thinking of the BEST lines you can handle during 1920.

The Reflex Ignition Company
1352 West 106th Street,
Cleveland, U. S. A.

REFLEX SPARK PLUGS
KEEP THE CAR ON THE GO!

THE ACCESSORY AND GARAGE JOURNAL
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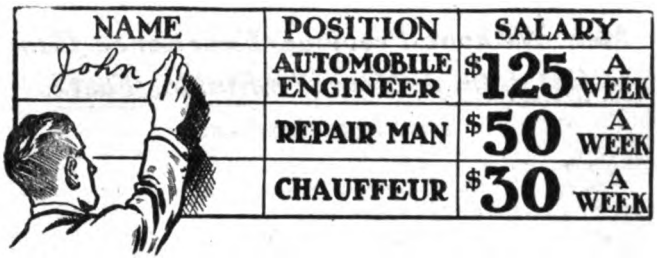

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Men like you are wanted for big-pay positions in the fascinating field of automobile engineering. We have made it easy for you to fit yourself for one of these positions. You don't have to go to school. You don't have to serve an apprenticeship. Fifteen automobile engineers and specialists have compiled a spare time reading course that will equip you to be an automobile expert without taking any time from your present work.

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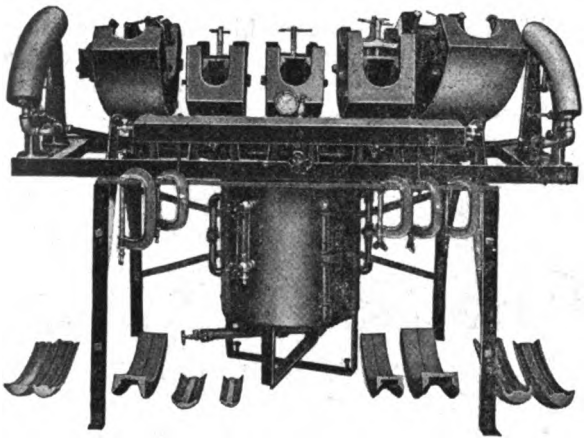
Everyone makes money in the TIRE VULCANIZING BUSINESS. Profits 100% or more. Small investment. We are the pioneers in the manufacture of the dry cure vulcanizer.

THE VANDERPOOL VULCANIZING OUTFIT

Repairs tires by the correct method. The Vanderpool Principle is endorsed by the great tire factories, also by veteran repairers after trying others. We send you FREE TIRE REPAIRING MANUAL. If others have been successful, so can you be. Write today for full particulars.



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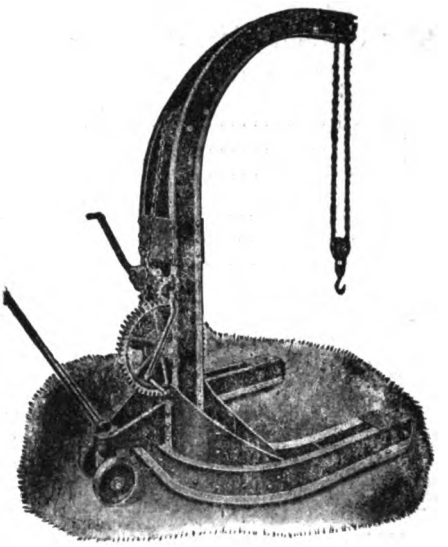
WM. VANDERPOOL CO., Springfield, Ohio

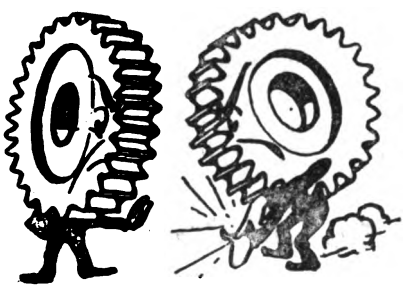


SAFE POWERFUL CHEAP

"LAFAYETTE PORTABLE STEEL CRANE"

The war is over and we are ready again to fill orders promptly. Labor and materials are 100% higher than pre-war. Our advances are only 50%. It is steel. It will not break. Roller bearings. Low center of gravity and will not upset. Double locked. It is safe. It is a heavy, strong machine for heavy, rough work. It won't wear out in 100 years. For the thousands in use we have not furnished $100 worth of repairs in seven years. It will always invoice at cost. It is in every state and most foreign countries. The only successful steel crane made and standard everywhere. It saves its cost in a short time. No first class garage or shop is without them and none other should be. For sale by jobbers everywhere. If the jobbing men who call upon you do not have it listed, write direct to the manufacturers.

LAFAYETTE ENGINEERING COMPANY
LAFAYETTE, INDIANA.



WHEN GEAR MEETS GEAR

When gear meets gear there is bound to be more or less friction. But that friction can be held down to a negligible minimum by proper lubrication.

DIXON'S GRAPHITE Transmission and Differential LUBRICANT

is specially compounded for gear work.

It stands the terrific pressure that is set up when gear meets gear—pressure that "squeezes out" ordinary oil or grease and allows a ruinous metal-to-metal contact—and it sticks to the gears when they are idle, which is just as important.

It lubricates efficiently under all temperatures—without "bunching up," congealing or "breaking down" as is the case with ordinary lubricants.

Stock this Dixon Lubricant and sell it to your customers. You'll be surprised at the sales results.

Write for prices and Booklet No. 49-G.

Also ask about Dixon's famous Cup Grease.

Made in Jersey City, N. J., by the

Joseph Dixon Crucible Company

D X N TRADE MARK Established 1827. D X N TRADE MARK

"The Most Trustworthy TIRES Built"

THE OLDFIELD TIRE COMPANY
BARNEY OLDFIELD, President
CLEVELAND, - - OHIO

METZ Master Six

The car of the Year **A New England Product**

Honest through and through

$1695 F. O. B. factory **FULLY EQUIPPED**

We are now extending our agency list
Information at request

METZ SALES CORPORATION
BOSTON, MASS.

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—and a fraction of a second might mean an accident that you could never forget.

Why Take A Chance?

ALL-WAYS TRADE APCO MARK RIGHT

Horn Button

—attaches to the throttle lever where it is under the driver's fingers at all times, leaving the hands on the wheel where they belong, especially in an emergency that requires the quick sounding of the horn. The installation is very simple, requiring no special tools or machine work. Furnished complete with directions.

DEALERS

¶This is one of the best sellers in the Apco line and a real money maker. Sold through jobbers only, but if your jobber cannot supply you send your order and we will have it shipped from a jobber near to you.

Apco Manufacturing Co., Providence, U. S. A.

ALL-WAYS TRADE APCO MARK RIGHT

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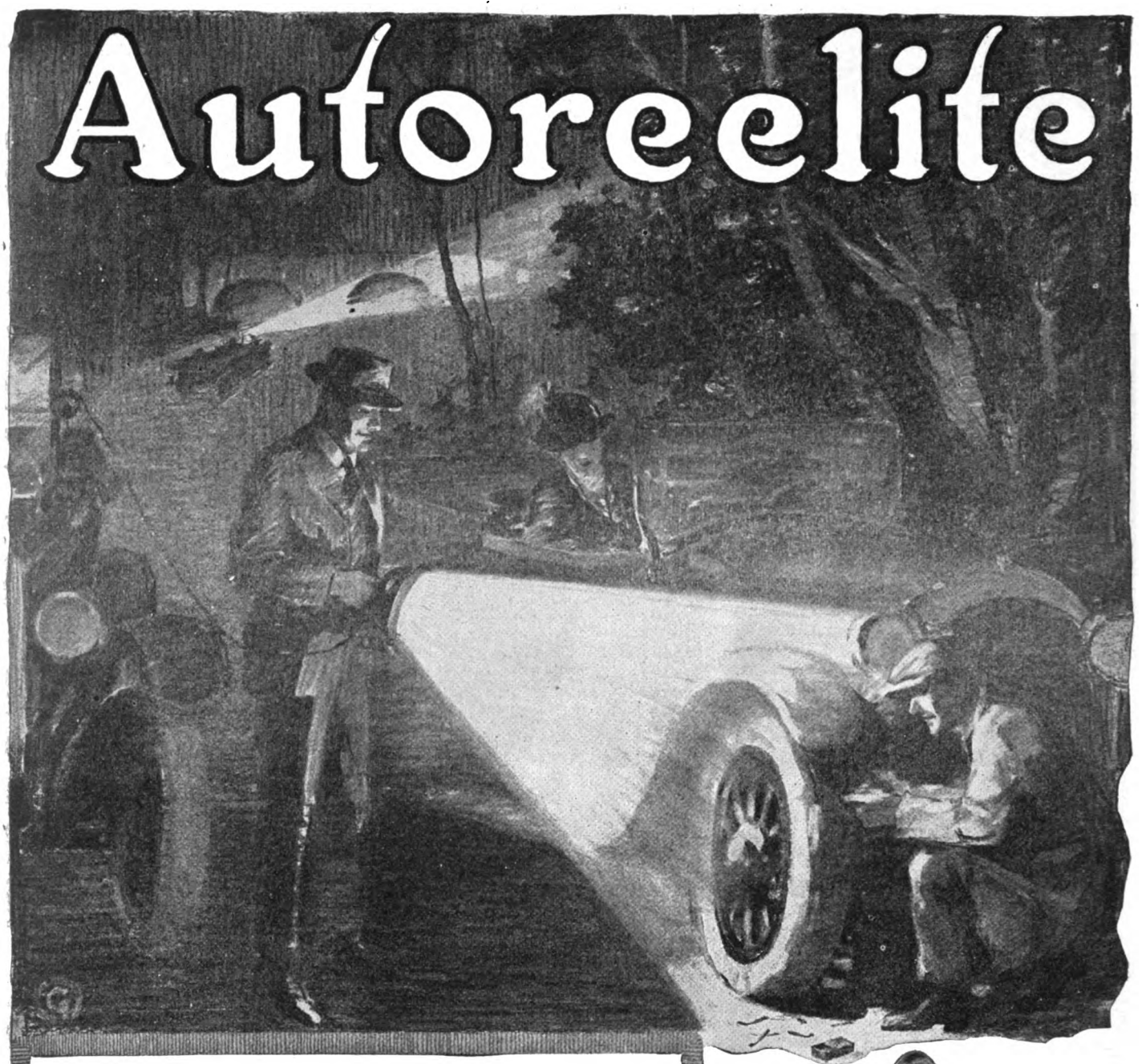
Autoreelite



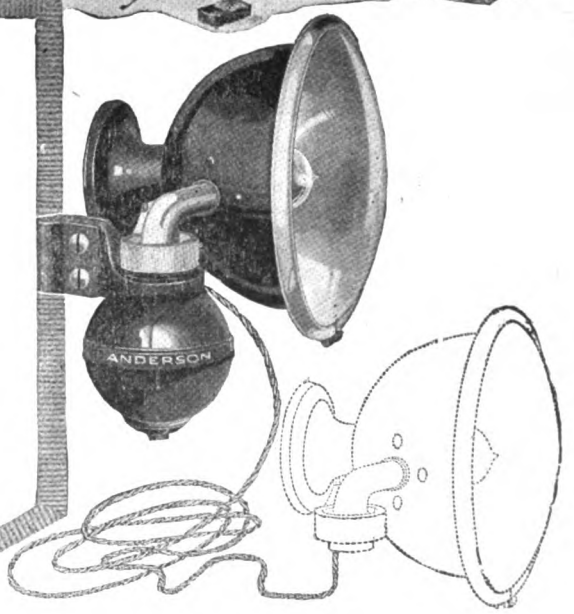
He's Lending His Spotlight!

He's a friend in need to the chap who relies on pocket flashlights or old-fashioned trouble-lamps with loose parts. His car is equipped with Autoreelite.

Autoreelite is a powerful, self-contained "spotlight on a reel." Two twists of the thumb and finger and Autoreelite can be reeled out any distance to 12 feet. Attached to windshield—fits any car.

Priced no higher than ordinary spotlights—seven-inch size, $10. Six-inch size, $9. Other models. Write for full information—ask for Booklet J207.

ANDERSON ELECTRIC SPECIALTY CO.
118-124 South Clinton Street · Chicago, Illinois



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GILL

The Perfect One Piece Piston Ring

"See that joint? That's the reason why I install Gill Piston Rings on my jobs. It's the one piston ring that I consider mechanically perfect."

When you hear a mechanic talk like that you may be sure there is something about the Gill Piston Ring that makes it different from any other. Mr. Dealer, try it out this way. Show a Gill Ring to the best automobile mechanic you know and see if he doesn't endorse what the man in the picture is saying.

One look at the double step interlocking joint shows him that the Gill Ring can expand from 1/8" to 3/16" without any loss of compression. That means it will adjust itself to oversize, worn or out of round cylinders within reasonable limits.

Look into this piston ring proposition for yourself and when you compare the Gill with any other ring on the market you will be convinced like the thousands of other men who handle this ring exclusively.

Send for the new Gill Piston Ring Size Directory, complete, convenient, and full of just the information you need. It is free to the trade.

Dealers—Ask your jobbers about them
Jobbers—Write to us for information

The Gill Manufacturing Company
351 West 59th Street, Chicago, Illinois

Sole Foreign Agents:
AUTOMOTIVE PRODUCTS CORPORATION
Woolworth Building, New York, N. Y.

See the Gill Piston Ring Exhibit at the New York and Chicago Automobile Shows

(When Writing to Advertisers, Please Mention the Accessory and Garage Journal.)

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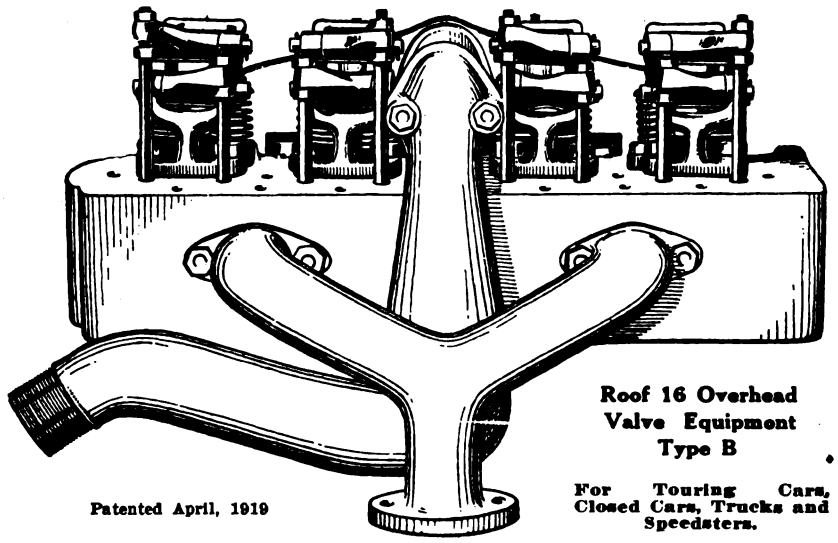
POWER and SPEED ROOF 16 OVERHEAD VALVE EQUIPMENT for FORD MOTORS



Patented April, 1919

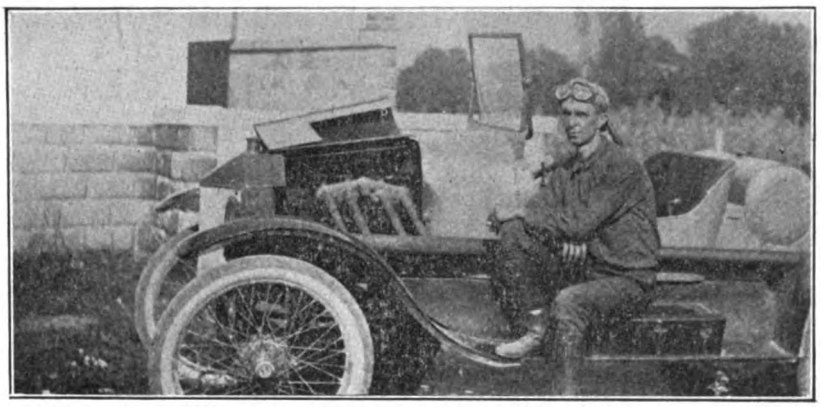
Roof 16 Overhead Valve Equipment Type B

For Touring Cars, Closed Cars, Trucks and Speedsters.

The Most Remarkable Power Device, Even in This Inventive Age

Hill climbing for touring cars—pulling power through sand and mud—doubles the hauling capacity of converted Ford truck-speed for mile and half-mile tracks to rival the fastest cars built. Ford racing cars with our Cylinder Head Equipment and special racing parts have attained speeds from 80 to 100 miles per hour. Hill climbing and pulling power for touring cars, closed cars and trucks. Price, complete, $115.00 f. o. b. factory. Nothing extra to buy. Cylinder head equipment all ready for installation. It takes the place of the regular Ford Cylinder Head. Any mechanic can easily and quickly install it.

Comparison Brake Horse Power Tests at the United States Bureau of Standards gave Standard Ford motor with regulation carburetor 18.7 Horse Power. The same motor with 16 Valve Head and regulation carburetor 22.4 Horse Power. The same motor with 16 Valve Head and Special carburetor 29.7 Horse Power. Recent tests at Bureau of Standards with Type B gave 32 Horse Power. We are Manufacturers and Distributors of speed and other specialties for Ford cars; 3 to 1 gears, high speed camshafts, aluminite, light grey iron pistons, lynite pistons, aluminite connecting rods, racing spark plugs, racing carburetors, roller bearings, counterbalances, wire wheels, multiple speed transmission, high tension magnetos, special oiling system, special worm and gear, steering gear, racing tires, racing bodies, hood and radiator, parts for underslinging chassis. Tell us what you want. We can supply it. Racing quality. Lowest prices. Send for our Complete Literature on how to build fast cars and double the value of your converted Ford Truck and descriptive circular on Speed and other Specialties for Fords.



HOWARD JARVIS
ZIONSVILLE, IND.

and his record breaking Ford equipped with Roof 16 Valve Head. Winner of the 15-mile championship race at Indianapolis State Fair in September. Car has attained a speed of 76 miles per hour.

Ford Racing Car Speed Kings

From the hundreds of fast Ford car drivers we mention the names of a few of those who have won laurels through the use of our equipment and some with speed records approaching that of the highest priced racing cars in the world, ranging from 70 to 97 miles per hour, and who on mile and half-mile tracks have closely approached the world's record with their speed cars:

Loren Darst.....Eureka, Ill.
Haines Bros.....Ft. Benton, Mont.
Ben Lawell.....Columbus, Ohio
W. L. Frazier....Washington, D. C.
Herbert Black....Webster City, Iowa
John Proctor.....Washington, D. C.
Rolly Blair.....Shelby, Neb.
Joseph C. Hayes..San Francisco, Cal.
Paul M. Boozer.....Windber, Penn.
Hugo Goedthe.....Milwaukee, Wis.
W. C. Phalgrafh....Cheyenne, Wyo.
Milner Motor Car Co....Monroe, La.
C. F. Goltry.....Roann, Ind.
Fred Dawson.....Springfield, Ill.
W. C. Norris Motor Car Co.....
.....Oklahoma City, Okla.
Alvin A. Pfeiffer.....Clatonia, Neb.
J. Ross Castendyck.....La Salle, Ill.
Fred Hank.....Cheyenne, Wyo.
L. E. Kerbs.....Otis, Kan.
Phil M. Kepley....New Albany, Ind.
A. Malby.....Daytona, Fla.

Don Husted.....Marshall, Okla.
L. S. Stewart.....Cincinnati, Ohio
Irving Donohoe....Washington. D. C.
Taylor Bros.....Lafayette, Ind.
Robert Cusick.....Cleburne, Texas
Bozanni Bros.....Los Angeles, Cal.
J. Marshall Yeats....Champaign, Ill.
Kirby Horton.....Cleburne, Texas.
N. H. Steele.....Racine, Wis.
John G. Banzhaf..Greenwich, Conn.
Richard O. Fay.....Xenia, Ohio.
R. C. Wheeler....Chattanooga, Tenn.
W. J. Meagher.....Medford, Ore.
Gilbert Sartain.....Tahlequah, Okla.
Bert Wellington.....Casper, Wyo.
N. C. Burdett.....Stuart, Ia.
Perry La Merte....Kalamazoo, Mich.
Albert Willshaw.....
.....Ft. Wadsworth, N. Y.
Willard Brothers..Ponca City, Okla.
Roy A. Tolen.....Carlow, Mo.
W. H. Hooker..Bay Side, L. I., N. Y.

Cliff Duhme.....Cincinnati, Ohio
Brinker & Sheffer..Gibsonburg, Ohio
Roscoe J. Whitney.Leominster, Mass.
Frank Richardson....Segourney, Ia.
Roy A. Scofield....Council Bluffs, Ia.
Rister Garage....New Harmony, Ind.
Dennis Auto Co.....Ottawa, Kan.
Tunica Motor Co.....Tunica, Miss.
Treacy G. Mohney...Harrisburg, Pa.
Speedster Shop.....Los Angeles, Cal.
William Erwin.....Corcoran, Cal.
Packard Engineering Co.....
.....Cleveland, Ohio
Charles N. Davis....Piedmont, Mont.
Antone Bertoglio.....
.....Twin Bridges, Mont.
D. E. Snider.....Middletown, Ohio
Roy M. Barzem.....
.....Thief River Falls, Minn.
Bay View Auto Co.....Cheriton, Va.
A. Jackson.....Bloomington, Ill.

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THE LAUREL MOTORS CORPORATION

ANDERSON, IND.

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Keep the shop busy and make big money with

STORM REBORING MACHINES

Reboring Fordson Cylinders with Storm Standard Reboring Machine.

RIGHT now is the time for every garage man to cash in big on motor rebuilding.

Put a Storm Reboring Machine in your shop now. Do the Cylinder reboring, the most important and the most profitable part of the work, yourself, and make these extra profits.

Storm Reboring Machines are standardized. Made in various capacities to meet your individual requirements. Built for hand or power operation.

Storm Motor Repair Equipment

Cylinder Reboring Machines—
Valve Port Renewing Tools—
Connecting Rod Gauges—
Bearing Tools—
Piston Vises—
Main Bearing Babbitting and Boring Tools.

Storm Tools offer you the best investment you could make to bring MORE JOBS into your shop. They will keep your shop busy all the time.

Write us today for full information.

STORM MFG CO.

Dept. P

Minneapolis, Minnesota.

(When Writing to Advertisers, Please Mention the Accessory and Garage Journal.)

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Cold Weather has no Terrors for the Ford Car Equipped with

MODINE SPIREX RADIATORS for Fords

BITTER, cold, zero weather—when everything is ice and snow—you need not keep your Ford locked in the garage if it's equipped with a SPIREX radiator.

With extra large water channels and a core construction of the strongest metal stock, the water circulates freely and in larger quantities—a great resistance against freezing.

In addition the famous SPIREX Spiral adds to the strength and rigidity of this radiator, making for a greater durability—making a radiator that is practically leak-proof. The SPIREX radiator was the only one that successfully passed the Government tests for war use on the famous five-ton military tractors. It is built to stand the roughest service under all weather conditions.

If a SPIREX radiator safeguards your Ford you can use it as satisfactorily in freezing weather as on a mild summer's day.

Don't risk using your old radiator another day. Ask a dealer for a Ford SPIREX, or write direct to the

MODINE MANUFACTURING COMPANY
Racine, Wisconsin
THE ZINKE CO., General Sales Agents
1323 S. Michigan Ave., Chicago, Ill.

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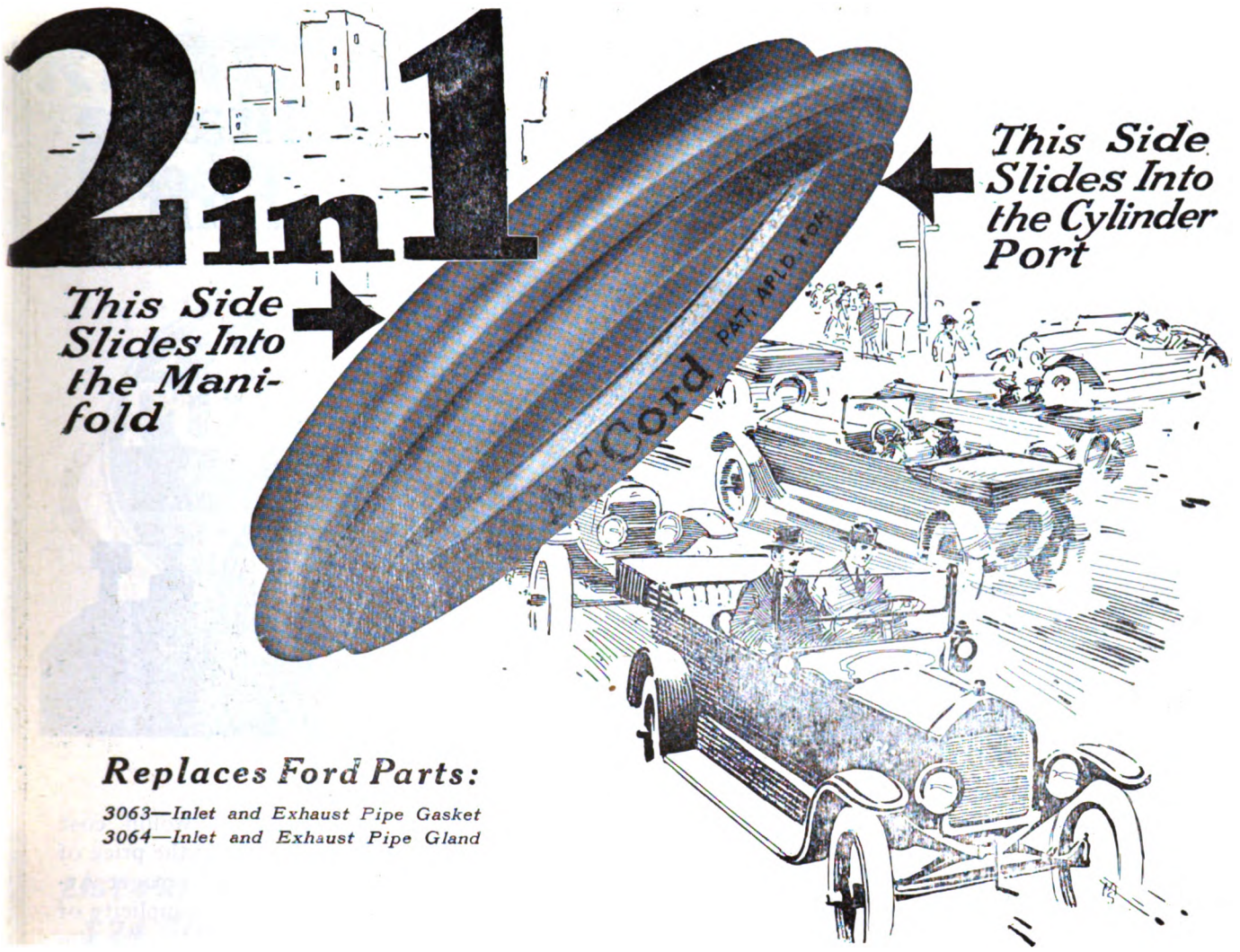

A Gasket and a Guide for Ford Intake and Exhaust Manifolds

The McCord 2 in 1 Manifold Gasket for Ford cars seals the connections between the exhaust manifold and cylinders absolutely tight—saves time and trouble in assembling.

The 2 in 1 is but one of the many various types of McCord Gaskets—Gaskets that prevent loss of oil, gasoline and power—Gaskets that have proven their worth in service during last 20 years.

Order McCord Gaskets Through Your Jobber

McCORD MANUFACTURING CO., Inc.
Detroit, Michigan

Manufacturers also of McCord Automobile Radiators and McCord Force Feed Lubricators

McCord
GASKETS

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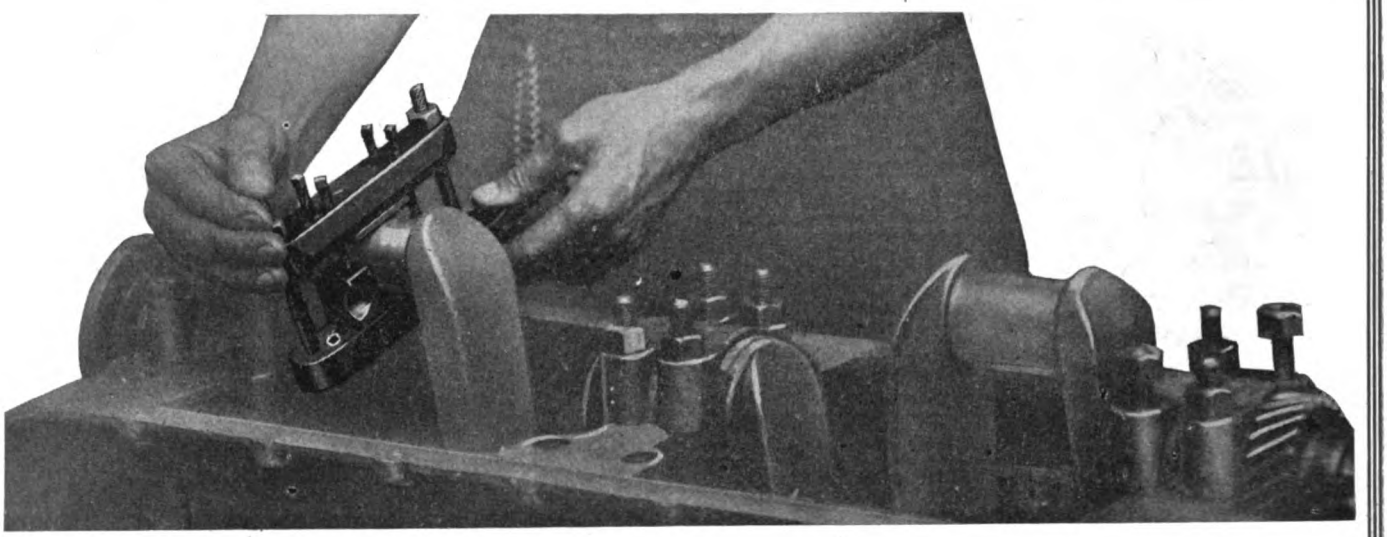
The Quick, Easy and Profitable Way to Grind a Crankshaft



Patented Nov. 11th, 1919.

JUST one job pays the cost of Atlas Abrasive Tool **(Patented Nov. 11, 1919).**

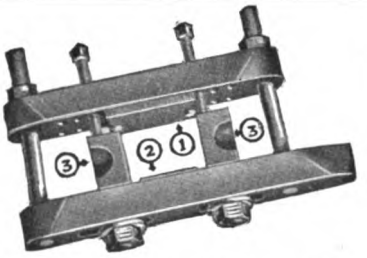
No experience required. The Atlas simplifies crankshaft grinding.

No lathe or other equipment required. Use a vise if you like, but remember that the crankshaft need not be removed from the crankcase.

One hour completes the work on any crankshaft.

No machine shop guarantees greater than two-thousandths of an inch accuracy. With the Atlas you get one-thousandth.

If you need an Atlas but once a year, it accommodates your customer, puts a good profit in your pocket and gives you a reputation for service.



1. *Hardened and tempered steel-cutter. Cuts in one direction only.*

2. *Bronze track bearings. Cannot cut ring in pin like hard steel nor freeze against pin from friction like soft steel.*

3. *Adjustable Abutment Blocks, which slip easily up against the face of the crank pin and hold the cutter and track in their proper working place.*

Price, complete, with cutter, $10, postpaid. Extra cutters (including bronze bearing tracks), good for from 10 to 20 pins or bearings, 30c each.

Another hand tool would cost from five to ten times the price of an Atlas—you would not get Atlas convenience—nor simplicity of its one cutter principle—nor the saving of time in making adjustments.

Adjustable to crank pins and bearings up to 2½ inches diameter for all passenger cars and trucks. Hundreds of garages and repair shops are enthusiastic users of the Atlas Abrasive Tool—it's selling like hot cakes.

A good mechanic would rather part with a $50 bill than with his Atlas, if he would not buy another.

Wire Your Order Today or Use Coupon

USE THIS COUPON

Atlas Mfg. Co.,
720 Canal St., Pittsburgh, Pa.

Please send me one Atlas Abrasive Tool and ..... extra cutters, also complete instructions for its use.

Name.....

Address.....

City.....State.....

ATLAS MANUFACTURING CO.

NORTH CANAL ST. **PITTSBURGH, PA.**

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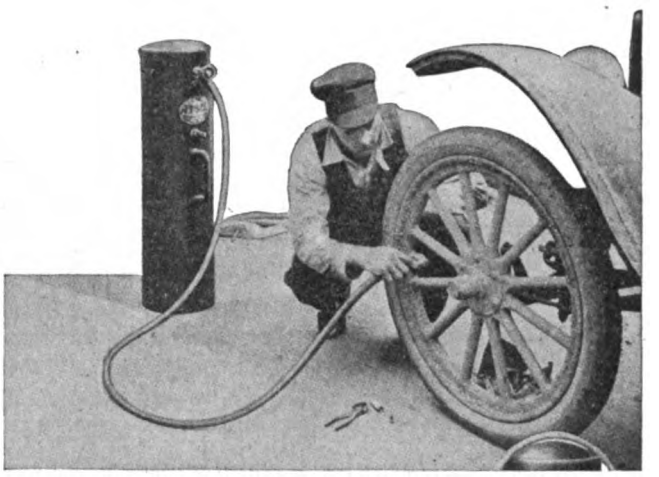
REAL EMERGENCY EQUIPMENT

THE

ATSCO PORTABLE AIR TANK



FOR ROAD OR GARAGE USE

It saves time and it saves labor. Both of these cost you money. Productive labor counts. Turn the valve and the tires are filled to maximun pressure, almost instantly.

LIST PRICE
$24.50
F. o. b. Pittsburgh, Pa.

Estimate what this means to you in your work for a year—and an Atsco tank has a service life of 10 years. Worth saving? Just think it over.

Just throw an Atsco in the car when called upon to do emergency work. With an Atsco there can be no delay. No back breaking pumping. No question about air.

Remember, your customer pays for what you do for him, not how you do it. All the time and labor saved is clear profit.

Atsco tanks are light, easily handled and can be filled by any compressor system. They are 36 inches long and 10 inches diameter, constructed with genuine copper brazed seams and suitable for 250 pounds working pressure or 500 pounds test pressure.

The equipment includes a standard tire filling valve, a protection valve cap for filling at a compressor system connection, and an eight-foot hose, everything that is necessary.

We specialize construction of garage pressure tanks, and have in stock or build to specification tanks of any size or pressure requirements. Our tanks are used by most of the producers of compressor and air storage systems.

These tanks are genuine copper brazed construction and the seams and joints are far stronger than the stock metal. They will not crystallize or crack and are guaranteed air tight.

We make pumps and pressure tanks for all purposes.

Produced only by

AIR TIGHT STEEL TANK COMPANY

OFFICE AND WORKS

PITTSBURGH, PENNSYLVANIA

TANK MAKERS FOR NEARLY THIRTY YEARS

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Try this test with Oro

Filtered Air

TAKE a sheet of clean white paper and hold it before the nozzle of a No. 7 Filtered Air Outfit. Turn on the air and watch the paper. You won't see a particle of oil, dust or dirt collect on the paper! The reason is very simple. The air has been washed thoroughly and is free of oil, dust, dirt and all foreign matter that might possibly injure a tire.

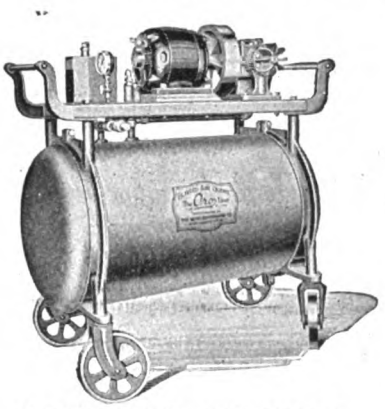
And because motorists appreciate the value of using such air in their tires, the Filtered Air Outfit is a wonderfully profitable investment for you. You attract trade—you hold it. You make it worth while for all classes of motorists to come to your place of business and they will gladly buy from you the things you can supply for their cars.

A Remarkable Outfit

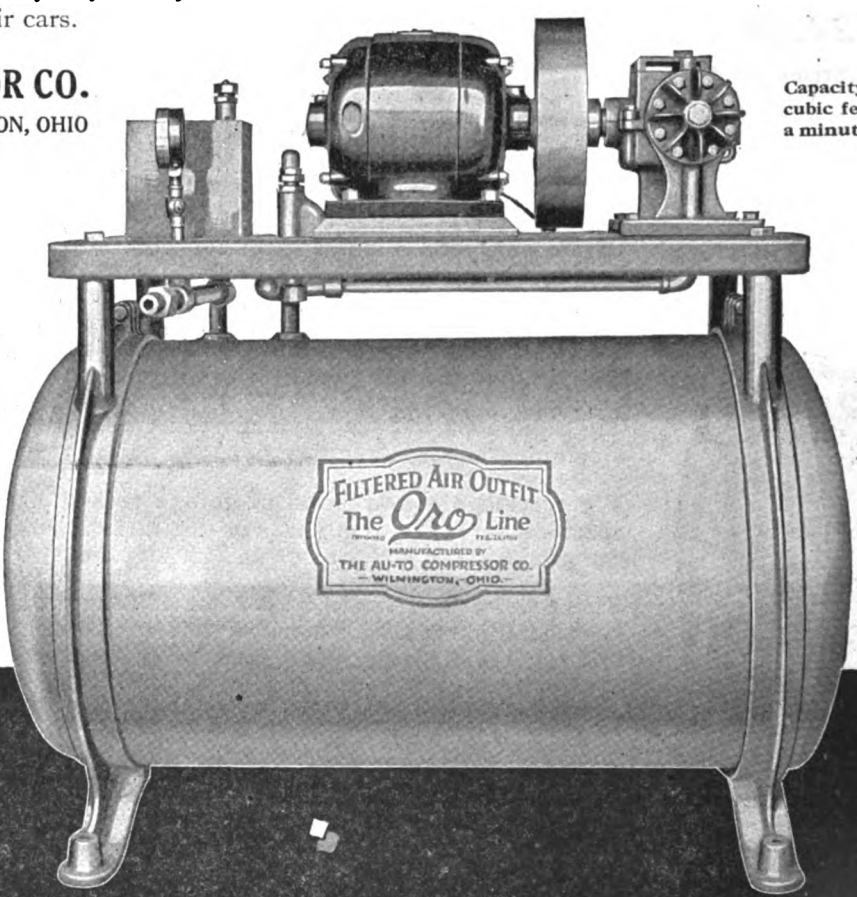
The "Filtered Air" outfit is complete—ready to run. You simply connect it with your electric wiring and it will immediately fill the tank with perfectly clean air, and keep the tank full—day and night. Sufficient pressure for pneumatic truck tires up to 150 lbs. Only 3 moving parts to compressor mechanism, in addition to valves. ½ horse power motor.

Get this splendid machine and watch your business increase! Ask your jobber, or send us his name and we will see that you are supplied quickly.

THE AU-TO COMPRESSOR CO.
303 S. Mulberry Street WILMINGTON, OHIO



Model No. 8 Au-To Air Compressor —same as No. 7, excepting that it has large wheel casters, which make it easy to move from place to place in the shop or garage.



Capacity over 4 cubic feet of air a minute.

a sign like this

brings business.

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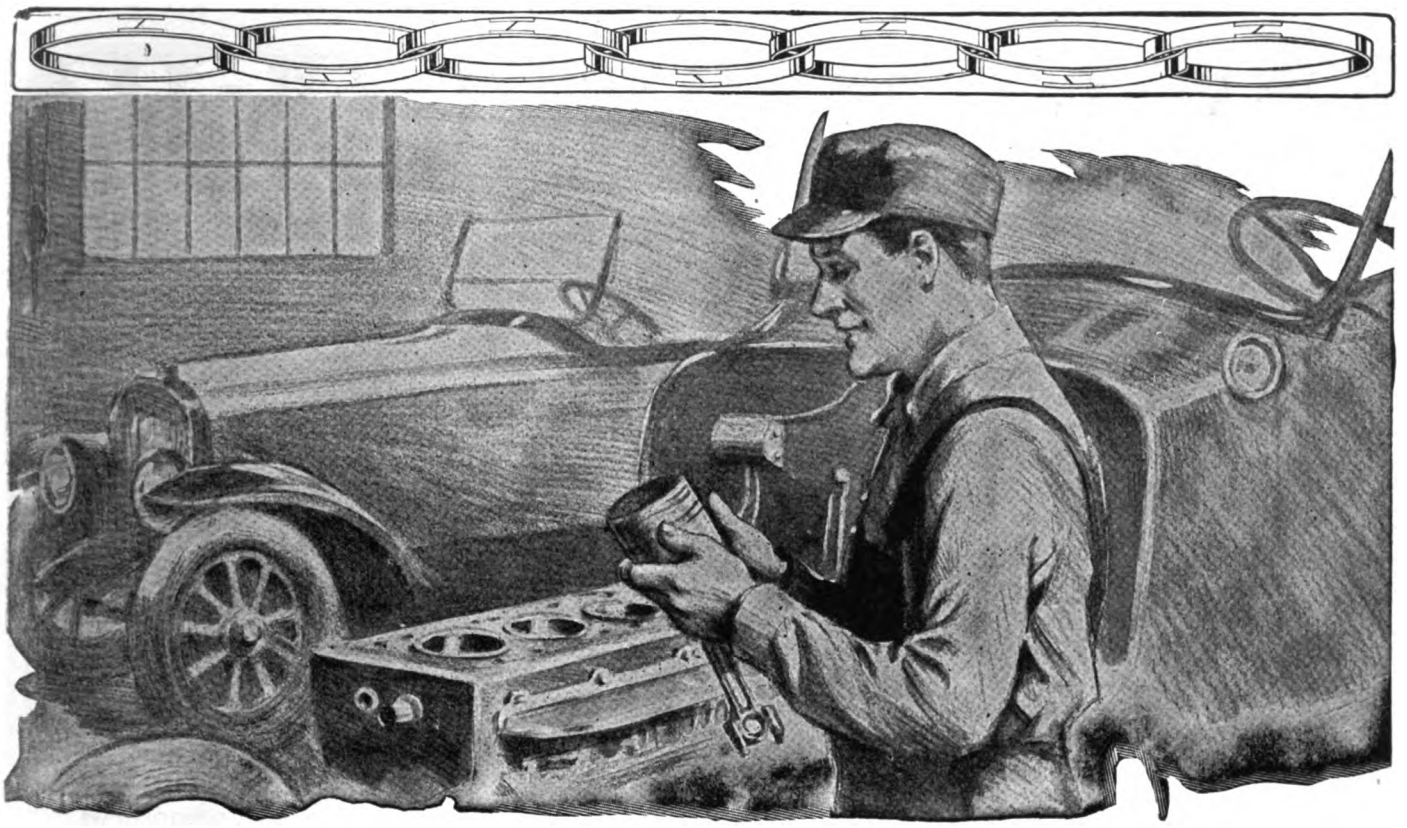

Why Take Chances?

As an expert mechanic—you know that carbon causes 98% of all engine trouble. You know also—that carbon is caused by leaky piston rings—which pump oil into the cylinders, where it does not belong. Lubricating oil does not explode—it burns—and forms carbon deposits. Carbon is an abrasive—like emery. If it is allowed to accumulate—it pits the valves and valve seats, produces abnormal wear of cylinders, pistons, piston rings and all engine bearings—causes faulty ignition, loss of compression and power—waste of gas and oil. In time it ruins the entire motor or makes regrinding and general overhauling absolutely necessary.

Install BURD Piston Rings

Approved by the World's Greatest Automotive Engineers

You can safely recommend BURD High Compression Piston Rings to your customers. They were selected for use in the Aviation Service—by the world's greatest automotive engineers—after the most rigid competitive tests. 16,000 Commissioned American Aviators, 5,000 Canadians and thousands of French and British Aviators learned to fly in planes equipped with BURD Piston Rings during the war, where efficiency was vital—because life was at stake.

BURD Piston Rings are easy to install—fit accurately to .00025 of an inch—are *guaranteed* against flaws and breakage—and warranted to produce higher compression and develop more power with less fuel and lubricating oil than any other piston ring made. The BURD Patented Guard Automatically Compensates for Wear and insures oil tight—gas tight—high compression—freedom from carbon trouble and a clean, economical, highly efficient engine.

Write for 1920 BURD Piston Ring Directory

It gives complete piston ring information, sizes and oversizes for practically every make and model engine for automobiles, trucks, motor boats, tractors, etc., with instructions for installing and scores of helpful hints and suggestions for mechanics.

All Jobbers Carry Complete Stocks—To Fill Rush Orders

Write to our Engineering Department for any information you want regarding special sizes or oversizes. This factory service is at your command—at any time—without charge.

BURD HIGH COMPRESSION RING COMPANY, Rockford, Ill., U. S. A.

America's Foremost Manufacturers of Piston Rings

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ALSOP-ALL-SPARK

This Test Proves

Address Reply to Duplicate to
DIRECTOR OF MILITARY AERONAUTICS
Washington, D. C.

IN REPLY PLEASE QUOTE
FILE NO. _____

WAR DEPARTMENT
OFFICE OF THE DIRECTOR OF MILITARY AERONAUTICS
WASHINGTON
January 18, 1919

From: Engineering Officer, Camp Morrison, Va.

To: Commanding Officer, Air Service Depot.

Subject: Supplemental Report on Test of Alsop Ignition Device.

1. In order to ascertain whether the device would insure ignition through plugs that were carbonized, cracked or rendered inoperative from other causes, one quart of oil above high level was placed in unit #9, the car was run until the motor died and could not be again started. The spark-plugs were then inspected and found to be heavily carbonized.

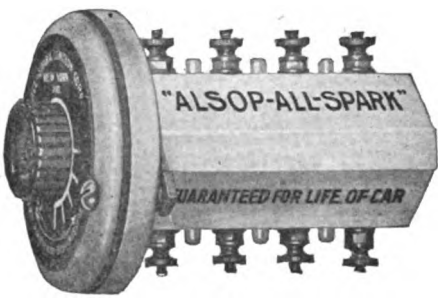
2. The Alsop Device was then attached, and within a short time all plugs were firing perfectly. The plugs were immediately removed and found to be clean - free from oil and carbon.

3. Then the Alsop was removed entirely from the car, motor was started again and ran for about four hours, then due to the excess oil still in crank-case, the plugs again became fouled and motor stopped. The heavily carbonized plugs were examined and replaced without cleaning.

4. The following day, Jan. 20th, the Alsop device was reinstalled with same results as before.

5. Later, a mixture of 50% kerosene and 50% gasoline was placed in the tank, no changes were made in the motor, carburettor or ignition device. The engine started as easily as with straight gasoline, developed greater power and continued to operate as above. No carbon formations were found on the plugs after using up the tank full of the above mixture.

Lloyd A. Taylor
Lieut., A.S.M.A.



THAT our claims are too conservative. What the War Department found to be true about the All-Spark is proven every day — Wherever this wonderful little device is installed owners enthuse over it. They find that it will cause old, cracked, carbonized, and oil soaked plugs to give powerful sparks. It eliminates carbon, saves gas, develops greater power and insures continued driving without misfires.

DEALERS — HERE'S YOUR CHANCE

There's a constant and growing demand for such a device — one that is absolutely guaranteed — one that has no dangerous exposed spark gaps, which may set the car afire, one that does not make a car hard to start or cause uneven timing.

Send $7.50 for 4-cylinder device with money back guarantee.

Dealer discoun s and our catalogue of Convincing Government Tests on request.

DEALERS—AGENTS—SALESMEN—WANTED.

ALLSPARK IGNITION CO. Inc.

13-J WATER STREET, NEW YORK, N. Y.

(When Writing to Advertisers, Please Mention the Accessory and Garage Journal.)

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Here's Good Winter Business-Equip Fords with Dyneto NON-Stallable Starting & Lighting Outfits

Dyneto TRADE MARK REGISTERED

Sell a high grade, dependable Starting and Lighting System—one that is proven to have "big car" quality. Dyneto—a NON-Stallable Starting and Lighting System for $85. (With a good dealer profit.)

The System is complete, with motor-generator, storage battery, battery box, all wiring, switches, brackets, sprockets, etc., etc. Can be easily installed.

It has the same characteristic features as the Dyneto system that has been used continuously since 1913 on America's highest priced light weight car, the Franklin.

Makes Fords NON-Stallable

The big advantage of this system over others is that it makes the engine NON-Stallable. If too sudden application of clutch brings motor to stop, Dyneto instantly takes hold and starts it—**automatically**—**driver** doesn't have to press a button or move a lever.

In emergency, Dyneto is powerful enough to move car out of danger, without the motor.

Liberal Discounts To Live Dealers

Only a limited number of these outfits are available for immediate shipment, and orders will be filled in the order in which they are received. Write for discounts for dealers. Better wire quantity you wish reserved for you.

$85.00

Retail F. O. B. Syracuse

Dealers' Discount

DYNETO ELECTRIC CORPORATION

SYRACUSE, N. Y.

Export Representatives:

BENJAMIN WHITTAKER, Inc.

21 State St., New York, N. Y.

56 Ludgate Hill, London, E. C. 4.

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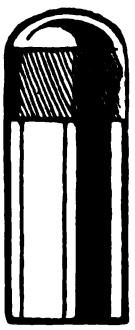
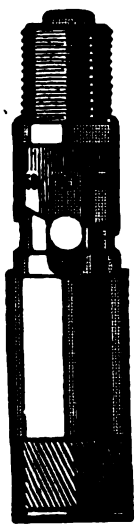
The Whistler

TRADE MARK
"IT WHISTLES WHEN ITS HAD ENOUGH"





Here it is, screw it on. Twice actual size.

would have saved that blowout!

ONE blowout may cost you a big piece of business — may endanger a life — certainly it is most unpleasant.

Why risk it? Nearly all blowouts are caused by overinflation. With Whistlers on your tires you can't overinflate if you set them for the right amount of air. They automatically close when the pressure is just right, saving your tires and helping your car.

The Whistler Pressure Regulator is an automatic tire valve that screws right on over the ordinary valve. It protects and guards your tires from the large losses occasioned by incorrect inflation.

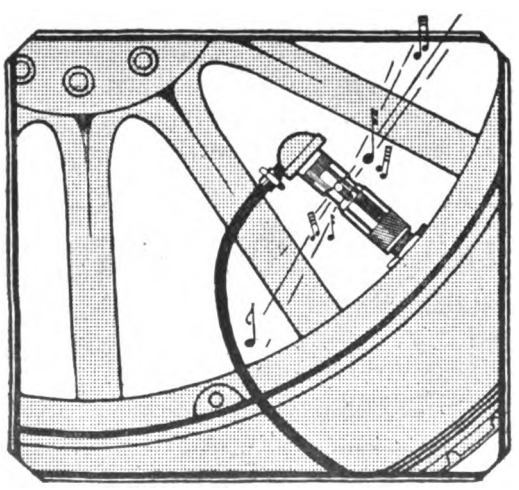
This extraordinary invention has enjoyed a great introduction, both to the consumer and to the trade. At the close of its first year, we feel confident in saying that it has *made good* as one of the steady, consistent sellers. Turnovers are quick and sure—profits generous and selling helps are of the right kind.

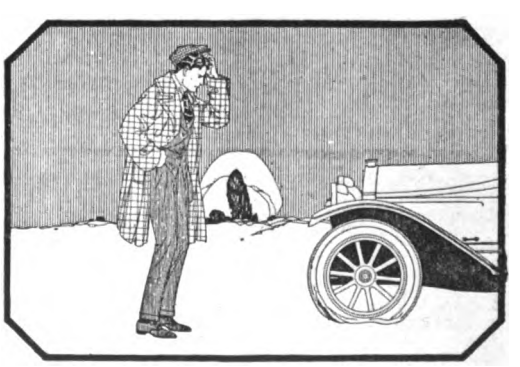
If you haven't stocked the Whistler yet, be sure and do so without delay. Ask your jobber or write us.

We shall exhibit at the New York Show, Grand Central Palace, January 3rd to 10th, 1920.

The Automatic Safety Tire Valve Corporation

1765 Broadway, New York City





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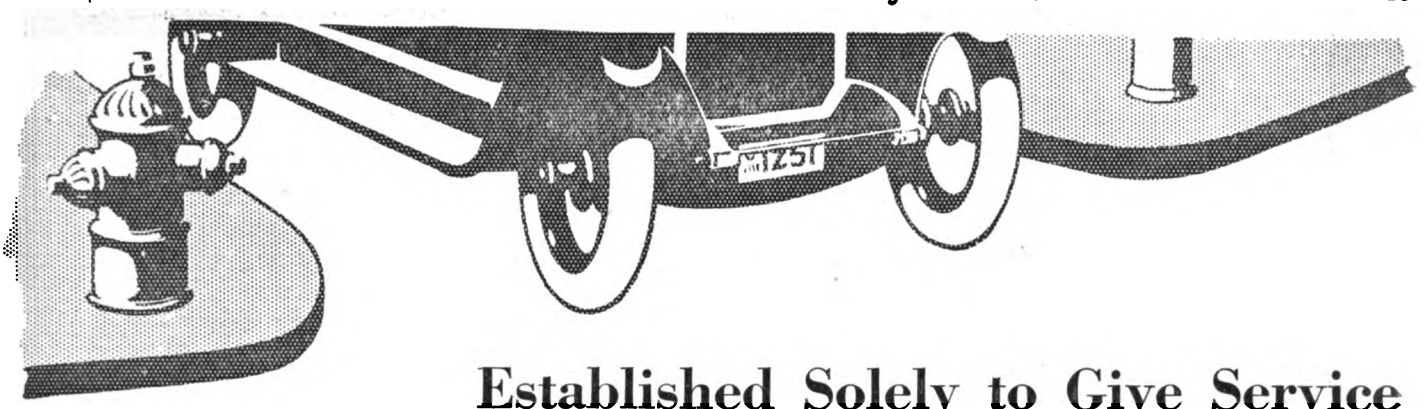

Established Solely to Give Service on Delco, Klaxon and Remy

The Sign of an Authorized Distributor

The United Motors Service Branches listed below—and our Authorized Distributors—were established solely to give expert, official service on the electrical equipment manufactured by The Dayton Engineering Laboratories Co., the Klaxon Co., and the Remy Electric Co.

It is a nation-wide service.

At each of these Branches and Authorized Distributors you will find complete stocks of genuine parts and prompt, efficient service.

Send for Our Latest Organization List Which Will Give You Addresses of Our Authorized Distributors

Branches in the Following Cities

Atlanta *12-14 W. Harris St.*	**Cleveland** *1973 East 61st St.*	**Kansas City** *1416 McGee St.*	**Omaha** *1806 Harney St.*
Boston *19-23 Jersey St.*	**Denver** *1332-38 Acoma St.*	**Los Angeles** *1152 S. Grand Ave.*	**Philadelphia** *242-248 N. Broad St.*
Buffalo *1127-33 Main St.*	**Detroit** *77-83 W. Willis Ave.*	**Minneapolis** *10-12-14 S. 10th St.*	**San Francisco** *Van Ness at Clay*
Chicago *2715-17 Mich. Ave.*	**Indianapolis** *1133 N. Meridian St.*	**New York** *239-241 W. 56th St.*	**Seattle** *1708-10 Broadway*

Toronto
88 Adelaide St., West

MOTORS SERVICE TRADE MARK

UNITED MOTORS SERVICE INCORPORATED

GENERAL OFFICES. DETROIT. MICH.

A BRANCH OR DISTRIBUTOR IN OR NEAR YOUR CITY

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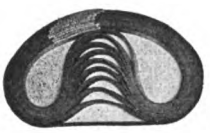
Fan Belt Conditions are Changing



The fan belt business has not been free from the general shake-up. The change in the past year has made 1920 prospects as different from 1919 as from 1918—and no one wants to be two years behind the times.

The 100% fan belt line of 1919 is only the 58% line of 1920. This is because cars are changing, We offered a complete line the past year in our splendid assortment of flat belts.

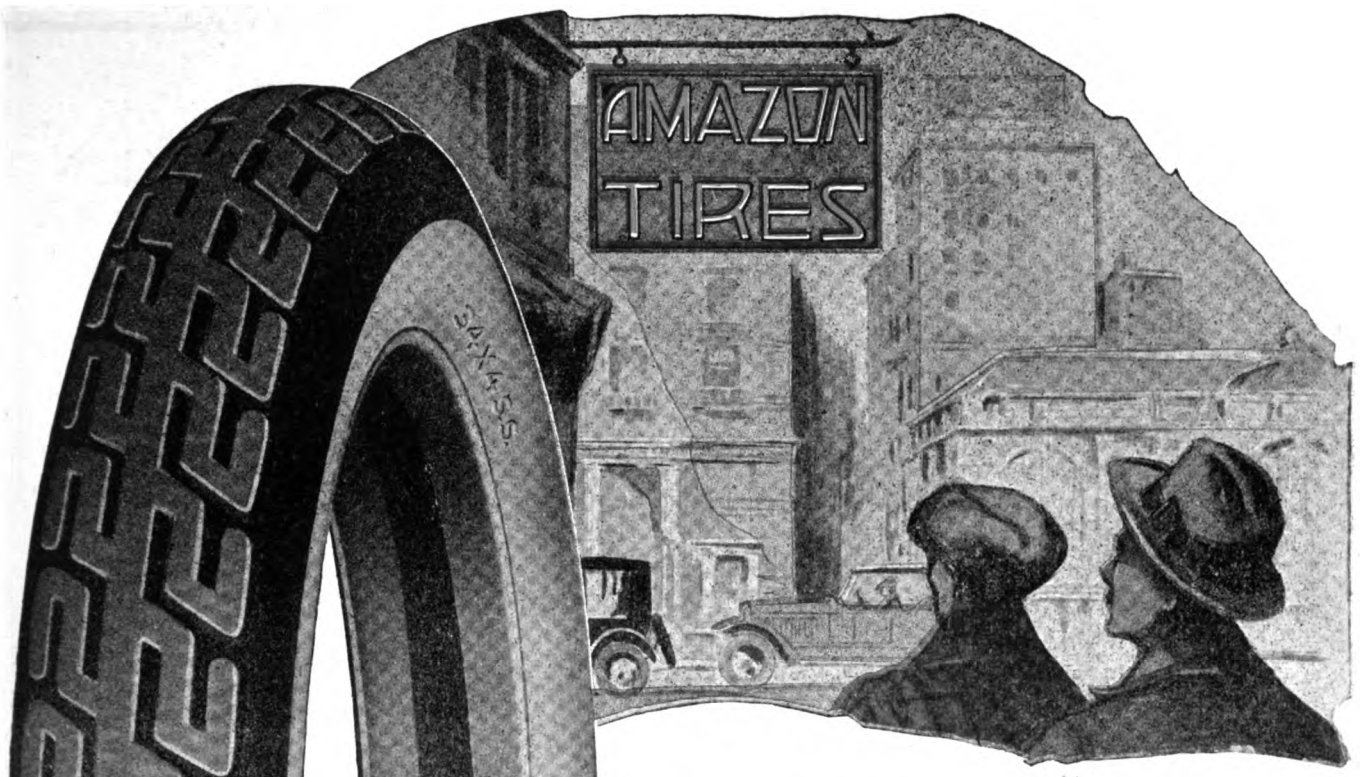
But that's not the complete line now. The 100% dealer must have an assortment of flat belts and solid V-belts, a stock of laminated V belting and flat belting in rolls.

Of course, the Gates Vulco-Cord line is the first to offer a 100% stock. This coupled with the patented features of Vulco-Cord and its popularity, make it still the most desirable and most profitable to handle.

It's just as easy, just as cheap and far more satisfactory to be in a position to handle 100% of the business as to try for only 58%. Tell your jobber it must be Vulco-Cord.

GATES VULCO CORD BELTS
"The Standardized Fan Belt"

MADE BY GATES Rubber Company DENVER



The Amazon Sign Stays

It is a significant fact that—once an Amazon Dealer, always an Amazon Dealer.

The Amazon sign, once placed, stays on the dealer's store season after season, marking the way for Amazon buyers.

This feature of an Amazon sales franchise has become so marked as to cause comment.

Although this record is remarkable, its reason is simple. It lies in the success Amazon dealers enjoy.

Amazon dealers of former years continue as Amazon dealers today because they find the arrangement decidedly profitable.

Every year is a better year for Amazon dealers. They have learned to regard each season's substantial profits as a truthful forerunner of a still more profitable season to follow.

DEALERS: We know of places where there are openings for aggressive Amazon dealers. Write us immediately.

The Amazon Rubber Company
Akron, Ohio.

New York Office: 269 Amsterdam Ave. at 72nd Street

AMAZON

GUARANTEED SATISFACTORY MILEAGE

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BRUNNER

THE same foresight that urges a man to "lay aside something for a rainy day" inspired our engineers to build a surplus of strength, endurance and dependability into the entire Brunner line of garage air compressors, to meet the unexpected emergency that comes sooner or later.

It is that occasional demand for hour after hour work to keep up the needed pressure during the rush season or for an exceptional number of large truck tires, that proves the value of that surplus capacity and durability.

The ability to do this whenever necessary, without breakdown delay or attention has won the enviable reputation held by Brunner Air Compressors.

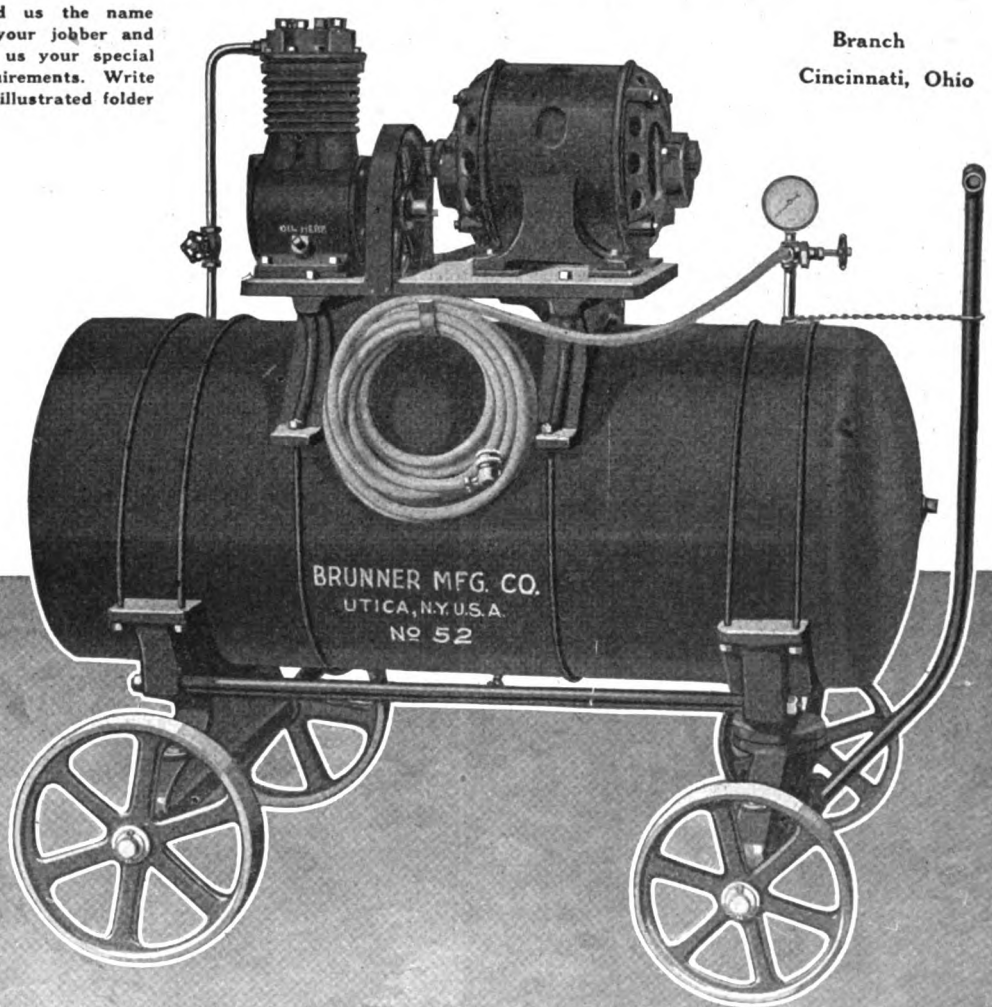
Performance records prove the value of the skill and foresight of Brunner engineers to the owner of Brunner equipment.

BRUNNER MANUFACTURING COMPANY

Main office and plant, Utica, N. Y.

Send us the name of your jobber and tell us your special requirements. Write for illustrated folder

Branch
Cincinnati, Ohio



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DUFF GENUINE BARRETT JACKS

Released from the Nation's Service

During the recent world crisis, priority had to be granted by the Duff Manufacturing Co. to all orders that involved the war needs of our country and its allies.

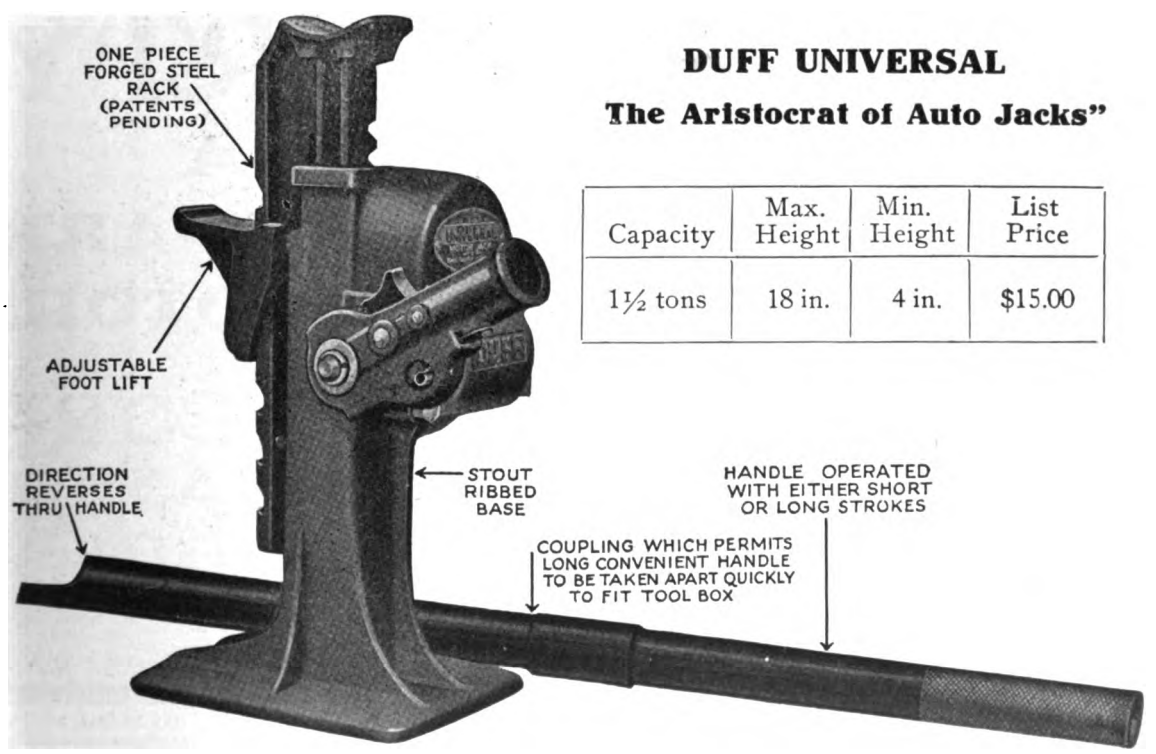
The pressure of production at our shops became terrific. It was impossible to fill many orders for passenger car and motor truck jacks.

Fortunately, this condition is now a thing of the past. Production facilities have been increased and the Duff Manufacturing Co. is again in a position to afford its dealers and jobbers the service to which it owed its supremacy as the largest manufacturer of jacks in the world.

Write for information regarding the Duff line of jacks for passenger cars, trucks and garages.

THE DUFF MANUFACTURING COMPANY
PITTSBURGH, PA.

New York **Chicago** **Atlanta** **San Francisco**



DUFF UNIVERSAL

The Aristocrat of Auto Jacks"

Capacity	Max. Height	Min. Height	List Price
1½ tons	18 in.	4 in.	$15.00

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BERTY

K THE DOME TOP PLUGS

OR
OT
E
TIBLE

ALL SIZES -
ONE PRICE -
$1-50

A LIBERTY
MEANS A
PERFECT SPARK
FOR ANY MOTOR

The FEDERAL CORP.
WESTFIELD, MASS.

SYCO
PRODUCTS

JUMBO
SPARK PLUGS

(Writing to Advertisers, Please Mention the Accessory and Garage Journal.)

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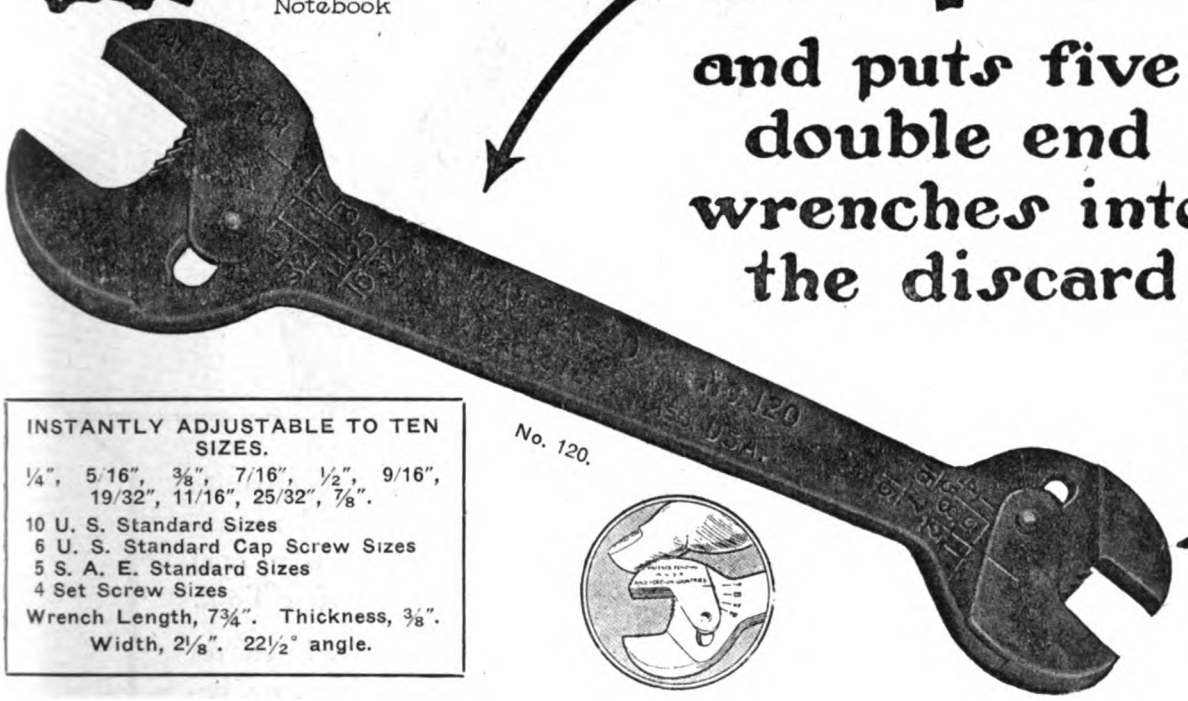
We thought we had a wrench that would fit any nut. We didn't-and couldn't borrow one. We had to drive with a loose bolt. The part broke. We wasted time and much effort. Had to wait by the roadside for hours until the repairer made the replacement. NOW WE HAVE A WIZARD.

From a Motorist's Notebook

Saves Time and Temper

and puts five double end wrenches into the discard



No Knurl Adjustment
No Back Lash

Patents pending in U. S. and Foreign Countries.

INSTANTLY ADJUSTABLE TO TEN SIZES.

¼", 5/16", ⅜", 7/16", ½", 9/16", 19/32", 11/16", 25/32", ⅞".

10 U. S. Standard Sizes
6 U. S. Standard Cap Screw Sizes
5 S. A. E. Standard Sizes
4 Set Screw Sizes

Wrench Length, 7¾". Thickness, ⅜". Width, 2⅛". 22½° angle.

The value of any tool aside from its quality lies in its utility.

The Wizard Wrench is a ten size wrench all in one and the Wizard is a Wakefield product which is a guarantee of the highest quality.

To use—simply lift jaw, slide to size and drop into mesh. It is the simplest and most practical tool in use ever devised for car or truck owner and repairer.

No better designed or made wrenches have ever been produced than the famous Wakefield quality line. They are known wherever cars, trucks, bicycles or motorcycles are used.

Thirty years of service tests have but added to their reputation.

The Wizard is made of specially treated carbon steel. It has the correct balance, and made to last long in the hardest service.

Price $1.50 each. Each wrench thoroughly greased and packed in individual carton.

JOBBERS AND DEALERS: In the Wizard Wrench we again are able to offer you a tool that is wholly in keeping with all Wakefield products. A necessary utility wrench that through sheer merit will bring business to you. Our proposition and discounts at request.

WAKEFIELD WIZARD WRENCH

ADJUSTABLE OPEN END

C. E. WAKEFIELD WRENCH MANUFACTURERS FOR OVER THIRTY YEARS **WORCESTER, MASS., U. S. A.**

(When Writing to Advertisers, Please Mention the Accessory and Garage Journal.)

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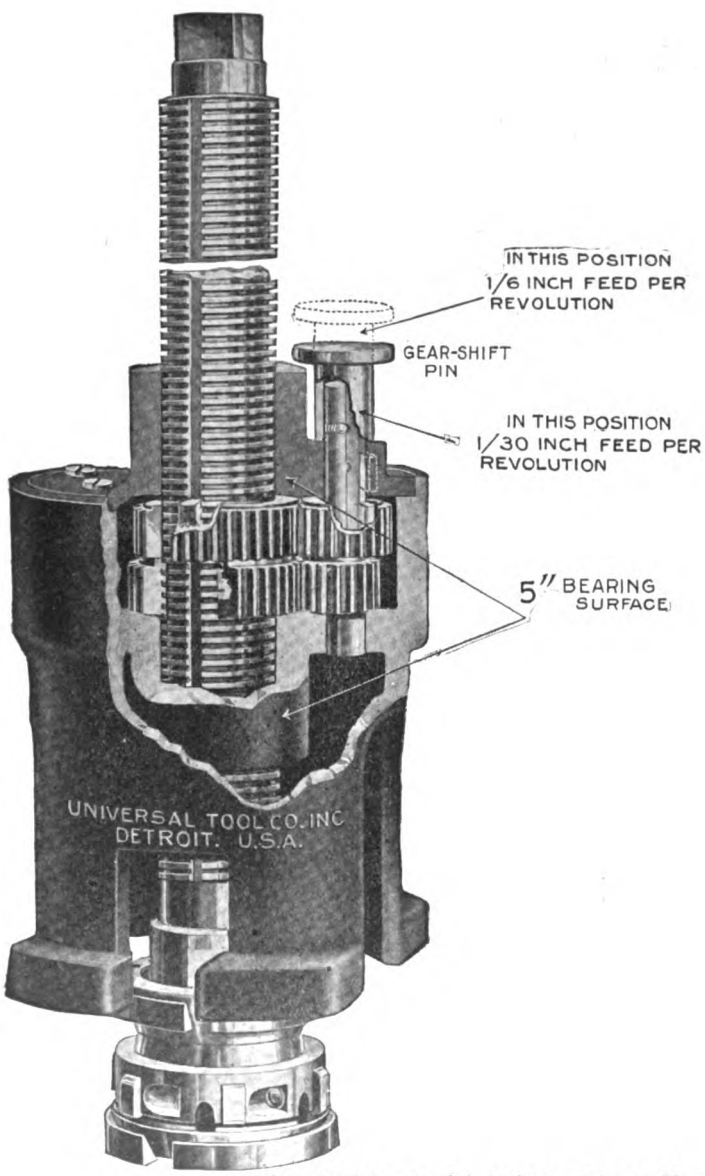
The OK that counts

—on the UNIVERSAL Cylinder Reboring Tool



The following companies use, endorse and recommend The Universal Cylinder Reboring Tool.

The Okeh we have received from them, we believe, is the Okeh which *counts.*

Chalmers Motor Car Co.
Dodge Brothers
Gramm-Bernstein Motor Truck Company
Gray Motor Car Co.
Hudson Motor Car Co.
Essex Motors
Indiana Truck Corp.
Mitchell Motors Company, Inc.
The Nash Motors Company
Oakland Motor Car Co.
Paige-Detroit Motor Car Co.
Republic Motor Truck Co., Inc.
Service Motor Truck Co.
Willys-Overland, Inc.

The Universal Tool Co., Inc.
435 Woodward Ave. Detroit, Mich.

Manufacturers of Universal Cylinder Reboring Tools and Main Bearing Replacement Equipment for Fords and Fordsons

TRADE MARK UTCO REGISTER PENDING

UTCO PRODUCTS

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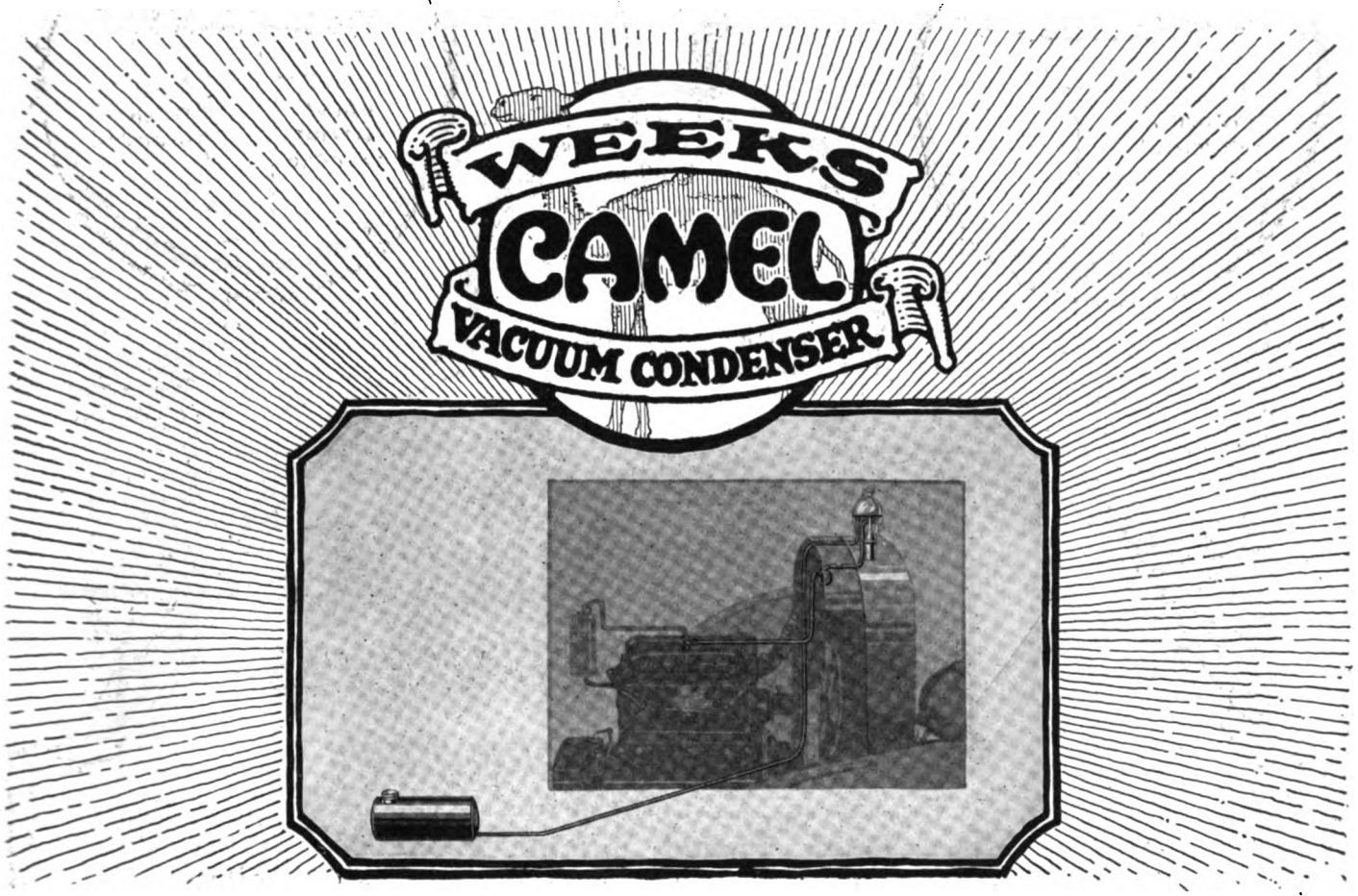
Five Thousand Miles—

On One Filling of Your Radiator

No Freezing
No Motor Troubles

Saves Money,
Time and Worry



The Weeks Camel Vacuum Condenser is the most efficient motor device on the market in helping motorists to enjoy the **full pleasure** of motor car driving. It is a simple little appliance which consists only of a tank which is permanently installed **in the motor** car, and which is connected to the overflow tube of the radiator; a vacuum valve which is installed in the top of **the radiator** connected to the intake manifold.

Water that is ordinarily lost by evaporation and overboiling through the overflow pipe is retained by the Weeks Camel Vacuum **Condenser** in the tank, and by the automatic action of the vacuum valve is sucked into the radiator, when, as and if needed.

Overheating, a common cause of motor troubles and big **repair bills**, is thus entirely eliminated, and the motor car can **be driven** for twenty weeks without a refilling of the radiator **being necessary.**

In the winter time this device renders a very material service **in that one filling** of anti-freeze solution is sufficient for an **entire season.** This effects a saving in an amount in most instances greater than the first cost of the device. This is a statement worthy of notice, when you consider motor cars require from five to fifteen gallons of anti-freeze solution at $1 a gallon and more.

Additional benefits derived are decarbonizing, gas saving and prevention of rust and encrustation in the radiator.

TO DISTRIBUTORS.

We are looking for responsible distributors in certain territories of the country to handle this efficient motor car device, and are ready to back them up to the limit with an intensive advertising campaign.

TO JOBBERS AND DEALERS.

Jobbers and Dealers are requested to write in for our proposition immediately.

WEEKS MANUFACTURING COMPANY

First National Bank Bldg., Chicago, U. S. A.

(When Writing to Advertisers, Please Mention the Accessory and Garage Journal.)

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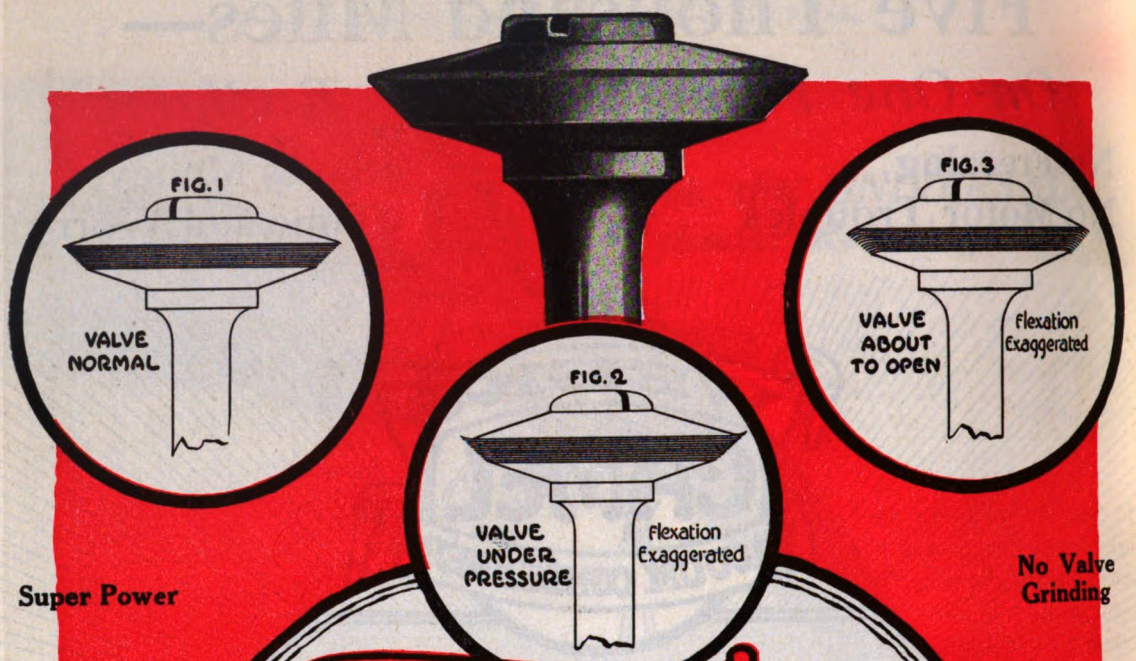

Super Power

No Valve Grinding

Flexedge

SELF-SEATING LAMINATED VALVES

Sensible-Logical-Inevitable

A Valve-Seat Carbon Remover at Work While You Drive

5000 Dealers Have Tested Sample Flexedge Valves and Pronounced Them the Answer to the Carbon Problem

Immediately following the announcement of FLEXEDGE VALVES, we were flooded with orders for sample sets for test purposes. As a result, dealers and car owners all over the country have written to us stating that FLEXEDGE VALVES positively eliminate valve grinding and produce exceptional power and efficiency of motor operation. Naturally after our own preliminary testing we expected that a big demand would be forthcoming. Consequently we were prepared, and today we are filling orders from dealers in almost every hamlet and metropolis in the Nation.

FLEXEDGE CONSTRUCTION PREVENTS CARBON DEPOSITS

The FLEXEDGE principle is merely a slight flexation, which is so small as to measure only a tiny fraction of a thousandth of an inch, yet sufficient to gently scrape the valve seat, removing the tiny flecks of carbon, which collect after each explosion. FLEXEDGE SELF-SEATING VALVES continuously grind themselves, always seat. They are installed just like all other valves.

FLEXEDGE JOBBERS.

CHANSLOR & LYON CO., San Francisco, Seattle, Los Angeles, Tacoma, Spokane, San Diego, Portland.
THE BECKLEY-RALSTON CO., New York, Detroit, Chicago, Kansas City, Pittsburgh, San Francisco.
HERRING MOTOR CO., Des Moines, Iowa.
THE GIBSON CO., Indianapolis, Ind.
MOTOR & MACHINISTS SUPPLY CO., Kansas City, Mo.
REINHARD BROS., INC., Minneapolis, Minn.
MOTOR CAR SUPPLY CO., 1451-5 Michigan Ave., Chicago, Ill.
J. D. GRANT CO., Fargo, N. D.
CHICAGO AUTO. SUPPLY HOUSE, 1349-53 Michigan Ave., Chicago Ill.
NICOLS, DEAN & GREGG, St. Paul, Minn.
REPASS AUTOMOBILE CO., Waterloo, Iowa.
WESTERN MOTOR SUPPLY CO., Milwaukee, Wis.

Send for a Test Pair Today

SELF-SEATING VALVE CO., 706-8 Townsend St. CHICAGO, ILL.

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How many dealers have the vision

In every city or town there usually is one dealer with the vision and foresight to grasp a ***real*** opportunity—to see a profitable business built upon merit, service and performance. To these gentlemen, we offer exclusive territory and an attractive proposition.

The demand for MADISON TIRES is based upon proven superiority. They are hand-built in a 4-acre plant. We use more rubber, a higher grade of rubber, and the finest Sea Island fabrics: utmost care is observed during every process of construction: each MADISON undergoes a triple test. The result is a tire far above the average.

We have been in the rubber business since 1880. The superintendent, 15 years in charge of one of the largest tire plants. The laboratory chief is an authority on rubber products—a splendid organization ready to render 100% co-operation to MADISON dealers.

Will you join us?

Madison Tires

SUPERB ENDURANCE

We Suggest That You Write Us To-day!

MADISON TIRE & RUBBER CO., Inc.
254 West 57th Street. New York

NOT CHEAP BUT BETTER

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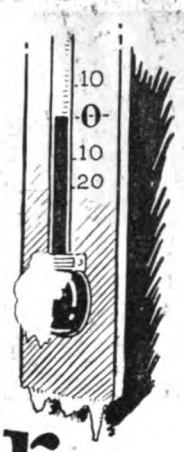
In Zero Weather Remember The COPLEY PRIMER



THE COLDER THE WEATHER THE BETTER THE COPLEY SELLS

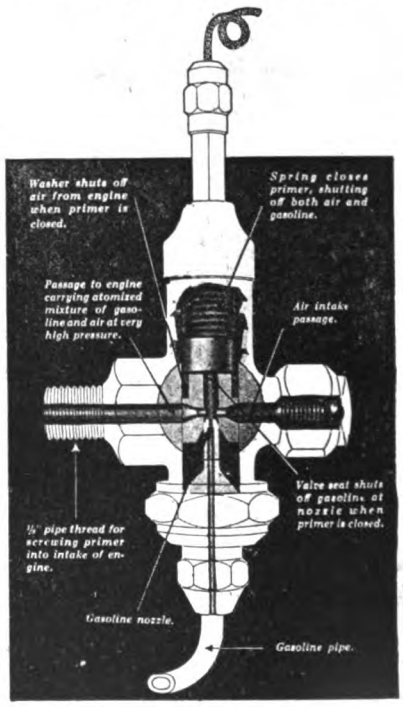
When you see a car or truck with a dead engine in a cold garage or on the road you can always count one more certain buyer of a Copley primer.

Burning up the batteries and back breaking cranking will not help. Cold weather and a poor grade of gasoline can beat any combination EXCEPT a Copley Primer.

WITH A COPLEY PRIMER ANY ENGINE CAN BE STARTED INSTANTLY IN ANY WEATHER AND WITH ANY GRADE OF GASOLINE.

The cost is small and the utility and service constant and positive. The Copley is easy to attach, requires no attention and affords results that make it a real car necessity.

Every Copley user is a booster. Every sale brings new customers. It is a business builder and a money maker for all dealers. It is easily the record selling item of the year.



Standard Equipment on Mitchell and Templar Cars

With a low grade of gasoline, it is almost impossible to start a motor in a cold garage on a winter morning or an engine when left standing long in the open. The present gasoline will not evaporate in cold air and there is no carburetor designed that will vaporize it.

When Copley equipped, the motor is turned over, either by hand-crank or starter, the suction of the engine draws a stream of air at high velocity through a small venturi tube, where it picks up a quantity of gasoline from a special nozzle. This mixture is converted into a rich, thoroughly atomized gas, which ignites in the cylinders as readily as the mixture in a warm motor.

Unlike other primers, the Copley Primer does not merely inject a small quantity of raw gasoline into the manifold. It not only fires the first cylinder that gets the charge, but is CONTINUOUS IN ACTION as long as it is held open, and will even run the motor without the help of the carburetor.

Write at once for our proposition.

List Price $6.00, including war tax.

BAY STATE PUMP COMPANY

BOSTON, 564 East First St. MASS.

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GUARANTY Motor Repair Arm

(Pat. No. 1,289,100, December 31, 1918)
Note the date.

"Scientifically made in Rights and Lefts, extended prongs providing greatest bearing surface and strength reinforcement. Saves time and expense. A wrench and a few minutes make a permanent repair. Loosen 6 bolts, tighten nuts, don't disturb motor."

Price $1.50

GUARANTY SPARK INTENSIFIER

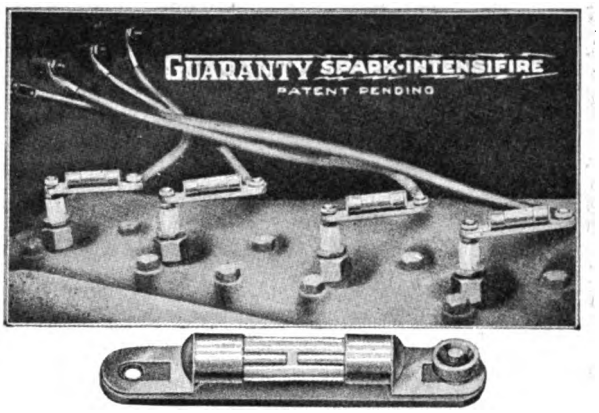
WHICH EXPLODES ALL GAS IN EACH CYLINDER AND MAKES THE PLUG FIRE EVEN IF DEFECTIVE AND CYLINDER THROWS OIL BY JUMPING THE SPARK, MAKING IT HOTTER AND ABSOLUTELY EVEN.

(The Jump-Spark is the most powerful electricity knows.)

GREATLY ADDS TO MILEAGE, MOTOR POWER, SPARK PLUG LIFE AND EFFICIENCY.

Easy starting—Prevents Carbon—No free gas to accumulate in cylinders or throw off through exhaust—Instantly locates source of trouble in case of broken wire, defective coil or timer. Pure Mica enclosed, eliminating all possibility of hazard. Of great value to all autos and trucks, whether Battery, Generator or Magneto.

Box of 4, $2.50. Box of 6, $3.75. Single, 75c.



Guaranty-Pliable-Drive and Extended Frame on Ford Truck

GUARANTY PLIABLE DRIVE

AND EXTENDED FRAMES

FOR FORD WORM-DRIVE TRUCKS

REMOVES ALL LIMITATIONS

$175

ALL MODELS

LOADING SPACE UP TO 10 FEET.
CARRYING CAPACITY UP TO 12 TONS.

Without new propellor shaft, universals and ball bearings

$100

ALL MODELS

Special Radius Rod, Hangers included in each equipment.

GUARANTY MOTORS CO.

436-438 Massachusetts Avenue,
Cambridge, Mass.

Manufacturers of the well known GUARANTY LINE.

GUARANTY Internal Gear Drive Units for converting pleasure cars into Trucks. GUARANTY Power Hoists, Pliable-Drive and Extended Frames for Ford Worm-Drive Trucks, Repair Arms, Etc.

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AUTOMOTIVE MOSCO EQUIPMENT

FRONT APRON FOR FORD CARS

For 1917-18-19-20 Models Only.

This apron makes a wonderful improvement in the appearance of the Ford Car, and for that reason alone is worth the cost, but it does more than that.

IT PREVENTS MUD FROM CLOGGING RADIATOR.

ITS SHAPE INDUCES A LARGER VOLUME OF AIR TO PASS THROUGH RADIATOR AND REDUCES RISK OF OVERHEATING.

IT KEEPS LAMPS CLEAN.

IT PREVENTS VIBRATION OF MUD GUARDS.

Made of heavy steel, finished with two coats black enamel and baked. Furnished complete with bolts, nuts and washers. Easy to attach.

PRICE, $6.50 EACH. $7.50 WEST OF MISSISSIPPI RIVER.

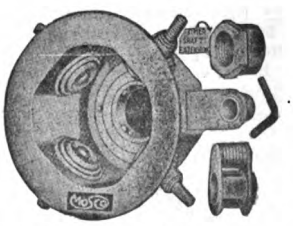
IMPROVED BEMUS BALL CONTACT TIMER FOR FORD CAR.

Is the IDEAL TIMER for the Ford high speed, short stroke engine, because form of contact is the only one which is correct both electrically and mechanically. Is made of a hardened tool-steel brush coming in contact with steel balls, are kept in proper position by means of a spring with plug on the end pressing against them. The impact of the brush causes the balls to turn so that a fresh surface is presented for each contact.

The brush comes in contact only with the four balls, touching no fiber or insulation. The balls are so located that each has a track of its own on the brush, insuring a maximum amount of wear.

MOUNTING is direct on the time shaft by means of an extension piece which is screw threaded on to shaft and runs in ball-bearing placed in recess of Timer's shell. RESULT—absolute precision of timing. Easier starting, smoother running, longer life and saves coil points.

EASIER STARTING—The chief cause of starting trouble in the Ford car is the presence of a body of hardened oil on the flat contact segments of the ordinary type timer. In the BEMUS the use of balls for contacts eliminates this source of trouble, as but little oil is used and the balls cannot retain more than the slightest film on their surfaces. Made of heavy nickel plated.



PRICE, $3.00.

MOSCO NO. 200 TIMER FOR FORD CAR.

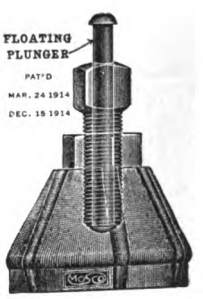
Case is made of extra heavy pressed steel, finished in aluminum. Gray bone fiber raceway, with steel inserts dovetailed in. The threaded terminals are insulated by fiber washers through to contact points, thus removing cause of short circuiting.

PRICE, $1.50.

MOSCO FLOATING PLUNGER WHEEL PULLER.

Starts a "Frozen" or "Stuck" wheel instantly. Strike the plunger, turn the screw, strike again and the wheel comes off without injury to hub threads, spokes or axle.

Made for 200 models of 45 popular makes of cars.



MOTOR SPECIALTIES CO.

MANUFACTURERS

WALTHAM ***MASSACHUSETTS***

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AUTOMOTIVE MOSCO EQUIPMENT

BEAMOLITE SPOTLIGHT

The spotlight that sells at sight. Distinctive and an ornament on any car. Made for owners who seek the greatest utility and service.

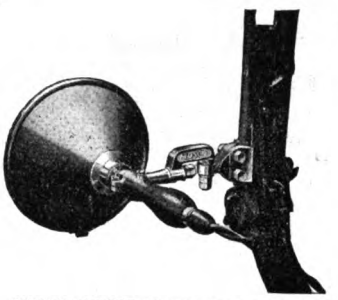
The bracket is of Universal type, made from non-rusting metal, heavily nickel plated and so designed and made that it "stays put" in any position.

The reflector is made of brass, silver plated, on nickel, and highly finished. It affords maximum lighting effect, and can be thrown in any direction (even backward).

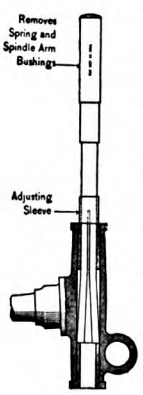
The focussing adjustment is simple and positive. The switch is of the lasting and practical type, and operated by a turn of the handle. The switch being placed inside of the handle, cannot be effected by water, dirt or weather.

It can be easily and quickly removed from the bracket when there is need of a trouble lamp. The bulb can be quickly replaced by removing the rim screw.

The Beamolite is custom made, quality equipment. Strongly constructed, giving a powerful light and so refined in appearance that it lends dignity to any car.



PRICE WITH 12 FT. HEAVY DUPLEX CLOTH COVERED CABLE, $15.00.



MOSCO JIFFY BUSHING REMOVER.

For Ford, Dodge, Dort, Chevrolet, Saxon, Overland and all Cars, Trucks and Tractors having ½" spindle bolt.

Made of steel, case hardened.
Indispensable to repairman and owner who does his own work.
Pays for itself in a few minutes.
The only tool now in use that will remove steering knuckle, spindle arm and spring bushings.

Price, $1.50.

"TUWAY" COMBINATION DASH LAMP AND PLUG SOCKET.

The "TUWAY" dash lamp affords a combination of refinement and utility. Its pleasing design makes it an ornament to any car, and the added advantage of giving a greater distribution of light from the same candle power bulb than any other lamp made. In addition it has the exclusive feature of a socket into which to plug trouble lamp, cigar lighter, etc., without interfering with the light of dash lamp.

The Tuway is made of brass heavily nickel plated and comes complete with bulb and all necessary screws, bolts and nuts for attaching to either wood or metal dash. This is a superior quality item, a sure seller and much in demand.

PRICE, $2.50 EACH.

ELECTRICAL FITTINGS AND EQUIPMENT.

In the manufacture of "Mosco" Sockets the tubing is swedged on. This eliminates all chance of the plug turning in the socket —a most common cause of trouble when ordinary methods are used. Our inspection and testing in the course of production insures perfect goods and the correct shipments made.

All "Mosco" electrical fittings are guaranteed not to "short circuit" or deteriorate in use of current up to twenty amperes and to afford every satisfaction in use for which they are made. With modern machinery and all time and labor saving equipment "Mosco" fittings are turned out in great volume and insures prompt service and delivery.

(Write today for the 1920 "Mosco" Catalog.)

MOTOR SPECIALTIES CO.

MANUFACTURERS

WALTHAM ***MASSACHUSETTS***

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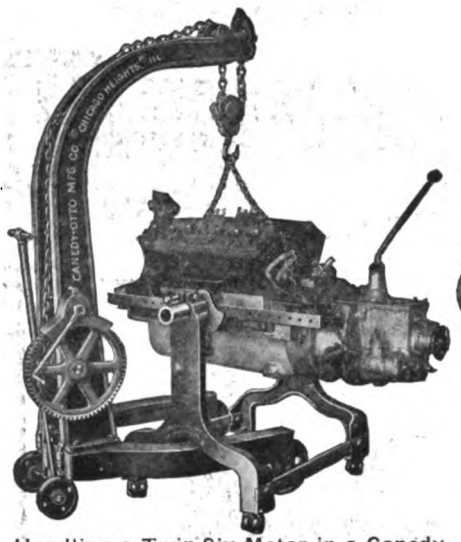
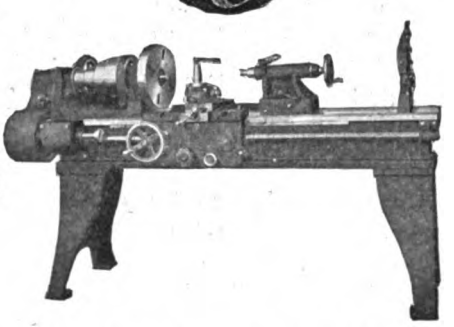
CANEDY-OTTO MFG. CO.

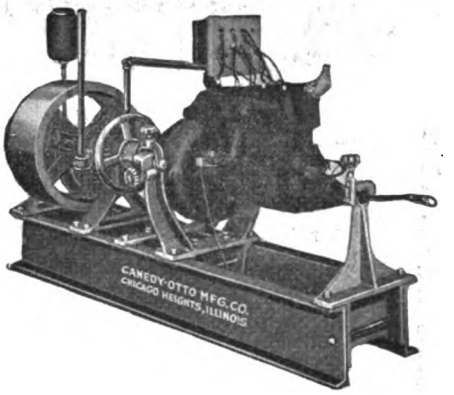
"Our complete line of labor saving tools may be seen in our permanent exhibit, Space 41, in the International Exhibit, sixth floor, Grand Central Palace."



Handling a Twin-Six Motor in a Canedy-Otto Motor Stand with a Canedy-Otto Portable Floor Crane.



Canedy-Otto Screw Cutting Engine Lathe.



Bearing Burning-in Machines.

One of the best investments you can make. Write us today.

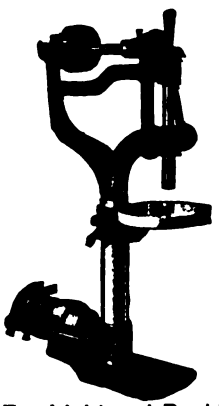
Maximum production efficiency demands absolutely dependable equipment.

For the Garage Repair Shop and Service Station

The selection of right tools answers to a large extent the problem of increased production. It is not good judgment to experiment with unknown or untried lines—confidence should be placed where confidence belongs. CANEDY-OTTO equipment represents favorably known and thoroughly tested value for durability, lasting quality, beauty of finish, and accomplishment of purpose.

Manufacturers of

Radial Drills, Sensitive Drills, Engine Lathes, Punches, Shears, Shrinkers, Counted Shafts, Upright Drills, Post and Wall Drills, Grinders, Buffers, Forges, Blowers, Tuyere Irons, Blast Gates, Bearing Burning-in Machines, Straightening Presses, Connecting Rod Straightening Jigs, Motor Test Stands, Arbor Presses, Portable Floor Crane, Piston Clamps, Rear Axle Test Stands, Tractor Tools and Special Machinery for Ford and Fordson.

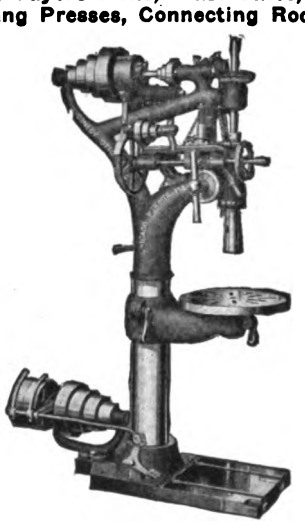


For Light and Rapid Drilling.

Royal Steel Forge No. 37.

Eventually, of course; but why not now? Let us know your needs. It may pay us both to get together. Won't you start it with a letter today?

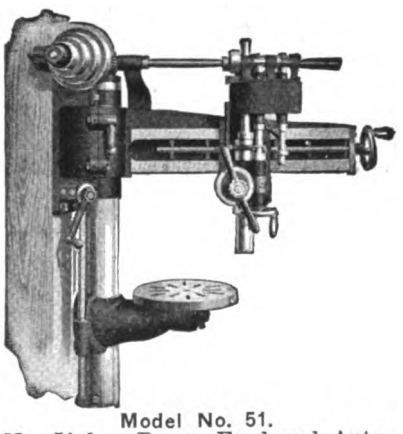
Just investigate—that's all.



No. 36 Canedy-Otto Power Drill.

Your inquiry or trial order is solicited. You will make no mistake by ordering now.

FOR SALE BY ALL
Wholesale Accessory Jobbers,
Heavy Hardware and Machinery Dealers.



Model No. 51.
No. 51 has Power Feed and Automatic Stop.

Our Attractive catalogue should occupy a prominent place in your files. Yours for the asking.

Grinding and Polishing Machine.

General Offices and Factory

Chicago Heights, Ill.

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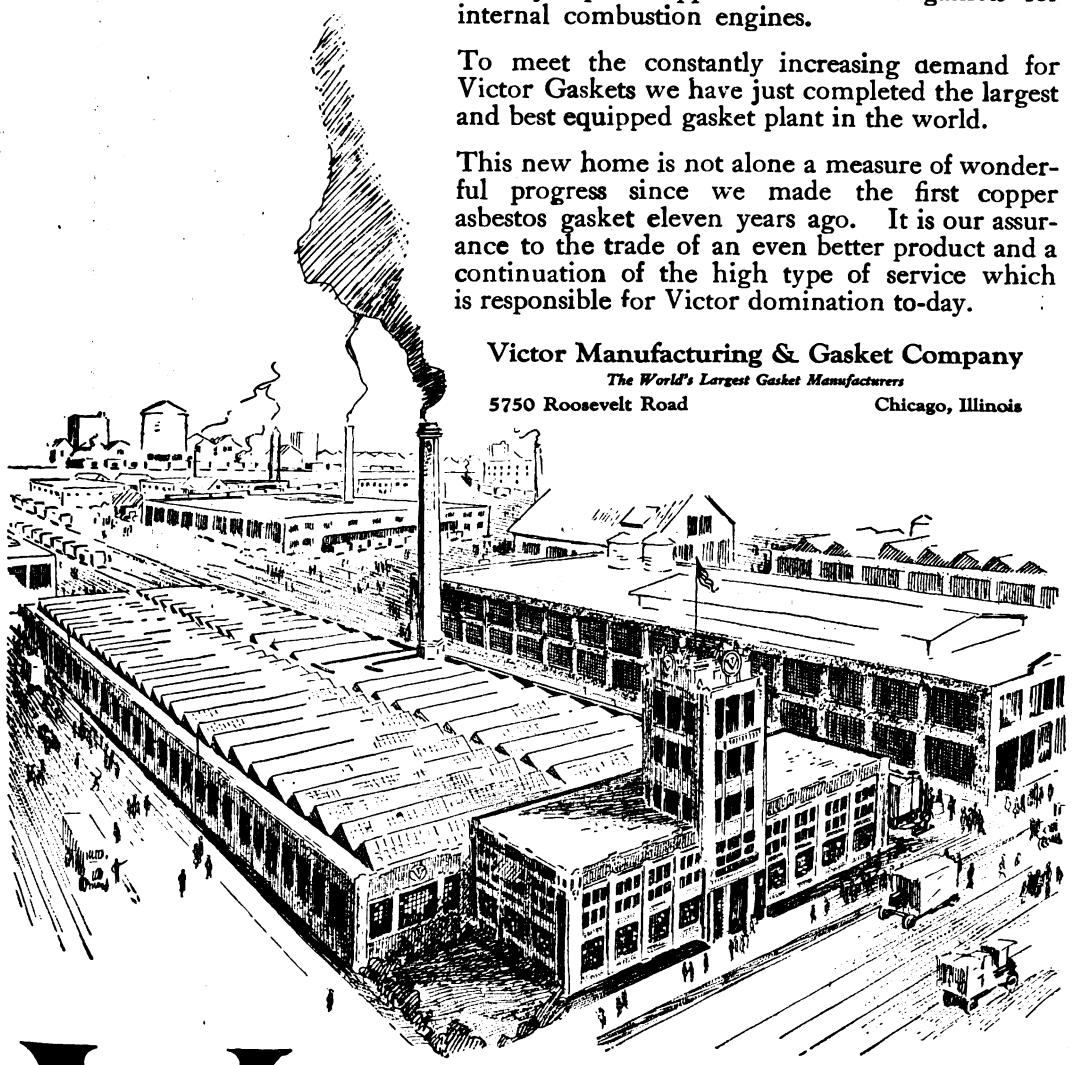
Victor Gaskets Dominate

OUR recognized leadership in the automotive industry to-day is due to our policy of holding steadfastly to the original ideals of specializing entirely upon copper and asbestos gaskets for internal combustion engines.

To meet the constantly increasing demand for Victor Gaskets we have just completed the largest and best equipped gasket plant in the world.

This new home is not alone a measure of wonderful progress since we made the first copper asbestos gasket eleven years ago. It is our assurance to the trade of an even better product and a continuation of the high type of service which is responsible for Victor domination to-day.

Victor Manufacturing & Gasket Company
The World's Largest Gasket Manufacturers
5750 Roosevelt Road Chicago, Illinois



The World's Standard Gaskets

VICTOR GASKETS

(1)

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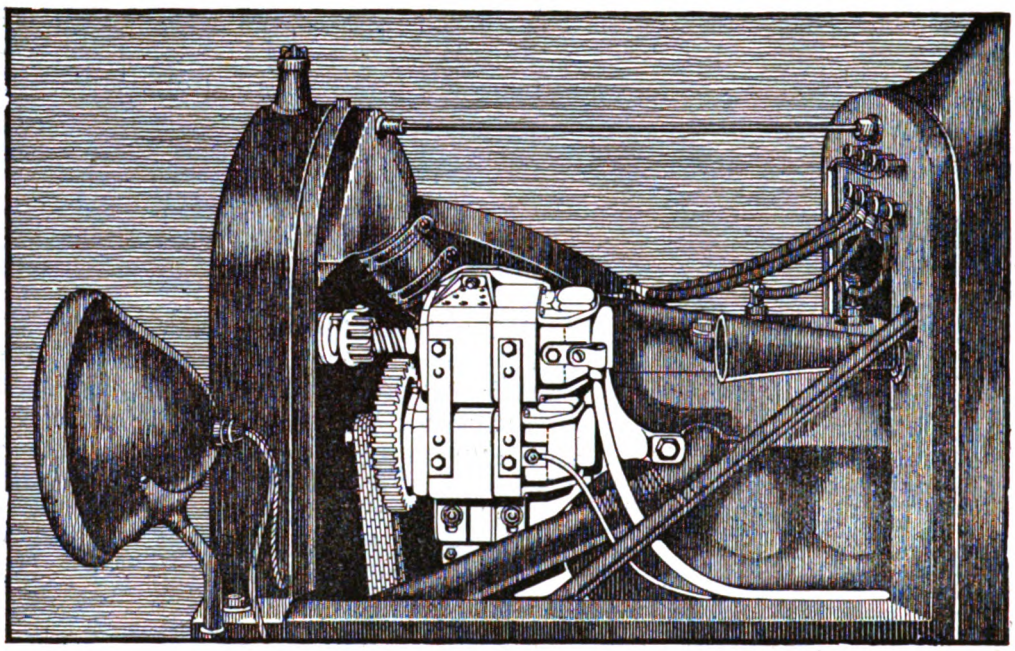

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STARTER
for Every FORD

Add convenience and safety. You and your Ford deserve it. Always a quick start in any weather. Bright steady light standing or running. Specially designed and built to add Gray & Davis reliability to Ford service.

Booklet A 62 tells the story.

GRAY & DAVIS, INC. Boston, Mass.

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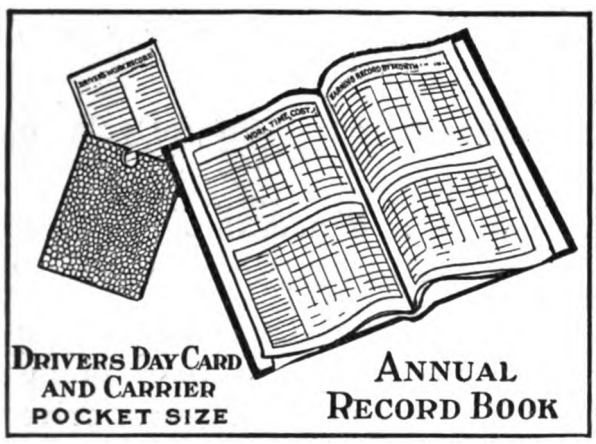
Know what it costs to Run your Truck

Learn what your Truck Earns

Know your Truck Profit and Loss

UNIVERSAL MOTOR TRUCK ACCOUNTING SYSTEM



The system includes an annual record book, 350 drivers' day cards, a day card carrier and full instructions.

Any owner can start this system at any time with an old or new truck of any make or type.

Any boy or girl clerk can maintain all records for one or a hundred trucks.

Each system is good for one year, nothing more is needed or necessary.

The records show at a glance any and all items entering into the earnings and cost of operation.

It is extremely simple. 100% complete and full working instructions are supplied with each system.

It is almost self-operating.

Price $10 — Delivered

Address Record Department

MOTOR TRUCK

Pawtucket, Rhode Island.

THE ACCESSORY AND GARAGE JOURNAL

Index to Contents

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Quickly—Easily—Profitably Handled

If you are not getting your share of this business you are overlooking the biggest chance you ever had.

Marvel Cylinder Re-Boring Machine No. 5

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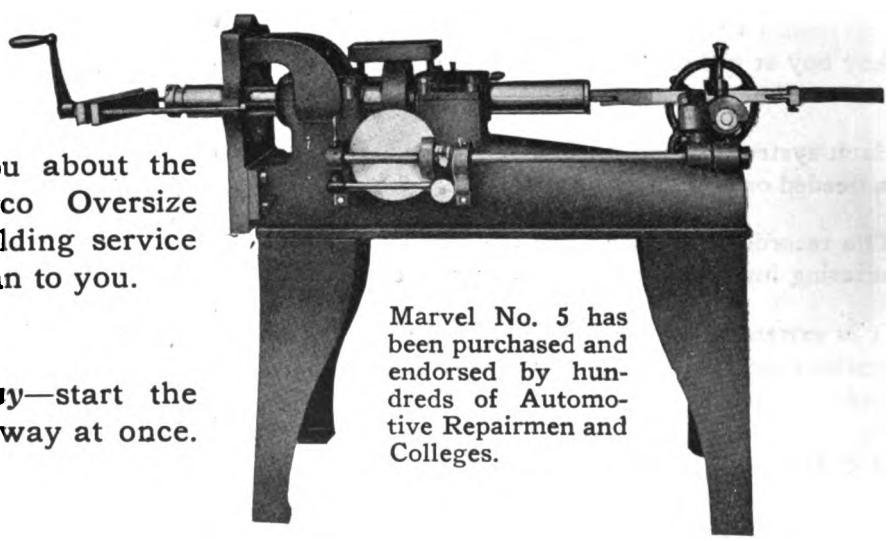

Marvel No. 5 has been purchased and endorsed by hundreds of Automotive Repairmen and Colleges.

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The ACCESSORY and GARAGE JOURNAL

VOL. IX. PAWTUCKET, R. I., DECEMBER, 1919 No. 8

National Shows Back on Peace-Time Basis

Prospects That New York and Chicago Exhibits Will Be Bigger and Better Than Ever Before--Passenger and Commercial Car Displays at Same Time

NOTHING is more significant of the sound readjustment of peace conditions throughout the automotive industry than the universal desire to make the big national shows this year the largest and most representative since the establishment of these exhibitions. Manufacturers are on the alert to take

Alfred Reeves, General Manager, N. A. A. C.

the utmost advantage of the present era of prosperity in the industry, but not satisfied with the present bright outlook they are wisely planning ahead for years to come, constantly improving their models in every way, enlarging facilities and advancing methods of manufacture and distribution with the one idea of increasing the efficiency of their products and to add to their appeal to the motorist.

This year, for first time at a national show, passenger cars and commercial vehicles will be exhibited simultaneously, but the latter will be housed in a building by themselves amply commodious to allow the space and attention to be devoted to them that their phenomenally increasing utility in the transportation field is demanding. And this new arrangement will also allow accessories and equipment to be collected and shown in conjunction with the various types of vehicles to which they more directly pertain, thus presenting a more complete and co-ordinated display more satisfactory to all interests.

Grand Central Palace, Where Passenger Cars Will Be Shown in New York City.

New York Show, Jan. 3-10.

The New York show, which is the 20th event of the kind to be held in the Metropolis, is to take place the week of Jan. 3-10, and the passenger cars will be

S. A. Miles, Manager National Automobile Shows.

shown in the Grand Central Palace, while the trucks will be exhibited at the same time in a location further up town, the Eighth Coast Artillery armory. Accessories will be displayed at both places.

The early shows were held in the Madison Square Garden, and were in two periods, the first week being devoted to pleasure cars and the second, held in the same place, to commercial vehicles, motorcycles being com-

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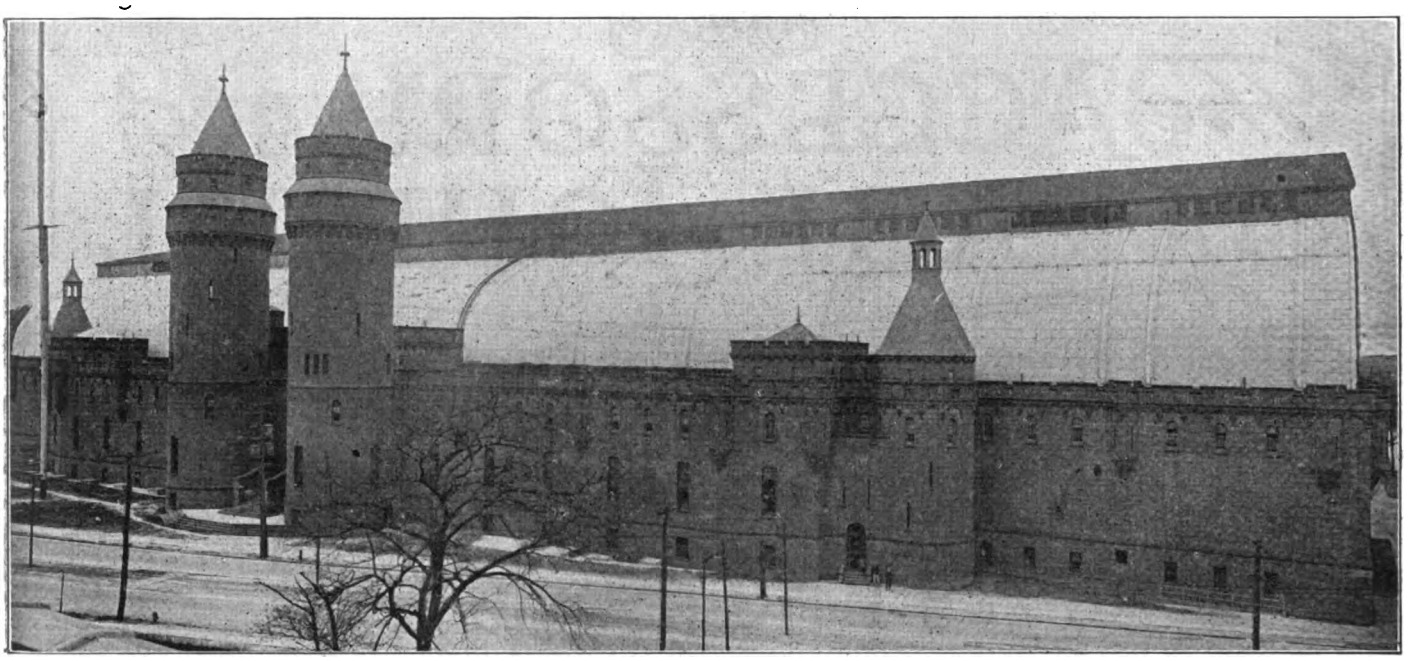


Eighth Coast Artillery Armory Where Commercial Cars Will Be Exhibited in New York, Jan. 3-10.

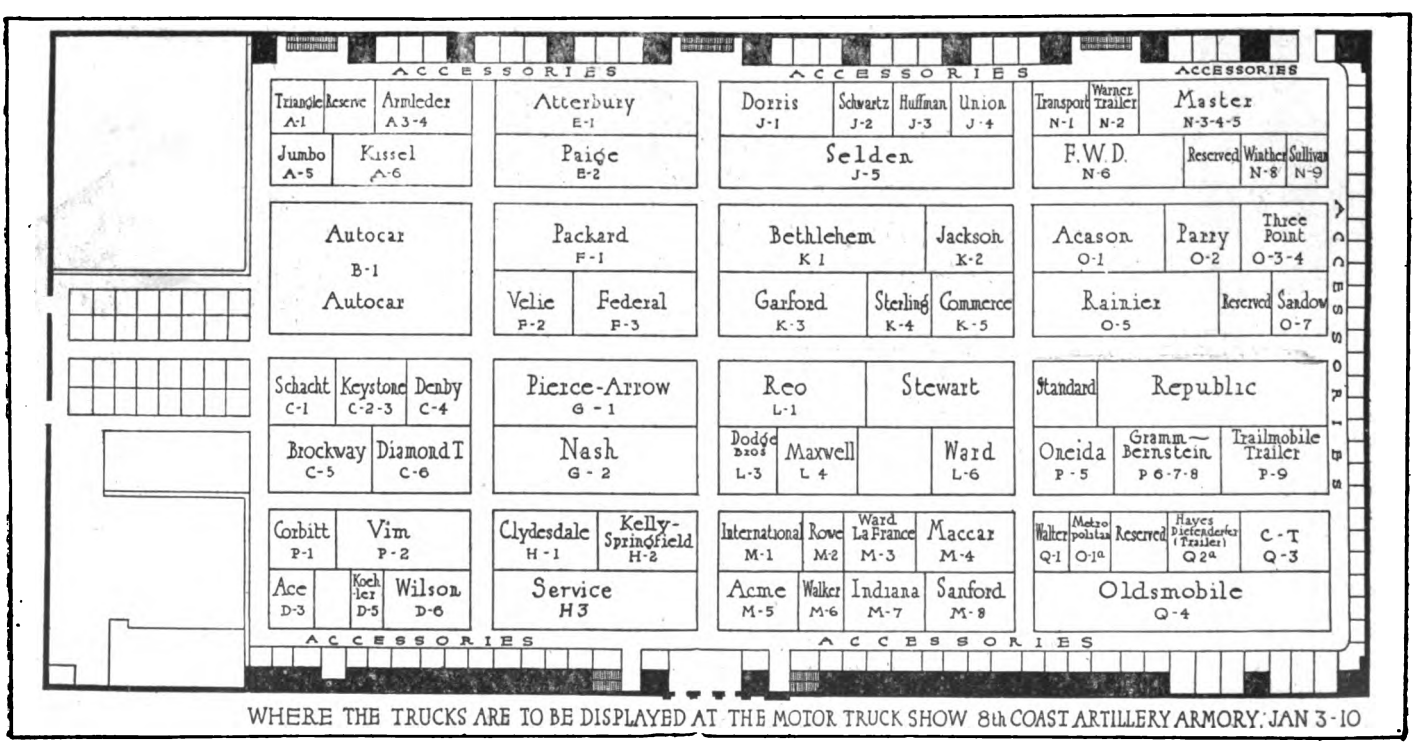
bined with the pleasure car section and accessories distributed between both shows.

Two Independent Exhibitions.

For a time there were two independent shows both at the same time; one, which had the sanction of the Association of Licensed Automobile Manufacturers, being held in Madison Square Garden. The other, which was in a sense an overflow of the Garden show, was presented in Grand Central Palace, but under different management and under the auspices of the American Motor Car Manufacturers' Association. The latter organization disbanded in the spring of 1910, as most of its members had affiliated with the Association of Licensed Automobile Manufacturers, but the Central Palace show was held the following season under the supervision of the American Motor Car Manufacturers' Exhibit Association. During the progress of this display the National Association of Motor Car Manufacturers was brought into being and future international exhibitions were seemingly assured by the taking of an option by the new association on Grand Central Palace for a series of years. This show was by no means at that time confined to automobiles, as a number of aeroplanes and aviation accessories shared with the motor cars the attention of visitors.

In 1912 the exhibits in both the Madison Square Garden and Grand Central Palace were combined under one management, S. A. Miles staging both events. In 1913 both shows were under the auspices of the Automobile Board of Trade, which had succeeded the licensed association. This show was held in two periods of one week each, the first being devoted to pleasure cars and the second to commercial vehicles. Manufacturers of accessories made display both weeks, and in addition members of the National Machine Tool Builders' Association exhibited during the second week.

In 1914 the show was held in the Grand Central Palace alone and it was housed subsequently in that place until 1919, when that building had been taken over for war service, and the show went back to the Madison Square Garden. In 1915, as all foreign shows were omitted, the American events were of especial interest and this was shown in the fact that this display, as well as those in the two years following, were increasingly successful.



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A Patriotic Display.

The 1918 display was the first one held while the country was at war, and it took on a decidedly patriotic aspect. At this time the majority of the exhibitors met the demand for the utility and serviceability of the motor car for transporting passengers, rather than as a purely pleasure proposition. There were seen none of the freakish or extreme type of bodies that had characterized previous exhibits.

In 1919 the National Chamber of Commerce recommended that no show be held, as the conditions were not deemed favorable for its success, but the New York Automobile Dealers' Association took the matter up and made plans for staging an exhibition independently.

It was decided to hold the event in two divisions, one going to the old quarters in the Madison Square Garden and the second division in the 69th Regiment Armory, the Palace not being available. The original design was to have passenger cars shown in both buildings and the trucks in Madison Square Garden. It was finally decided that during the first week passenger cars and accessories should be held in both buildings, but that during the second or truck week, commercial vehicles be shown at the Garden and Armory and accessories only at the Garden.

The last truck show sanctioned by the National Chamber of Commerce was held in 1913, since which time no commercial car exhibit had been held under its auspices. Last year trucks were shown and proved a very successful feature. This year the truck seems to finally have come into its own, as the commercial section is to exhibit coincidentally with the pleasure cars and under conditions which adequately recognize it as the important branch of the industry it has become.

Exhibits This Year.

The pleasure car division will exhibit this year again in the Grand Central Palace, whose facilities have proved so admirable for an event of this kind. The location of this building, as is well known, is particularly convenient for its

To Go to Truck Show

FROM

Grand Central Palace
Grand Central Station
Biltmore Hotel
Belmont Hotel
Commodore Hotel
Manhattan Hotel
Murray Hill Hotel
Ritz-Carlton Hotel

TAKE

Lexington Avenue Subway Marked Jerome Avenue. Entrances Are on Lexington Avenue, Immediately South of 43rd Street and Immediately North of 42nd Street. Time About 30 Minutes.

FROM

Pennsylvania Station
Pennsylvania Hotel
McAlpin Hotel
Imperial Hotel
Waldorf-Astoria

TAKE

Sixth Avenue Elevated at 33rd Street. Time About 40 Minutes.

FROM

Astor Hotel
Claridge Hotel
Knickerbocker Hotel

TAKE

Sixth Avenue Elevated at 42nd Street, or Broadway-Seventh Avenue Subway at Times Square. Take Subway Train Market West Farms and Change at Mott Avenue to Jerome Avenue Line.

FROM

Any Point Between Fifth Avenue and the East River

TAKE

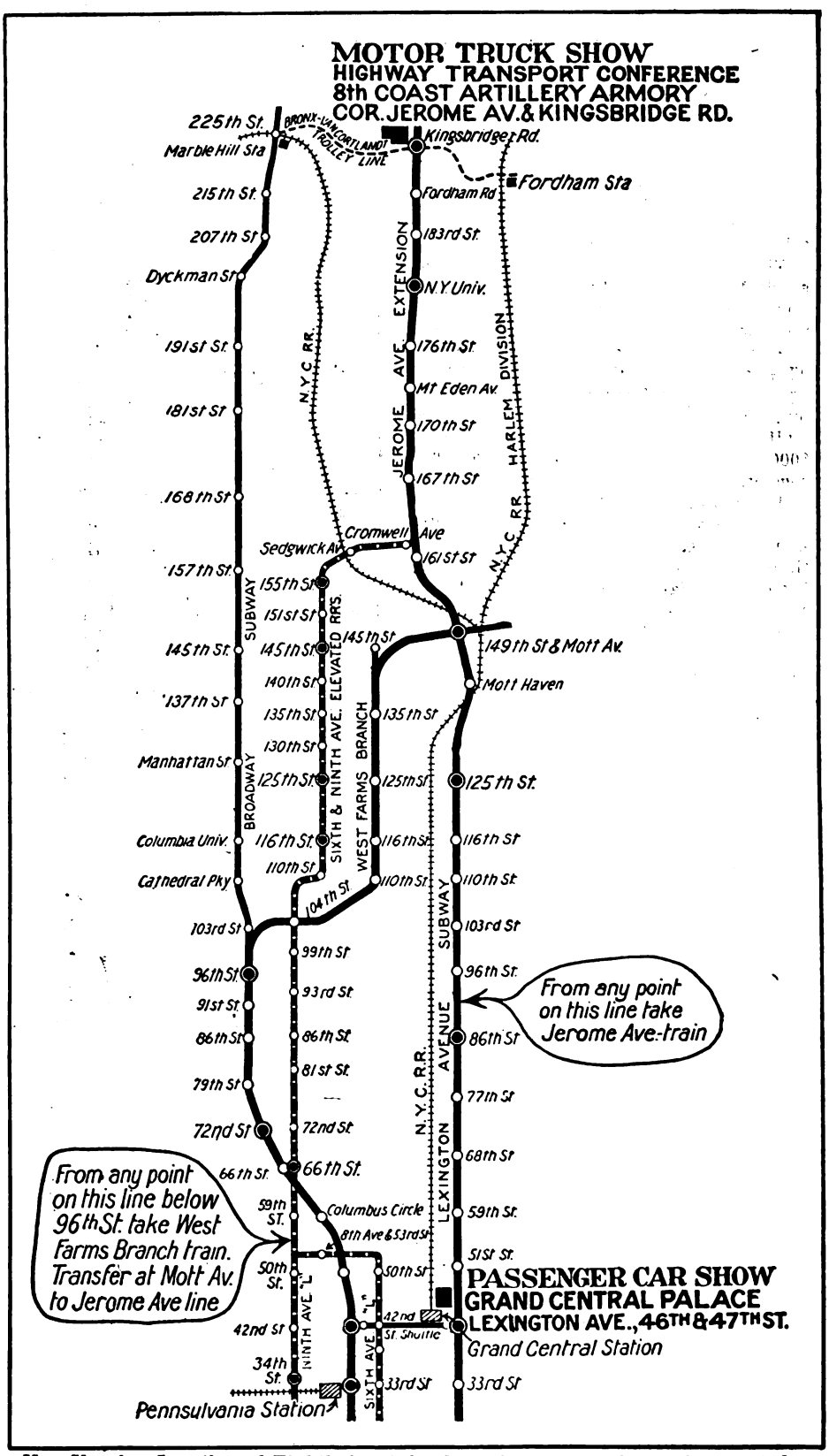
Nearest Station on Lexington Avenue Subway, Which, South of 42nd Street, Runs Under Fourth Avenue. Take or Change to Express Marked Jerome Avenue.

FROM

All Points on the West Side

TAKE

Sixth or Ninth Avenue Elevated, or Broadway-Seventh Avenue Subway. Take Subway Train Marked West Farms and Change at Mott Avenue to Jerome Avenue Line.



Map Showing Location of Eighth Coast Artillery Armory and Grand Central Palace Together with Connecting Rapid Transit Lines.

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patrons, being on Lexington avenue, two blocks north of Madison Square Garden. It is a handsome 13-story structure and affords 120,000 square feet of floor space, well arranged for exhibition purposes.

The Eighth Coast Artillery Armory, which will house the commercial cars this year, is situated at Kingsbridge road and 194th street, and while its location may seem to be somewhat of an inconvenience on account of its distance from the section where the shows have always been held, it is reported, however, that the big structure, which is the largest armory in the country, is easy to find and may be reached by subway or elevated within 35 minutes from either Times Square or the Grand Central station. There are several possible routes, which do not involve more than the possible changing from one "L" or subway train to another, and Manager Miles is authority for the statement that he has made the trip frequently in less than 40 minutes by the slowest way.

The fact that the armory combines several valuable features for show purposes was held to counteract any inconvenience from its location. It measures 300 by 600 feet clear of pillars or posts. The great drill floor affords 150,000 square feet of unbroken floor space under one gigantic vaulted roof, while a large auditorium, seating between 7000 and 8000 people, will be available for the sessions of the transportation convention it is proposed to hold during the week of the show. Provision is also made for a suitable restaurant. Here for the first time in the history of these events will the commercial car interests have all the room needed for an adequate exposition of its utilities. The pleasure car section will incidentally have more commodious facilities for the exposition of its exclusive features.

The plan of holding both sections of the show simultaneously will result in the bringing to the show cities more representatives of the automotive industry during one period than ever before. Heretofore, dealers and out-of-town visitors have been compelled to make their rounds of the expositions cover two periods and in many cases, dealers found that other business interests made it impracticable for them to spare more than one week at the show centers. Under the arrangements prevailing at this show it will be possible to inspect the latest passenger cars and truck models, as well as accessories, during the same week.

Some Comparison of Exhibits.

While it would obviously be illogical to compare with previous events the number of exhibits made at last year's show, on account of the changed conditions under which it was held at that time, some statistics of events staged during the pre-war period as showing the rapid progress of the industry may be of interest. At the first show at Madison Square Garden in 1900 there were only 31 exhibitors of motor cars and motorcycles and 20 of accessories. And at that show, strange as it may seem in the light of present day exhibits, steam cars easily were in predominance, with a goodly number of electrics, while gasoline cars were a bad third. In 1912 it was reported

Exhibitors at New York and Chicago Automobile Shows

LIST OF PASSENGER CARS.

NOTE—All exhibitors will appear in both shows unless otherwise noted. Exhibitors marked "C," will enter Chicago show only. Exhibitors marked "N. Y.," will enter New York show only.

Name	Company	Address
Allen	Allen Motor Co.	Columbus, O.
American Beauty	Pan-American Motors Corps.	Decatur, Ill.
Anderson	Anderson Motor Co.	Rock Hill, S. C.
Apperson	Apperson Bros. Auto Co.	Kokomo, Ind.
Auburn	Auburn Automobile Co.	Auburn Ind.
Biddle	Biddle Motor Car Co., Inc.	Philadelphia, Pa.
Briscoe	Briscoe Motor Corp.	Jackson, Mich.
Buick	Buick Motor Co.	Flint, Mich.
Cadillac	Cadillac Motor Car Co.	Detroit, Mich.
Case	J. I. Case T. M. Co.	Racine, Wis.
Chalmers	Chalmers Motor Co.	Detroit, Mich.
Chandler	Chandler Motor Car Co.	Cleveland, O.
Chevrolet	Chevrolet Motor Co.	New York, N. Y.
Cleveland	Cleveland Automobile Co.	Cleveland, O.
Cole	Cole Motor Car Co.	Indianapolis, Ind.
Columbia	Columbia Motors Co.	Detroit, Mich.
Comet	Comet Automobile Co.	Decatur, Ill.
Commonwealth	Commonwealth Motors Co.	Chicago, Ill.
Crow-Elkhart	Crow-Elkhart Motor Co.	Elkhart, Ind.
Davis	Geo. W. Davis Motor Car Co.	Richmond, Ind.
Detroit Electric	Anderson Electric Car Co.	Detroit, Mich.
Dixie Flyer	Kentucky Wagon Mfg. Co.	Louisville, Ky.
Dodge Bros.	Dodge Bros.	Detroit, Mich.
Dorris	Dorris Motor Car Co.	St. Louis, Mo.
Dort	Dort Motor Car Co.	Flint, Mich.
Elcar	Elkhart Carriage & Motor Car Co.	Elkhart, Ind.
Elgin	Elgin Motor Car Co.	Chicago, Ill.
Fiat	F. I. A. T.	New York City.
Franklin	H. H. Franklin Mfg. Co.	Syracuse, N. Y.
Grant	Grant Motor Car Corp.	Cleveland, O.
Haynes	Haynes Automobile Co.	Kokomo, Ind.
Hollier	Lewis Spring & Axle Co.	Chelsea, Mich.
Holmes	Holmes Automobile Co.	Canton, O.
Hudson	Hudson Motor Car Co.	Detroit, Mich.
Hupmobile	Hupp Motor Car Corp.	Detroit, Mich.
Jackson	Jackson Automobile Co.	Jackson, Mich.
Jordan	Jordan Motor Car Co.	Cleveland, O.
King	King Motor Car Co.	Detroit, Mich.
Kissel Kar	Kissel Motor Car Co.	Hartford, Wis.
Kline Kar (N. Y.)	Kline Car Corp.	Richmond, Va.
Leach (C)	Leach-Biltwell Co.	Los Angeles, Cal.
Lexington	Lexington Motor Co.	Connersville, Ind.
Liberty	Liberty Motor Car Co.	Detroit, Mich.
McFarlan	McFarlan Motor Co.	Connersville, Ind.
Maibohm	Maibohm Motors Co.	Sandusky, O.
Marmon	Nordyke & Marmon Co.	Indianapolis, Ind.
Maxwell	Maxwell Motor Co.	Detroit, Mich.
Mercer	Mercer Automobile Co.	Trenton, N. J.
Metz	Metz Co.	Waltham, Mass.
Milburn Electric	Milburn Wagon Co.	Toledo, O.
Mitchell	Mitchell Motors Co.	Racine, Wis.
Monitor	Monitor Motor Car Co.	Columbus, O.
Monroe (C)	William Small Co.	Indianapolis, Ind.
Moon	Moon Motor Car Co.	St. Louis, Mo.
Nash	Nash Motors Co.	Kenosha, Wis.
National	Natl. Motor Car & Vehicle Corp.	Indianapolis, Ind.
Oakland	Oakland Motor Car Co.	Pontiac, Mich.
Oldsmobile	Olds Motor Works.	Lansing, Mich.
Olympian	Olympian Motors Co.	Pontiac, Mich.
Overland	Willys-Overland Co.	Toledo, O.
Owen-Magnetic	Baker R. & L. Co.	Cleveland, O.
Packard	Packard Motor Car Co.	Detroit, Mich.
Paige	Paige-Detroit Motor Car Co.	Detroit, Mich.
Paterson	W. A. Paterson Co.	Flint, Mich.
Peerless	Peerless Motor Car Co.	Cleveland, O.
Pierce-Arrow	Pierce-Arrow Motor Car Co.	Buffalo, N. Y.
Pilot (C)	Pilot Motor Car Co.	Richmond, Ind.
Premier	Premier Motor Corp.	Indianapolis, Ind.

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Name	Company	Address
Reo	Reo Motor Car Co.	Lansing, Mich.
Roamer	Barley Motor Car Co.	Kalamazoo, Mich.
R & V-Knight	Root & Van Dervoort Eng. Co.	East Moline, Ill.
Saxon	Saxon Motor Car Corp.	Detroit, Mich.
Sayers	Sayers & Scovill Co.	Cincinnati, O.
Scripps-Booth	Scripps-Booth Corp.	Detroit, Mich.
Standard	Standard Steel Car Co.	Pittsburgh, Pa.
Stanley	Stanley Motor Carriage Co.	Newton, Mass.
Stearns-Knight	F. B. Stearns Co.	Cleveland, O.
Stephens Six	Moline Plow Co., Motor Branch.	Moline, Ill.
Stevens-Duryea	Stevens-Duryea Co.	Chicopee Falls, Mass.
Studebaker	Studebaker Corp.	South Bend, Ind.
Stutz	Stutz Motor Co.	Indianapolis, Ind.
Templar	Templar Motor Corp.	Cleveland, O.
Velie	Velie Motors Corp.	Moline, Ill.
Westcott	Westcott Motor Car Co.	Springfield, O.
Willys-Knight	Willys-Overland Co.	Toledo, O.
Winton	Winton Co.	Cleveland, O.

LIST OF MOTOR TRUCK EXHIBITORS.

Acason	Acason Motor Truck Co.	Detroit, Mich.
Acme	Acme Motor Truck Co.	Cadillac, Mich.
All-American (C)	All-American Truck Co.	Chicago, Ill.
Ace	American Motor Truck Co.	Newark, O.
Armleder (C)	The O. Armleder Co.	Cincinnati, O.
Armleder (N. Y.)	Armleder Sales & Service Co.	New York City.
Atterbury	Atterbury Motor Car Co.	Buffalo, N. Y.
Autocar	Autocar Co.	Ardmore, Pa.
Bethlehem	Bethlehem Motors Corp.	Allentown, Pa.
Brockway (N. Y)	Brockway Motor Truck Co.	Cortland, N. Y.
Clydesdale	Clyde Cars Co.	Clyde, O.
Commerce (N. Y.)	Commerce Motor Car Co.	Detroit, Mich.
Corbitt (N. Y.)	Corbitt Motor Truck Co.	Henderson, N. C.
C. T. (N. Y.)	Commercial Truck Co. of America.	Philadelphia, Pa.
Defiance	Turnbull Motor Truck & Wagon Co.	Defiance, O.
Denby	Denby Motor Truck Co.	Detroit, Mich.
Dependable (C)	Dependable Truck & Tractor.	Galesburg, Ill.
Diamond T	Diamond T Motor Car Co.	Chicago, Ill.
Dodge Brothers	Dodge Brothers	Detroit, Mich.
Dorris	Dorris Motor Car Co.	St. Louis, Mo.
Federal	Federal Motor Truck Co.	Detroit, Mich.
F. W. D. (N. Y.)	Four Wheel Drive Motor Truck	Webberville, Mich.
Garford	Garford Motor Truck Co.	Lima, O.
Gary (C)	Gary Motor Truck Co.	Gary, Ind.
Gramm-Bernstein	Gramm-Bernstein Motor Truck.	Lima, O.
Hendrickson (C)	Hendrickson Motor Truck Co.	Chicago, Ill.
Huffman	Huffman Bros. Motor Co.	Elkhart, Ind.
Indiana	Indiana Truck Corp.	Marion, Ind.
International	International Harvester Corp.	Chicago, Ill.
Jackson	Jackson Automobile Co.	Jackson, Mich.
Jumbo	Nelson Motor Truck Co.	Saginaw, Mich.
Kalamazoo (C)	Kalamazoo Motors Corp.	Kalamazoo, Mich.
Kelly (N. Y.)	Kelly & Springfield Motor Truck.	Springfield, O.
Keystone (N. Y.)	Commercial Car Unit Co.	Philadelphia, Pa.
Kissel	Kissel Motor Car Co.	Hartford, Wis.
Koehler (N. Y.)	H. J. Koehler Motors Corp.	Newark, N. J.
Maccar	Maccar Truck Co.	Scranton, Pa.
Master	Master Trucks, Inc.	Chicago, Ill.
Maxwell	Maxwell Motor Co.	Detroit, Mich.
Nash	Nash Motors Co.	Kenosha, Wis.
Obenchain-Boyer (C)	Obenchain-Boyer Co.	Logansport, Ind.
Oldsmobile	Olds Motor Works.	Lansing, Mich.
Oneida	Oneida Motor Truck Co.	Green Bay, Mich.
Packard	Packard Motor Car Co.	Detroit, Mich.
Paige	Paige-Detroit Motor Car Co.	Detroit, Mich.
Parker (C)	Parker Motor Truck Co.	Milwaukee, Wis.
Patriot (C)	Hebb Motors Co.	Lincoln, Neb.
Pierce-Arrow	Pierce-Arrow Motor Car Co.	Buffalo, N. Y.
Rainier	Rainier Motor Corp.	Flushing, L. I., N. Y.
Reo	Reo Motor Car Co.	Lansing, Mich.
Republic	Republic Motor Truck Co.	Alma, Mich.
Rowe (N. Y.)	Rowe Motor Mfg. Co.	Lancaster, Pa.
Sandow	Sandow Motor Truck Co.	Chicago, Ill.
Sanford (N. Y.)	Sanford Motor Truck Co.	Syracuse, N. Y.
Schacht	G. A. Schacht Motor Truck Co.	Cincinnati, O.
Schwartz (N. Y.)	Schwartz Motor Truck Co.	Reading, Pa.
Selden	Selden Motor Vehicle Co.	Rochester, N. Y.

that 250 cars were shown by 70 different exhibitors; in 1915, 528 cars were shown by 81 manufacturers, there being six electrics and 249 motorcycle and accessory exhibitors. In 1917 there were 97 car exhibitors, 342 cars and chassis being shown, and 226 accessory displays; in 1918 some 400 cars were displayed by 86 American exhibitors.

This year Samuel A. Miles rounds out a score of years efficient management of the national shows at Chicago, and has directed every one in New York during that time with the exception of 1919, when the show was staged by a different organization. The knowledge that Mr. Miles has the management of all shows again this year is sufficient indorsement that both general arrangements and minutest details will be looked after with the same care and efficiency that have characterized the exhibitions in the past. Mr. Miles has arranged with John R. Eustis to serve as his assistant, and Mr. Eustis will have especial charge of the truck division and conference.

Truck Conference.

Plans for the Highway Transport conferences, which are to be held in conjunction with the national truck shows, indicate that they will be the most comprehensive and important yet held. The feature of these sessions will be the liberal use of illustrations both by stereoptican slides and moving picture films. The conference will be opened the evening of Jan. 3 at New York. The matters of highways and highway traffic, motor express operation and farmers' haulage problems will be among those discussed, together with subjects having to do with the actual operation of motor trucks.

During the remaining six days of the shows the afternoon sessions will be especially devoted to the interests of those engaged in the motor truck business from the standpoint of manufacturing, distribution and service, and at the evening sessions topics of particular import to truck owners and operators and shippers and others interested in transportation will be presented. However, all sessions will be open to the general public. On the closing day there will be a single joint session in the afternoon.

Automobile Makers to Dine.

One social feature that is usually anticipated during the course of the New York displays is the annual banquet of the National Automobile Chamber of Commerce. This will be held this year the evening of Tuesday, Jan. 6, in the grand ball room of the Commodore hotel. Besides the customary single speaker there will be other interesting features

EXHIBITORS AT NEW YORK SHOWS.

83 Passenger Cars.
65 Trucks.
2 Trailers.
2 Bodies.
267 Accessories.

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this year, including the presentation of awards to individuals who have rendered important service to the industry during the past 12 months, and the production of an original play on timely topics in the industry written by Fred E. Dayton, vice president of the Ajax Rubber Co., and Henry Caldwell, automobile editor of the New York Herald.

With the additional accommodations that the ball room provides, it will be possible to care for a number of men connected with the automotive industry, aside from those who are affiliated with the National Automobile Chamber of Commerce. Balcony seats will be provided for ladies who wish to attend.

Features of Chicago Exhibition

Early in the history of the gasoline automobile Chicago began to play an important part in the development of the industry, and owing to its central location and its proximity to the biggest motor car manufacturing plants of the Middle West, the annual national show at this western metropolis has always had an importance apart from the big shows of the East. Dealers from the Central West, West, South and Northwest have always made the Chicago exhibition their point of rendezvous. The negotiations between manufacturers and dealers for the year's ousiness are consummated here, and new contracts made and new agencies secured.

As the Chicago show follows the New York display it is of course to be expected that many of the exhibits should be similar to a certain extent to those at New York, but Manager Miles has always provided an entirely different environment and decorative scheme for the western event to meet the tastes of a different clientele which attends the western event. The exhibits in number and variety have always closely approximated and sometimes even surpassed those at New York, as might be expected from the fact that Chicago is nearer the heart of the manufacturing end of the automotive industry.

The Chicago show was held as a unit when the eastern show was divided and held under the auspices of two separate associations, and the advice and efforts of Manager Miles to preserve the unity of the Chicago show and make it representative of the entire industry have always been successful and the wisdom of this course has been recognized.

Where Chicago Events Are Housed.

The Coliseum and Annex, which have for so many years been the scene of these annual events, are still retained this year to house the passenger cars and accessories, and the First Regiment Armory, across the street from the Coliseum, will also be utilized as an overflow for this division. In 1916 the show became of such proportions that four buildings were needed and the Greer building, adjoining the Coliseum, was used for several years.

When plans were matured this year to

Name	Company	Address
Service (C)	Service Motor Truck Co	Wabash, Ind.
Standard	Standard Motor Truck Co	Detroit, Mich.
Sterling (N. Y.)	Sterling Motor Truck Co	Milwaukee, Wis.
Stewart	Stewart Motor Corp	Buffalo, N. Y.
Sullivan (N. Y.)	Sullivan Motor Truck Corp	Rochester, N. Y.
Trailmobile	Trailmobile Co	Cincinnati, O.
Transport	Transport Truck Co	Mt. Pleasant, Mich.
Three Point (N. Y.)	Three Point Truck Co	Newark, N. J.
Triangle (N. Y.)	Triangle Motor Truck Sales Co	381 4th Ave., N. Y. C.
Union	Union Motor Truck Co	Bay City, Mich.
Velie	Velie Motors Corp	Moline, Ill.
Vim	Vim Motor Truck Co	Philadelphia, Pa.
Walker	Walker Vehicle Co	Chicago, Ill.
Walter	Walter Motor Truck Co	New York City.
Ward (N. Y.)	Ward Motor Vehicle Co	Mt. Vernon, N. Y.
Ward La France (N. Y.)	Ward La France Truck Co	Elmira, N. Y.
Wilson	J. C. Wilson Co	Detroit, Mich.
Winther	Winther Motor Truck Co	Kenosha, Wis.

Trailers on Floor with Truck Exhibits.

Fruehauf (C)	Fruehauf Trailer Co	Detroit, Mich.
Highway Trailer (N. Y.)	Hayes-Diefenderfer Co., Inc	New York City.
Warner Trailer	Warner Mfg. Co	Beloit, Wis.

Bodies on Main Floor with Truck Exhibits.

Metropolitan Body Co., Inc. (N. Y.)		Bridgeport, Conn.
Parry Mfg. Co		Indianapolis, Ind.

EXHIBITORS OF ACCESSORIES.

Name	Passenger N. Y.	Passenger Chgo.	Truck N. Y.	Truck Chgo.
A. B. C. Mfg. Co., New York	•			
Accurate System & Manifolding Co., N. Y.	•			
Acme Auto Accessories Co., Chicago		•		
Advance Auto. Accessories Corp., Chicago	•	•		
Af-Ford-Able Sales Co. of N. Y., Inc., N. Y. City	•			
Air Device Co., Chicago		•		
Alemite Die Casting & Mfg. Co., Chicago	•	•		
Alexander, J., Mfg. Co., New York	•	•		
Aluminum Brazing Solder Co., Philadelphia, Pa			•	
Aluminum Die Castings Co., Cleveland, O	•	•	•	•
American Auto Lamp Co., Inc., N. Y	•			
American Auto. Digest, Cincinnati, O	•	•	•	•
American Bosch Magneto Corp., Springfield, Mass	•	•	•	•
American Bureau of Engineering; Chicago	•			
American Chain Co., Inc., Bridgeport, Conn	•	•	•	•
American Ever Ready Works, L. I. City, N. Y	•	•		
American Hammered Piston Ring Co., Baltimore	•	•		
American Machine Co., Newark, Del			•	•
American Pump & Tank Co., New York	•			
American Taximeter Co., New York			•	•
Ames Co., F. A., Owensboro, Ky	•	•		•
Anderson Electric Specialty Co., Chicago	•			
Apollo Magneto Corp., Kingston, N. Y			•	•
Arc-o Mfg. Co., Inc., Chicago		•		
Arnold Electric Tool Co., New York	•			
Arrow Grip Mfg. Co., Glens Falls, N. Y	•	•	•	•
Asch & Co., Inc., New York	•			
Au-To Compressor Co., Wilmington, O	•	•		
Automatic Safety Tire Valve Corporation, N. Y	•			
Automobile Journal Publishing Co., Pawtucket, R. I	•	•	•	•
Auto Pedal Pad Co., New York	•			
Barnes Foundry Co., Jersey City, N. J	•			
Barney's Auto Parts Co., New York	•			
Bausch Machine Tool Co., Springfield, Mass			•	
Bedker Brothers, Chicago	•	•		
Bendus, J. V., New York			•	•
Benjamin Electric Mfg. Co., Chicago		•		
Black & Decker Mfg. Co., Baltimore, Md	•	•		
Blackledge John W., Mfg. Co., Chicago	•	•		
Breeze Mfg. Co., Newark, N. J	•			
Briscoe Devices Co., Jackson, Mich	•	•		
Brown-Lipe-Chapin Co., Syracuse, N. Y	•			
Brown-Lipe Gear Co., Syracuse, N. Y	•	•		
Buda Co., Harvey, Ill		•	•	•
Budd, Edward G. Mfg. Co., Philadelphia, Pa	•			
Budd Wheel Corp., Philadelphia, Pa	•			
Buell Mfg. Co., Chicago, Ill				•
Byrne, Kingston & Co., Kokomo, Ind	•	•	•	•
Campbell, A. S. Co., Boston, Mass	•	•		
Casco Mfg. Co., Thomasville, Ga	•	•		
Challoner Co., Oshkosh, Wis			•	•
Champion Ignition Co., Flint, Mich	•	•		
Chase, L. C. & Co., Boston, Mass	•	•		
Chicago Steel Wheel Co., Chicago, Ill	•	•		
Chilton Co., Philadelphia, Pa	•	•	•	•
Clark Equipment Co., Buchanan, Mich			•	•
Class Journal Co., New York City	•	•	•	•
Cleveland Heater Co., Cleveland, O	•			•
Coffield Tire Protector Co., Dayton, O	•			

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Name	Passenger N. Y.	Passenger Chgo.	Truck N. Y.	Truck Chgo.
Columbia Axle Co., Cleveland, O.		•		
Commercial Investment Trust, N. Y.			•	
Connecticut Clock Co., N. Y.	•			
Continental Auto Parts Co., Columbus, Ind.				•
Continental Motors Corp., Detroit, Mich.	•	•	•	•
Corbin Screw Corp., New Britain, Conn.	•	•		
American Hardware Corp. Succ.		•		
Copp, George W. Co., New York	•			•
Corcoran Mfg. Co., Cincinnati, O.		•		
Corcoran-Victor Co., Cincinnati, O.	•			
Cowles, C. & Co., New Haven, Conn.	•	•		
Cramp, Wm. & Sons, Ship & Eng. Co., Philadelphia, Pa.	•	•		
Cronk, E. D. & A. F., Inc., Utica, N. Y.	•			
Curtis Pneumatic Machine Co., St. Louis, Mo.	•	•		
Dayton Steel Foundry Co., Dayton, O.			•	•
Defender Auto Lock Co., Inc., Detroit, Mich.		•		
Detroit Carrier & Mfg. Co., Detroit, Mich.		•		
Detroit Pressed Steel Co., Detroit, Mich.	•	•		
Dewey, George W., New York City	•			
Dixon, Jos., Crucible Co., Jersey City, N. J.	•	•	•	•
Doehler Die Casting Co., Brooklyn, N. Y.	•	•		
Dorr Miller Differential Co., New York	•	•		
Duff Mfg. Co., Pittsburgh, Pa.	•	•		
Dunham, Thomas Co., Aurora, Ill.	•	•		
Duplex Engine Governor Co., Brooklyn, N. Y.			•	•
Detroit Steering Wheel Corp., Detroit, Mich.	•	•		
E. A. Laboratories, Inc., Brooklyn, N. Y.	•	•		
Eastern Machine Co., S. Easton, Mass.			•	•
Eastern Rubber Co., Philadelphia, Pa.	•	•		
Eclipse Machine Co., Elmira, N. Y.	•	•		
Edelman & Co., E., Chicago, Ill.		•		
Eisemann Magneto Co., Brooklyn, N. Y.	•	•	•	•
Electric Storage Battery Co., Philadelphia, Pa.	•	•		
Empire Axle Co., Dunkirk, N. Y.			•	•
English & Mersick Co., New Haven, Conn.	•			
Ericsson Mfg. Co., Buffalo, N. Y.				•
Essenkay Products Co., Chicago, Ill.	•	•		•
Essex Rubber Co., Inc., Trenton, N. J.	•			
Everyday Eng. Magazine, New York	•	•		
Fairbanks Co., New York	•	•		
Faw, J. H., Inc., New York	•			
Fire-Gun Mfg. Co., Inc., New York	•	•		
Fleckenstein Visible Gasometer, Grand Rapids	•	•		
Flint Motor Axle Co., Flint, Mich.			•	•
Ford News Publishing Co., Long Island City	•	•		
Franklin Mach. & Tool Co., Springfield, Mass.			•	•
Fulton Co., Knoxville, Tenn.	•	•		
Gabriel Mfg. Co., Cleveland, O.	•	•		
Gastine Co., Bridgton, N. J.	•			
General Electric Co., Schenectady, N. Y.	•	•		
Gill Mfg. Co., Chicago, Ill.	•	•		
Globe Mfg. Co., Battle Creek, Mich.	•	•		
Gould Storage Battery Co., N. Y. C.	•	•		
Gray & Davis, Inc., Boston, Mass.	•	•	•	•
Grundy Mfg. Corp., Detroit, Mich.		•		
Guarantee Visible Measure Sales Co., Washington, D. C.	•			
Hale & Kilburn Co., Philadelphia, Pa.	•	•		
Halladay Co., L. P., Streator, Ill.		•		
Hart-Bell Co., Inc., New York	•	•		
Hartford, Edw. V., Inc., New York	•	•		
Harvey Wheel Sales Co., New York	•	•		
Hassler, Robert H., Indianapolis, Ind.	•	•		
Hayes Wheel Co., Jackson, Mich.	•	•		
Heinze Electric Co., Lowell, Mass.	•	•		
Hercules Motor Mfg. Co., Canton, O.			•	•
Hero Mfg. Co., Philadelphia, Pa.			•	•
Hill-Smith Metal Goods, Boston, Mass.	•	•		
Holmes, George L., New York City	•			
Holophane Glass Co., Inc., New York	•			
Horizontal Hydraulic Hoist Co., Milwaukee, Wis.			•	•
Houpert Machine Co., Long Island City, N. Y.	•		•	
Hoyt Elect. Instr. Co., Penacook, N. H.	•			
Hudson Motor Specialties Co., Philadelphia, Pa.	•	•	•	•
Humil Corp., New York City			•	
Imperial Brass Mfg. Co., Chicago, Ill.		•		
Improved Gauge Mfg. Co., Syracuse, N. Y.	•	•		
Inland Machine Works, St. Louis, Mo.	•	•		
International Magazine Co., New York City	•	•		
Iron City Products Co., Pittsburgh, Pa.	•	•	•	
Jaxon Steel Products Co., Jackson, Mich.			•	•
Jiffy Jack Co., Cleveland, O.	•	•		
Johnson Auto. Lock Co., Chicago, Ill.	•	•		
Johnston, Wm. R., Mfg. Co., Chicago, Ill.	•	•		
K-W Ignition Co., Cleveland, O.	•	•		
Kalee Stamping Co., Detroit, Mich.	•	•		
Kellog Mfg. Co., Rochester, N. Y.	•			
Kent, Atwater, Mfg. Co., Philadelphia, Pa.	•	•		
Keystone Rubber Mfg. Co., Erie, Pa.	•			
Klaxon Co., Newark, N. J.	•	•		

hold the truck exhibition the same week as the passenger car show, it became apparent that larger accommodations than ever before would be needed to adequately house the commercial car division. This resulted in the leasing of the International Amphitheater for the exclusive showing of trucks and accessories. This building is located at Halsted and 42nd streets, and is the scene of the annual stock shows, the horse shows and other events of a similar nature for which Chicago has been famed for many years past. The International Amphitheater consists of a main arena and two wings. It is possible to obtain at this structure and its adjoining buildings as much space as at the armory, but excluding the less desirable space, some 120,000 square feet will be utilized, and ample space is still available should conditions demand an overflow. The Amphitheater is readily reached by the elevated road from the center of the city in about 20 minutes, and there are ample transportation facilities from other parts of the city.

Date of Chicago Show.

This will be the 20th annual exhibition at Chicago and it will be held the week of Jan. 24-31, both pleasure car and business car divisions being held simultaneously. This also marks Mr. Miles' 20th consecutive season as manager of this event.

In 1900 Mr. Miles became an enthusiastic member of the Chicago Automobile Club. The side exhibit of motor vehicles in connection with the annual bicycle show in New York in 1899 had awakened the interest of manufacturers and other allied interests in the East, and Mr. Miles became convinced that something of this nature would appeal to the residents of the Middle West. The Chicago Automobile Club agreed to assist him in the enterprise and the Coliseum was engaged. Later in the year the club, however, evidently began to doubt the probable success of such an affair and Mr. Miles was left to conduct the matter personally. How well he succeeded is now a matter of history, but it may be surmised from the fact that when the National Association of Automobile Manufacturers was organized he was selected as general manager and he has since devoted his attention to the production of these big shows in New York and Chicago.

EXHIBITORS AT CHICAGO SHOWS.

85 Passenger Cars.
57 Trucks.
2 Trailers.
1 Body.
201 Accessories.

Truck Conferences Also at Chicago.

As at New York, the highway transportation and motor conferences will be featured in connection with the Chicago show, the same general plan to be followed at the latter, but with a change in some details of the programme. The

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conference will open the evening of Jan. 24 in Chicago, with an important inaugural session, in which men of national reputation are expected to participate.

During the progress of the show meetings of the National Automobile Dealers' Association, the Chicago section of the Society of Automotive Engineers, and the Motor and Accessory Manufacturers' associations are held.

The following pleasure cars will be exhibited at Chicago alone: Leach, Monroe, Pilot.

Trucks to be seen only at Chicago: All-American, Armleder, Dependable, Hendrickson, Kalamazoo, Parker, Patriot, Service.

The Fruehauf trailer will also be seen only at Chicago.

ANNUAL SHOW DIRECTORY.

The Sixth Annual Directories for the New York and Chicago national automobile shows are being prepared by F. Ed. Spooner, 420 Book building, Detroit, editor of the Automotive World department of the Detroit Free Press. The Free Press issues these directories annually for the benefit of the exhibitors and all visitors of the automotive industries at the national shows. In addition to the features which have been carried in previous years there will be added for the 1920 national shows a department containing the names of visiting automotive dealers and distributors from the entire United States, the names of firms and their representatives.

The Annual Directories will include a list of all hotels in each city, with address and telephone; the events scheduled for the week; the calendar of the show circuit; newspaper and automobile editors present; scheduled headquarters of all prominent companies; names of advertising managers and their headquarters; names of national associations and their officers; and the names of all companies, whether exhibitors or not, in the automotive field, with the names of the representatives and their stopping places.

Mr. Spooner wishes to emphasize the necessity on the part of all concerns or individuals affiliated with the automotive industry who desire to be included in this directory, of sending in names, addresses, etc., at the earliest possible date as, on account of the size of the compilation, lists received late will necessarily be omitted.

BUSY DAY IN TRAFFIC COURT.

All traffic court records for number of cases in a single day were recently broken in New York, when 223 cases were heard before the magistrates assigned for disposing of such cases, the unusual number necessitating the attention of two judges instead of one as usual.

Offenders tried for speeding, first offense, numbered 116, 11 were arraigned for the second time for this offense, and the remainder of the cases heard were for minor violations of the traffic regulations.

Name	Passenger N. Y.	Passenger Chgo.	Truck N. Y.	Truck Chgo.
Laidlaw Co., Inc., New York City	•			
La-Lo Chemical Co., Providence, R. I.	•			
Lane Brothers Co., Poughkeepsie, N. Y.	•	•		
Lauraine Magneto Co., New York City			•	•
La Vietes, Geo. E., Inc., New York City	•			
Lawrence & Co., L., New York City	•	•		
Lee Mercantile, H. D., Co., Kansas City, Mo.	•			
Le Compte Co., Newark, N. J.		•		
Lewis Searing Co., Flint, Mich.	•	•		
Light Mfg. & Foundry Co., Pottsdown, Pa.	•			
Lightning Change Rim Corp., Chicago, Ill.		•		
Lipman Refrigerator Car & Mfg. Co., Beloit, Wis.	•	•		
Lobes Body Co., Inc., Mt. Vernon, N. Y.			•	
Longdin Brugger Co., Fond du Lac, Wis.	•			
Lyons Ignition Co., New York City	•	•		
M & A M A Office, New York City	•	•	•	
McCord Mfg. Co., Inc., Detroit, Mich.	•	•		
McQuay-Norris Mfg. Co., St. Louis, Mo.	•	•		
Macbeth-Evans Glass Co., Pittsburgh, Pa.	•	•		
Manley Mfg. Co., York, Pa.	•	•		
Marlin Rockwell Corp., New Haven, Conn.	•	•		
Martin, James, New York City	•			
Mead-Morrison Mfg. Co., East Boston, Mass.			•	•
Merchant & Evans Co., Philadelphia, Pa.			•	•
Merritt, S. W., Co., New York City	•			
Metal Stamping Co., Long Island City, N. Y.	•	•		
Midwest Engine Co., Indianapolis, Ind.	•			
Militor Corp., Springfield, Mass.	•	•		
Miller, Chas. E., New York City	•			
Minneapolis Steel & Mach. Co., Minneapolis, Minn.			•	
Morse Chain Co., Ithaca, N. Y.	•	•		
Moto-Meter Co., Long Island City, N. Y.	•	•		
Motor Car Supplies Co., Inc., New York	•			
Motor Compressor Co., Newark, N. J.			•	
Motor Guide, New York	•	•		
Motor Kleen Co., New York City	•			
Motor Spark Plug Co., Newark, N. J.	•			
Motor Vehicle Pub. Co., New York City	•	•		
Mutty, L. J., Co., Boston, Mass.	•			
Muzzy-Lyon Co., Ltd., Detroit, Mich.	•			
Nathan Novelty Mfg. Co., New York City	•			
National Carbon Co., Cleveland, O.	•	•		
National Clutch Co., Inc., Irvington, N. Y.	•	•		
National Tube Co., Pittsburgh, Pa.	•	•		
National Wire Wheel Wks., Inc., Detroit, Mich.	•	•		
New Era Spring & Specialty Co., Grand Rapids, Mich.	•			
New York Coil Co., New York City	•	•		
Nobrac Co., New York City	•			
Northwestern Chemical Co., Marietta, O.	•	•		
Oakes Co., Indianapolis, Ind.		•		
Fantasote Co., New York City	•	•	•	•
Parker Axle & Prod. Corp., New York City			•	•
Parry Mfg. Co., Indianapolis, Ind.	•	•	•	•
Perfection Heater & Mfg. Co., Cleveland, O.	•	•		
Perkins Tonneau Windshield Co., New York City	•			
Phelps Mfg. Co., Columbus, O.	•	•		
Pines Mfg. Co., Chicago, Ill.	•	•		
Power Farming Press, St. Joseph, Mich.			•	
Powrlok Co., Cleveland, O.	•	•		
Pratt, Wm. E., Mfg. Co., Chicago, Ill.	•	•		
Presto Felt Mfg. Co., Inc., Toledo, O.		•		
Prest-O-Lite Co., New York City	•	•		
Primolite Sales Co., Westfield, N. Y.	•	•		
Radcliffe Turbin-Drive Co., New York City	•	•		
Rajah Auto Supply Co., Bloomfield, N. J.	•	•		
Recording & Computing Machine Co., Dayton, O.	•			
Reliance Wheel Co., Youngstown, O.	•			
Republic Auto Parts Co., Long Island City, N. Y.	•	•		
Rex Mfg. Co., Connersville, Ind.	•	•		
Rich Mfg. Co., New York City	•			
Rives, Geo. H., Mfg. Co., New York City	•			
Robertson Cradlelock Wheel Co., Chicago, Ill.			•	
Rockwell Mfg. Co., College Point, L. I.	•	•		
Russel Motor Axle Co., Detroit, Mich.			•	•
Saltsman, Dewitt G., Co., New Haven, Conn.	•			
Schrader's, A. Son, Inc., Brooklyn, N. Y.	•	•	•	•
Schutte, Charles, Body Co., Lancaster, Pa.	•			
Sears Cross Co., Brooklyn, N. Y.	•	•		
Security Auto Theft System, N. Y. C.	•			
Sedgwick Sales Co., Bronx, N. Y. C.	•			
Service Engineering Co., New York City			•	
Sewell Cushion Wheel Co., Detroit, Mich.			•	•
Shaler, C. A., Co., Waupun, Wis.	•	•		
Shontz, H. B., Co., Inc., New York City	•			
Silvex Co., Bethlehem, Pa.	•			
Simms Magneto Co., East Orange, N. J.	•	•		
Snead & Co. Iron Works, Inc., Jersey City, N. J.	•			
Sparks-Withington Co., Jackson, Mich.	•	•		
Special Tool Engineering Co., Dayton, O.	•	•		
Spencer Metal Products Co., Spencer, O.	•	•		
Spiro, C., Mfg. Co., New York City	•			
Splitdorf Electrical Co., Newark, N. J.	•	•	•	•
Standard Steel Castings Co., Cleveland, O.			•	•

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Name	Passenger N. Y.	Passenger Chgo.	Truck N. Y.	Truck Chgo.
Standard Tool & Engineering Co., S. Bend, Ind.		*		
Stanley, John T., Co., Inc., New York City	*			
Stewart, F. W., Mfg. Co., Chicago, Ill.	*			
Stewart-Warner Speedometer Corp., Chicago, Ill.	*	*		
Story Rubber Corp., New York City	*			
Stromberg Motor Devices Co., Chicago, Ill.	*	*	*	*
Sunderman Corp., Newburgh, N. Y.	*	*		
Superior Lamp Mfg. Co., Inc., New York City	*			
Thomas, C. B., New York City	*			
Titeflex Metal Hose Corp., Newark, N. J.	*			
Tonneau Shield Co., Inc., New York City	*	*		
Torbensen Axle Co., Cleveland, O.			*	*
Trexler Co., Philadelphia, Pa.	*	*		
Triplex Safety Glass Corp., N. Y. C.	*	*		
Triplex Tire Corp., N. Y. C.	*			
Tuthill Spring Co., Chicago, Ill.		*		
Twin Fire Spark Plug Co., Detroit, Mich.		*		
United Mfg. & Distributing Co., Chicago, Ill.	*	*		
United States Air Compressor Co., Cleveland, O.	*			
U. S. Light & Heat Corp., Niagara Falls, N. Y.	*	*		
U. S. Specialty Co., Boston, Mass.			*	
Unity Laprobe Mfg. Co., Inc., N. Y. C.	*			
Universal Shock Eliminator, Inc., N. Y. C.	*	*		
Utilities Sales Corp., Philadelphia, Pa.	*	*		
Vacuum Oil Co., N. Y. C.	*	*	*	
Van Sicklen Speedometer Co., Elgin, Ill.	*	*		
Vaporizer Utilities Sales Corp., N. Y. C.	*	*	*	*
Veedor Mfg. Co., Hartford, Conn.	*	*		
Wales-Adamson Co., Chicago, Ill.		*		
Wallace Mfg. Co., Newark, N. J.	*			
Waltham Watch Co., Waltham, Mass.	*	*		
Warner-Patterson Co., Chicago, Ill.	*	*		
Wasson Piston Ring Co., Plainfield, N. J.	*			
Waukesha Motor Co., Waukesha, Wis.				*
Weaver Mfg. Co., Springfield, Ill.	*	*		
Wellman-Seaver-Morgan Co., Akron, O.			*	*
West Steel Casting Co., Cleveland, O.			*	*
Weston Electrical Inst. Co., Newark, N. J.	*			
Wheeler-Schebler Carburetor Co., Indianapolis, Ind.	*	*	*	*
Whittington Mfg. Co., Montrose, Pa.	*			
Wildenberg Bros., New York City	*			
Willard Storage Battery Co., Cleveland, O.	*	*		
Williams, J. H., Co., Brooklyn, N. Y.	*	*		
Wilson, K. R., Buffalo, N. Y.	*	*		
Wire Wheel Corp. of America, Buffalo, N. Y.	*	*		
Wisconsin Motor Mfg. Co., Milwaukee, Wis.			*	
Woodworth Mfg. Corp., Niagara Falls, N. Y.		*		
World Mfg. Co., Richmond Hill, N. Y.	*			
"X" Laboratories, New York City	*	*		
Yale & Town Mfg. Co., Stamford, Conn.	*	*		
Zenith Carburetor Co., Detroit, Mich.	*	*		

*Indicates will exhibit.

KLAXONS FOR FORD CARS.

The Klaxon Co., Newark, N. J., has met the demand on the part of owners of Ford cars for a motor-driven horn, by placing on the market its new Klaxon Five Ford type, which is being distributed to dealers in all parts of the country.

The new horn is equipped with a bracket that fits readily on to the Ford engine, under the hood, and installation on the later Ford models, which are equipped with self-starters, is a simple matter and can be done by any owner.

ARMY AUTOS BRING $50,000.

The Motor Transport Corps of the United States army sold at public auction at Governor's Island Nov. 25, 55 motor vehicles designated as "unserviceable." The estimated total receipts were $50,000. A dozen touring cars and roadsters and 43 trucks were included in the sale, the selling price very nearly approximated the quotations on second hand cars in the commercial market it was reported.

LARGE GARAGE TO BE BUILT IN SALEM.

A large part of the old Salem Hospital land, Salem, Mass., has been purchased by the Goldberg Trust Co. of Salem, of which Max Goldberg is president, for the site of the largest garage on the North Shore. The area of land secured by the company is 40,000 feet, with a broad frontage on Derby street, and is situated on the direct line of all the heavy auto traffic between Boston and the North Shore. Building operations will be begun at once.

Almy, Bigelow & Washburn, owners of a big private garage opposite the hospital grounds, have plans for an addition to the plant, to be erected this spring.

MEMBERSHIP INCREASING.

The membership of the Motor and Accessory Manufacturers' association has been increasing at an unprecedented rate the past few months. The full roster now includes more than 360 companies, manufacturing motors, parts, tires and accessories for the automotive industry.

Big Aerial Exhibition at Chicago

Indications now point to the fact that one of the biggest aeronautical exhibitions ever held in the country will be seen at the Coliseum in Chicago the week of Jan. 8.

It will epitomize the progress that has been made in this and foreign countries in the science and application of aeronautics both during and since the close of the war. It will be largely educational in its nature, depicting the history of the airplane from its inception to its present development. It will undoubtedly include types of lighter-than-air-craft, as well as sea planes of various designs.

One of the purposes will be to show the utility of the modern airplane for the transportation of passengers and freight, especially its availability where quick service is the desideratum.

There will be included a representative display of aeronautical equipment and supplies, and the exhibition is receiving the sanction and support of the important manufacturers of these components, who are recognizing this as a wonderful opportunity for presenting their product to the general public from an educational standpoint.

One of the recent applicants for liberal space is the Goodyear Tire & Rubber Co., Akron, O., which built more than 1000 balloons for the government.

SHIPPING PISTON RINGS BY THE CAR LOAD.

A full car load, consisting exclusively of piston rings, was recently shipped from the plant of Foster, Merriam & Co., Meriden, Conn., to a single concern, this probably setting a record in the piston ring industry. This was accomplished in spite of the fact that a portion of the finished product which the company had on hand was somewhat damaged by a small fire.

The large, new addition to the foundry of Foster, Merriam & Co. is about completed and the new machinery will be installed so that the company, by the first of the year, will be making 100 different sizes and styles of piston rings.

This concern was the first in the United States to finish six-inch trench mortar shells for the government during the war. It was through the experience gained in work for the government that the company has developed the manufacture of articles in other branches which are now demanded, including piston rings for Liberty motors, which has led to its specializing in these goods for many other lines.

The Gayette Motors Corporation, Manhattan, New York City, has been chartered with $50,000 capitalization by A. Engelhardt, J. C. Grossman and S. Stein, 416 Fort Washington avenue, New York.

As a result of the demand for automobiles and tires the Fitchburg Yarn Co., Fitchburg, Mass., has its plant running to capacity making tire fabric.

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Personal News of the Industry in Brief

Joe Spery, who is well known in the automotive industry, was recently put in charge of production by L. W. Wright, president and general manager of the Hooven Radiator Co., Chicago. It is reported that the business of the company has increased 300 per cent. since Mr. Spery joined the Hooven company. He is a young man of energy and executive ability, and is an expert on tools, dies and special machinery, thoroughly understanding the advantages of labor saving devices and the designing and installation of such equipment.

Joseph Spery, Manager of Production, Hooven Radiator Co., Chicago.

President Wright is a firm believer that the production end of any business is the foundation upon which the entire organization depends, and the Hooven company is leaving no stone unturned in the way of improved machinery, dies, etc., to enable it to meet the increasing demand for Hooven radiators.

J. M. Stockfisch, formerly associated with the Tide Water Oil Co., New York, has been made Chicago district sales representative for Pasco wire wheels, made by the National Wire Wheel Works, Inc., Hagerstown, Md. Mr. Stockfisch will have the states of Ohio, Indiana, Illinois, Kentucky, Wisconsin, Minnesota, Iowa, Missouri, North and South Dakota, Nebraska, Kansas and Oklahoma under his jurisdiction. He is widely known in the automotive industry, being a prominent member of the S. A. E.

Harry S. Buzby, who for 12 years was connected with the staff of the Chilton Co. and W. Cortez Raughley, formerly automobile manager of the Philadelphia Public Ledger, and for the past five years connected with the Fletcher Co., have formed a partnership under the name The Buzby-Raughley Co., and will engage in advertising and merchandising.

Walter Y. Anthony has been promoted to be manager of the Packard Motor Car Co. of Philadelphia, to succeed Lee J. Eastman, who was recently elected president and general manager of the Packard-New York Co. Mr. Anthony became affiliated with the Packard company in 1909 and has always held positions of responsibility in the organization.

J. H. Browning, for 2½ years manager of the Buffalo, N. Y., branch of the Buick Motor Car Co., has been promoted to the position of manager of the Milwaukee, Wis., branch. Mr. Browning's successor at Buffalo is Charles L. Fletcher of that city.

C. W. Curtiss has resigned his position as director and general manager of the Splitdorf Electrical Co., Newark, N. J., and is to take charge of the affairs of a large automobile accessory company with headquarters in Newark. R. W. Sutherland has been chosen to succeed Mr. Curtiss as general manager of the Splitdorf Co. and F. C. Manning becomes vice president and factory sales manager.

Henry M. Stanley has been appointed retail sales manager of Johnson Brothers, Inc., distributors for western Massachusetts of Auburn Beauty six-passenger cars and International motor trucks. Mr. Stanley has had an extensive experience in the automotive industry, having been recently with the Williams Motor Sales Co.

John B. Sopher, who was general manager for the Acason Motor Sales Co., Philadelphia, has been appointed district sales manager for the Acason Motor Truck Co., Detroit, with headquarters at Philadelphia. He will have direct supervision of all Acason sales organization from New York City to New Orleans, taking in every southern state east of the Mississippi river.

John B. Sopher, Southern District Sales Manager, Acason Motor Truck Co.

J. B. Childe, general manager of the Canton spring and forge plants of the Standards Parts Co., Cleveland, has been promoted to be general manager of the Perfection spring division. H. E. Clay succeeds Mr. Childe as general manager.

E. A. Shelly, who was engaged in sales promotion for a well known eastern truck company, is now connected with the home office of the Selden Truck Corporation at Rochester, N. Y., as assistant sales manager, succeeding C. E. Williams, resigned. Vice President Boulden, in charge of sales and advertising, has organized an advertising department that will be operated at the home office, and the sales department has been completely reorganized to meet the demands of the increased production under the new plan of operating.

E. A. Shelly, Assistant Sales Manager, Selden Truck Corporation.

R. E. Keller, who has for some time been prominently identified with the automotive publicity field, has organized the R. E. Keller Co., which will conduct an advertising agency with offices in the Otis building, Chicago.

Ernest H. Evans of the C. E. Fay-Allen Co. has sailed for Europe, where he will make a study of business conditions with a view of determining the advisability of opening a foreign branch for his concern.

George E. Blakeslee, president of the Crescent Automobile Co., Jersey City, N. J., has been elected boulevard commissioner for Hudson county. Mr. Blakeslee handles the Cadillac car and is one of the New Jersey Trade association, and is one of its board of governors.

Gilbert U. Radoye has been made director of advertising of the Haynes Automobile Co., Kokomo, Ind.

F. J. Druar of the engineering department of the Packard Motor Car Co., has taken over the duties of chief engineer of the Standard Motor Truck Co., Detroit.

Witney Wright has joined the sales department of the Philadelphia branch of the Locomobile Co. of America. Mr. Wright is a graduate of Harvard, class of 1915, and served during the war with the 111th Infantry, 28th division.

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Goodyear's Most Successful Year

Reports made public at the annual meeting of the Goodyear Tire & Rubber Co., Akron, O., Dec. 1, showed that the past year's business was the largest in

L. C. Rockhill, Sales Manager, Goodyear Tire & Rubber Co.

volume and profits in the history of the company. Gross sales for the fiscal year ending Oct. 31 amounted to $168,914,982.83, an increase of $37,677,600.38 over the previous year. The net profits, subject to federal tax, were $23,277,245.29, as against $15.388,190.74 for the preceding year.

In his report to the stockholders President F. A. Seiberling stated that during the year both issues of outstanding preferred stock had been called for redemption and the authorized common and preferred capital stock of the company was increased to $100,000,000 each. It was also reported that of the new issue of preferred stock offered to stockholders and employees of the company, $41,135,900 had been subscribed by 30,409 individuals, representing every state in the Union, of which amount $7,843,600 was taken by 17,407 employees.

During the year subsidiaries of the company were formed as follows: The Goodyear Tire & Rubber Co. of California, $20,000,000 capital, and the Pacific Cotton Mills Co., $6,000,000. Plants of the most modern design and best equipment that years of experience can furnish are now being erected, the rubber plant to have a capacity of 7500 tires a day and the cotton mill 150,000 yards a week. The company plans to manufacture and distribute $250,000,000 worth of products during the coming year.

There are now on the pay roll 47,983 persons in its world-wide activities, including those at branch offices, the California and Canadian factories, the cotton mills at Goodyear, Conn., the cotton plantation in Arizona and the rubber plantations in Sumatra. Of these 28,681 are in Akron. The production of pneumatic tires has now reached 33,000 daily, but this large output does not supply demand.

At the annual meeting all of the directors were re-elected as follows: F. A. Seiberling, C. W. Seiberling, G. M. Stadelman, F. H. Adams, P. W. Litchfield, H. B. Manton, J. P. Loomis. The directors in turn organized as follows: President and general manager, F. A. Seiberling; vice president and manager of purchases, C. W. Seiberling; vice president and director of sales, G. M. Stadelman; vice president and factory manager, P. W. Litchfield; secretary and treasurer, W. E. Palmer; assistant secretary, W. D. Shilts; assistant treasurer, H. J. Blackburn; second assistant treasurer, H. H. McCloskey. The only changes in the personnel were the promotion of Mr. Palmer, formerly assistant secretary to the office of secretary in addition to his position as treasurer, and the election of Mr. Shilts to succeed Mr. Palmer as assistant secretary.

The Goodyear Tire & Rubber Co., Akron, O., has created a new office in connection with its activities, that of sales manager, and has appointed L. C. Rockhill to the position. This appointment, coming as it does at a time when the Goodyear company is able to announce the close of the most successful year in its already remarkable history, with a total gross sales of almost $169,000,000, will attract wide attention to the man who will direct its future sales policies. Mr. Rockhill has been with Goodyear over 12 years, previous to which time he was in the advertising department of a Cleveland newspaper. His first service was in charge of the repair department, which was a sub-division of the tire department, handling repairs and adjustments. He was successively made manager of the aeronautical and automobile tire departments and assistant sales manager in charge of tire sales.

Mr. Rockhill's advancement is in line with the Goodyear policy of recognizing ability among its employees.

C. R. Lester, Manager Technical Department, Packard Motor Car Co., Detroit.

Nicol Manager Garford Chicago Branch

Grant C. Nicol, who has been identified with the power truck industry in Chicago for a number of years, has been made manager of the Chicago branch of

Grant C. Nicol, Manager Chicago Branch, Garford Motor Truck Co.

the Garford Motor Truck Co., assuming the duties of the position Nov. 1. He succeeded George Crane, who resigned after an association of several years with the company. The management carries with it supervision of a dealer organization in Chicago territory.

BENDER JOINS C. A. S. CO.

John L. Bender has resigned his position as sales manager of the Anderson Forge & Machine Co. and has joined the C. A. S. Engineering Co., Detroit, which concern has just completed arrangements to represent the Pollak Steel Co., operating plants at Cincinnati and Marion, O., and Chicago.

The Pollak company produces light and heavy forgings for the automobile industry, heavy forgings for locomotives, engines, machine and marine service, industrial forgings of all types, hammered, pressed or drawn; also rolled products, including angles, shapes, tees, merchant bars, concrete bars, etc.

The Pollak Steel Co. has had 54 years of practical manufacturing experience, and recently entered the motor car field with a new forge plant at Chicago.

KELLY-SPRINGFIELD INCREASES COMMON CAPITAL.

Stockholders of the Kelly-Springfield Tire Co. have voted to increase the authorized common share capital from $5,029,000 to $10,000,000. The increase is for the purpose of distributing common stock dividends. It was also voted to authorize a decrease in the authorized preferred stock from $3,990,300 to $3,900,300.

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Cashin Acason's Advertising Manager

J. G. Cashin, who was for a considerable time associated with the Standard Motor Truck Co., Detroit, as advertising manager, has joined the Acason Motor Truck Co. of that city in a similar capacity. He succeeds Donald F. Whittaker, who had served in the dual capacity of advertising manager and assistant sales manager, who has been made assistant to Vice President and Director of Sales Harry A. Conlon, and will now devote himself exclusively to sales and sales promotion.

J. G. Cashin, Advertising Manager, Acason Motor Truck Co.

Charles E. Fay of the C. E. Fay-Allen Co., Boston, Ford distributor, has been elected president of the board of directors of the Watertown, Mass., Co-Operative Bank. Mr. Fay is also on the board of directors of the Back Bay National and Back Bay Co-Operative banks.

W. H. Nash, formerly in the sales department of the Timken-Detroit Axle Co., at Detroit, has accepted a position as sales manager of the Beaver Manufacturing Co., Milwaukee, Wis., manufacturer of a four-cylinder tractor engine and a six-cylinder passenger car engine.

P. V. Sullivan has been promoted to the position of sales manager for the Mitchell-Lucas Co., distributor of Mitchell automobiles.

George E. Twitmyer has been appointed general sales manager of the Stevens-Duryea lines at Chicopee Falls, Mass. Mr. Twitmyer has been at the executive offices of the Peerless Motor Car Co., Cleveland, O., where he was favorably known from his many years association with that company.

Everett S. Cameron has returned to the automobile manufacturing industry as president of the Cameron Motors Corporation, West Haven, Conn., and will again place the Cameron car on the market, the production of which was interrupted by the outbreak of war.

R. W. Knox, formerly advertising manager of the Columbia Graphophone Co., and previous to that in the advertising departments of the Loose-Wiles Biscuit and American Chicle companies, has been appointed by Harry S. Houpt, president of the Hudson Motor Car Co., Detroit, to promote an intensified plan of publicity and sales for the coming year in behalf of the Hudson and Essex cars.

Alexander W. Barber, formerly connected with the credit department of the Irving National Bank of New York, has been appointed a field secretary of the Motor and Accessory Manufacturers' association, by M. L. Hemingway, general manager of the association. By training and experience Mr. Barber is unusually well qualified for his new work, as when with the bank he handled many of the important accounts with the automotive industry and prior to his connection with the bank he was a member of the inspection department of the New York Life Insurance Co.

Pickens is Selden's Advertising Manager

The Selden Truck Corporation, Rochester, N. Y., has established an advertising department within its organization which has been placed in charge of J. E. Pickens, who was for nearly five years assistant advertising manager for the Federal Motor Truck Co., Detroit. Previously the advertising for the Selden company was handled by the agency having the Selden account, but the nation wide distribution of Selden trucks necessitated a change in the policy. In addition to directing the advertising, Mr. Pickens will also edit "Transportation," a publication that will be produced by the Selden company for the purpose of promoting power highway haulage.

J. E. Pickens, Advertising Manager, Selden Truck Corporation.

Arthur A. Roelofs has been chosen as special representative in the Middle West for the Precision and Thread Grinder Manufacturing Co., Philadelphia.

Ralph C. Roguon, President, Automotive Service Association, New York, N. Y.

L. M. Field, Pacific Coast Representative, Selden Truck Corporation.

H. W. Drew, Assistant Manager, Technical Service Department, Packard Motor Car Co.

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Briggs is B & W Co.'s General Manager

The B. & W. Manufacturing Co., Chicago, manufacturer of radiators for the automotive industry, has made great strides since it was incorporated in January. The first radiators were shipped in June and since then orders amounting to over $750,000 have been written.

S. D. Briggs, General Manager of B. & W. Manufacturing Co.

The factory in Chicago is now turning out an average of more than 300 radiators per day. General Manager S. D. Briggs states that every indication is for increased production in 1920. All manufacturers now being served by the company have indicated their intention of increasing their orders after Jan. 1.

The company is planning to increase its production to 600 radiators per day beginning Jan. 1, and, from all indications, will on that date have sufficient orders booked to carry it throughout the year.

B. J. Grigsby, vice president of the Anderson Electric Specialty Co., is now in London and Paris in connection with the distribution of the company's products in those countries. Mr. Grigsby is well acquainted with the possibilities of these markets from his former connection, for 10 years with the automobile and electrical manufacturing concern of Benjamin Electric, Ltd.

U. S. Johnson, long and familiarly known to the trade from his connection with the Motor Hardware & Equipment Co., San Diego, Cal., has severed his connection as sales manager with that company and will join his brother, C. E. E. Johnson, to establish a manufacturers' agency under the name of U. S. & C. E. E. Johnson, and will specialize in the Pacific coast jobbing trade.

C. S. Hyman, recently returned from overseas and formerly with the Campbell-Ewald Co., has been appointed advertising manager for the Standard Motor Truck Co., Detroit.

William McDonnell, formerly connected with the American Ice Co., and Alexander Saburn, recently with the Franklin car agency, Atlantic City. N. J., have taken over the agency for the Holmes air cooled car for that territory. The new concern will maintain a Holmes service station in addition to taking on the sale of the cars.

Emlen S. Hare, who recently resigned as vice president of the Packard Motor Car Co., has become president of the Mercer Motors Co., which has acquired the stock of the Mercer Automobile Co., Trenton, N. J. Henry Lansdall and G. L. Guyman also go from the Packard company to the Mercer company with Mr. Hare, the former as vice president in charge of sales and advertising.

F. H. Kueck, who recently completed a drive from New York to Los Angeles, Cal., in a Nash six, reports that his average for the distance, 4154 miles, was 14.4 miles to a gallon of gasoline.

Harry Lozier, formerly head of the Lozier Motor Co., Detroit, and the Hal Motor Car Co., Cleveland, is now in charge of the distribution of Chandler cars at Albany, N. Y.

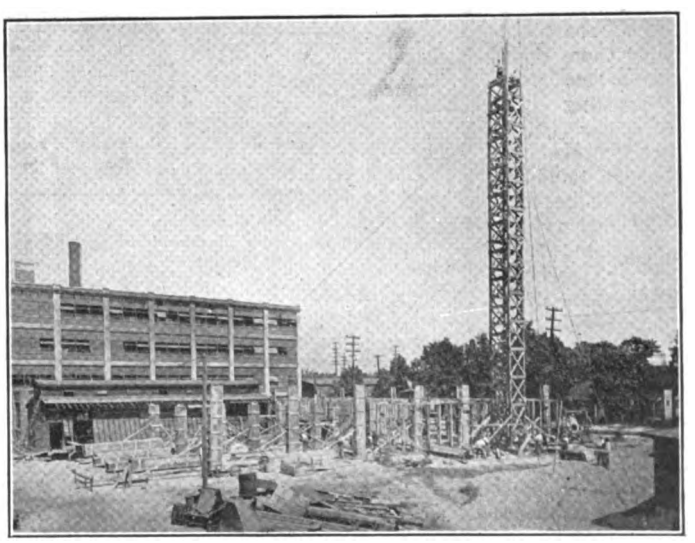
Lester George Provo, assistant to the sales manager of the Packard Motor Car Co., Boston, was married recently to Mrs. Minnie Haas Kattell, daughter of George Haas of Clayton, N. Y., at the Hotel Brunswick in Boston. Mr. Provo was a member of the United States Medical Corps during the war.

PISTON RING CO. EXPANDING ITS MUSKEGON PLANT.

The Piston Ring Co., Muskegon, Mich., which claims to be the largest manufacturer of piston rings in the world, is erecting an addition to its plant, now being constructed by the National Construction Co. of Detroit and Muskegon, which will, when equipped, bring the production up to more than 125,000 rings a day. The demand for its products has necessitated this expansion, the second made in a few years. The company expects that the new plant will be operating before the end of the year.

The company produces piston rings for automotive engine, pump and compressor manufacturers, furnishing angle jointed, lap joined or specially designed rings to meet any requirement, and the production is now considerably in excess of 1,000,000 a month.

The rings are made from a tough, close grained gray iron that is subjected to laboratory analysis before and after casting, and plant is equipped with much special machinery.



Constructing the New Plant of the Piston Ring Co., Muskegon, Mich., to Meet the Demands of Greatly Increased Business.

Williams Joins Sanford as Sales Manager

Announcement is made by the Sanford Motor Truck Co., Syracuse, N. Y., builder of Sanford trucks, of the appointment of C. E. Williams as sales manager. Mr. Williams was for a considerable period associated with the Selden Truck Corporation and the Selden Truck Sales Co. as assistant to Hal T. Boulden, the director of sales and advertising. He is well known in the industry and to the trade and by training and experience is well qualified for the supervision of the sales organization of the Sanford company.

C. E. Williams, General Sales Manager, Sanford Motor Truck Co.

H. Guy Grimmel, formerly with the Baltimore office of the Holbrook Auto Corporation, distributor of Allen cars, has gone to Washington, D. C., as manager of the branch of the Holbrook Corporation in that city.

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TRUCK TIRE SERVICE AS A BUSINESS

Station with Practical Equipment and Good Management Developed to Be the Largest in New England in Less Than Three Years

Drivers and Owners at the "Conservation Day" Gathering at Feltham's Truck Tire Service Station, an Event Planned to Advise Them of Practical Tire Economies.

TIRE service keenly concerns every owner of power trucks. The time of a truck has distinct value and any period that is not productive results in a loss that cannot be compensated. The owner may, provided that the number of machines shall justify, provide for tire changes and repairing, but this will necessitate initial investment for shop equipment and tires, the use of capital and the employment of men, and unless the fleet is of such proportions that the employees shall be constantly working a tire maintenance department will be an extravagance and not an economy.

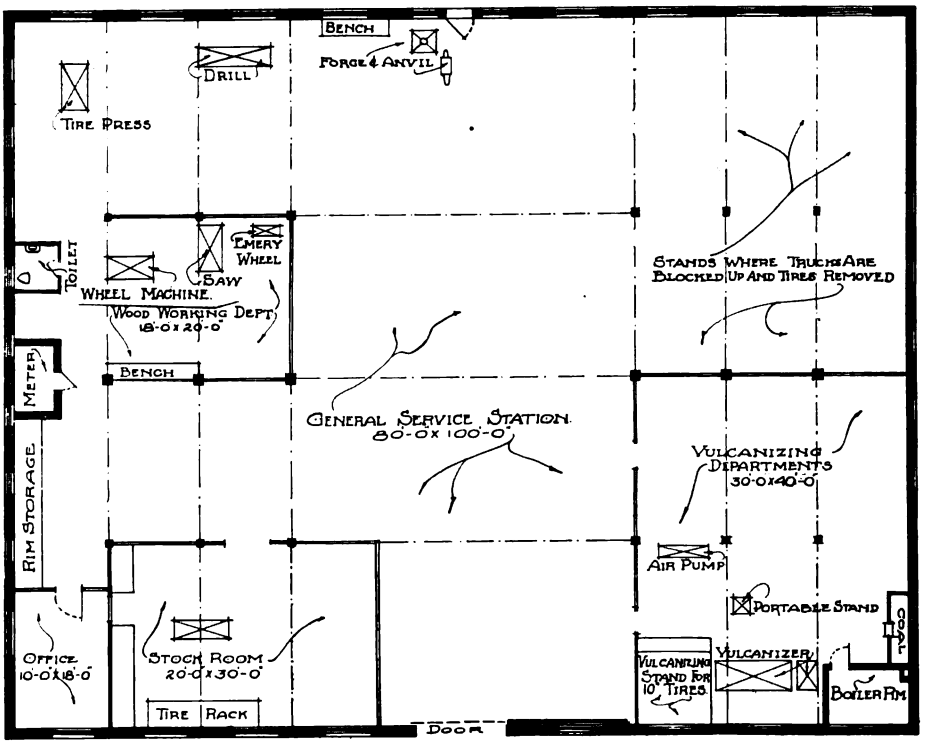
The tire service station must, as does the mechanical service station, specialize this work. There are thousands of tire repairers, many of them operating in a small way and handling passenger car tires solely. Some of the repair men have expert knowledge, having had factory experience and frequently thorough training. The number of truck tire service stations is comparatively few, however, due first to the fact that with very limited equipment a shop for car pneumatic tire repairs can be established; second, that cars vastly outnumber trucks and the possibilities for business are believed to be greater; third, that the repairing that can be done with solid tires is not of a character that earns considerable revenue, and fourth, the equipment necessary for a truck tire service station is costly and considerable initial investment is necessary.

There is every reason to believe, however, that from now on the tire station that is equipped to afford tire service for trucks will have a very satisfactory and remunerative business, and the possibilities are exceptionally attractive. The number of trucks in use is increasing very fast and though there is no probability they will be as numerous as passenger cars, the character of service is entirely different and ought to be very profitable.

An Exclusive Truck Tire Service.

This story has to do with the establishment and development of a tire station that was until recently given over exclusively to truck service. It has in 2½ years become the largest station of the kind in New England in point of facilities and equipment, and has become very profitable. Because of the increasing use of pneumatic tires for trucks of small size it now affords service shoes of this type for passenger cars as well, and does all kinds of repairing and restoration.

But its business is first of all with truck tires. There is no doubt of the growth of patronage and it is enduring because of the satisfaction that it insured to its patrons. The station was established by a truck tire salesman, who was attached to the Providence, R. I., branch of the Goodyear Tire & Rubber Co. for five years and in 1913 he won a gold medal offered by the company as a 100 per cent. efficiency man. He re-



Floor Plan of Feltham's Truck Tire Service Station, Showing the Arrangement of the Different Stock and Work Departments.

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signed Oct. 31, 1916, and the following morning established his present business, beginning with desk room in the sales rooms of the Federal Motor Truck Co. of Rhode Island, and April 1, 1917, he leased the station he now operates at 76 Branch avenue, Providence.

The building is brick, a single story, 80 by 100 feet, mill construction, and was originally built for mill storage. It has a yard of 16,000 square feet that is available for expansion or outside storage. The building is high studded and well lighted, with an entrance at the center of the front, which is advantageous for the layout of the several departments of the station. Reference to the accompanying plan of the floor of the building as it is utilized is interesting.

The location is well removed from the business center of Providence and Mr. Feltham was advised that the location would militate against business development, and especially against transient patronage, but the building is not too large for his requirements. One object was to have sufficient floor area so that the trucks could be worked on sheltered instead of in the open air. and convenient to the several departments to minimize labor and time, and there is little doubt that the size of the building has been an economy in more than one way, especially in cold weather.

Arrangement of the Departments.

Entering the structure at the left is the tire stock room, which is separated by half partitions with a sliding wire grating door, which is 20 by 30 feet, and beyond this in the corner is the office, 10 by 18 feet. Next beyond the office is the rim storage racks and bench, the meter room, the lavatory, and in the further corner at the left is the tire press. Arranged along the rear wall, extending about half the length of the floor, is the drill press, bench, forge and anvil. In the center of this section of the floor is the wood working department, which is 18 by 20 feet and is equipped with a wheel machine, band saw and grinder.

At the right of the entrance is the vulcanizing room, 30 by 40 feet, and beyond this are the stands for trucks that are in the station for work, and further on is the storage space for tires and rims removed from trucks and which will be sold for "scrap." The center of the floor is open and clear of posts and this is utilized moving trucks in and out and occasionally for work if the truck stand is filled.

This space is 37 by 70 feet and a part of this and the area now used for old tire storage could be devoted to additional equipment if this is needed with the development of the business.

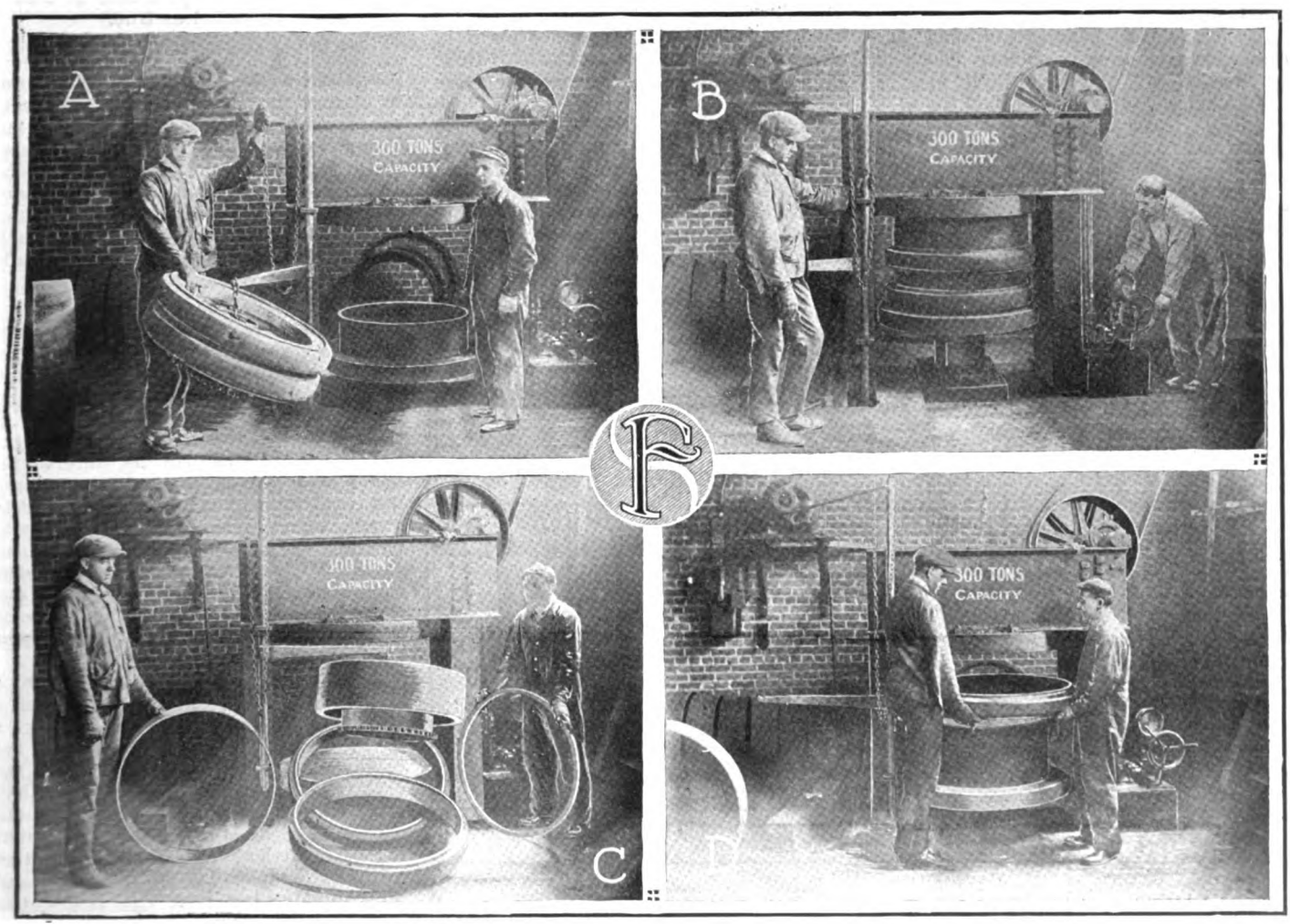
In the stock room is a show case in which is displayed tire accessories. On two sides of the room are racks in which are kept all sizes of truck and passenger car tires. In truck tires, solid bands, the range is from 32 by 3½ inches to 41 by 12 inches; in cushion truck tires from 30 by four inches to 36 by five inches; in cord truck pneumatic tires from 36 by six inches to 42 by nine inches; in passenger car pneumatic tires, both cord and fabric, from 30 by three inches to 37 by five inches, and in industrial truck solid band tires from 10 by three to 20 by five inches. All the tires are Goodyear products and the stock will range in value from $25,000 to $30,000.

So far as is possible all sizes of tires and pneumatic tubes are stocked, so that practically any requirement can be met.

The station is also stocked with all sizes of S. A. E. bands, so-called, these being the steel rims that are pressed on the felloes of all wheels on which demountable pneumatic tires are mounted, quick detachable and demountable rims for passenger car wheels, wheel flanges for cushion tires and rims for truck pneumatic tires.

The shop equipment of the station is exceedingly complete and was determined with a thorough knowledge of the requirements for the work. None of the machines is duplicated, but the system is such that the work is progressively

(Continued on Page 56.)



Removing and Replacing Tires: A, Wheel with 40 by 10-Inch Dual Bands Hoisted to Swing on to the Press Table; B, One Band Clear and the Other Being Forced Off the Rim; C, Wheel with Tires Removed in Readiness for Installation; D, Wheel on Press and Setting New Tire for Pressing On.

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System for Handling Charge Accounts

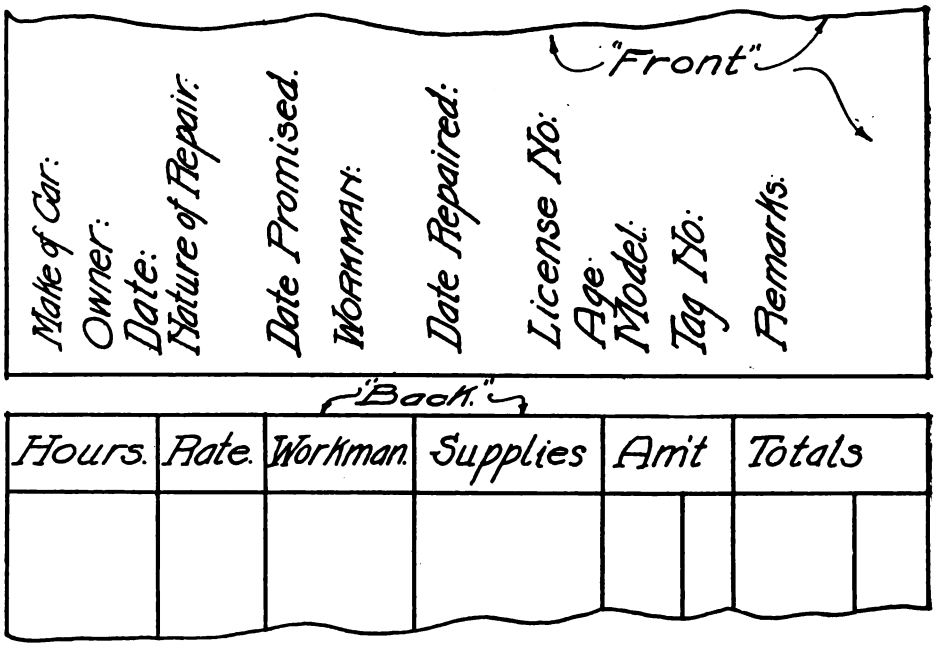
By Walter Engard.

THAT credit is a mighty force in modern business requires but little proof in view of its extensive use by retail merchants, automobile dealers, wholesalers and manufacturers the world over. That, as a matter of fact, it is an indispensable element in our present day commerce cannot be denied. Fully 90 per cent. of the business of this country is carried on by credit. Its application to the retail business is almost universal. And, while the credit business has some disadvantages, the real advantages of the credit business outweigh the disadvantages two to one in favor of credit.

Retail credit has come into disrepute because of the fact that it has not been adequately controlled. Business men have been too easy in the extending of credit. They have extended credit without the necessary facts upon which they could intelligently base the advisability of credit; in other words, they have extended credit in many cases where they would not for one moment think of extending a minor loan. They have been too lax in their methods of keeping books and entirely too lax in their collecting methods.

Credit, when handled through the proper system, is a mighty business builder. Credit, as a usual thing, appeals to the better class of trade than the cash method. Credit binds the customer closer to the house extending him credit, and also brings the customer back with a greater degree of regularity.

Credit enables the merchant to extend his business dealings to a greater extent than he could through the strictly cash basis, resulting in a much larger volume of sales, therefore more profit, even though he may suffer a few losses through bad accounts.



For illustration, let us say that through a strictly cash system the merchant does an annual business of $75,000 upon which he realizes a net profit of five per cent., or a total of $3750. Now, if that same merchant by doing business on a credit basis can increase his business from $75,000 to a volume of $150,000 yearly, and by using a proper system of extending credit and a systematic method of collecting his accounts--his loss should never be as high as one per cent., and this percentage would be high under a proper system—he would still have a gain of $2250 in net profits, or the difference between five per cent. net profit on $75,000 and four per cent. on $150,000

In view of these facts the retail automobile merchant may do well to encourage credit business. This may be a bold system, yet nevertheless true.

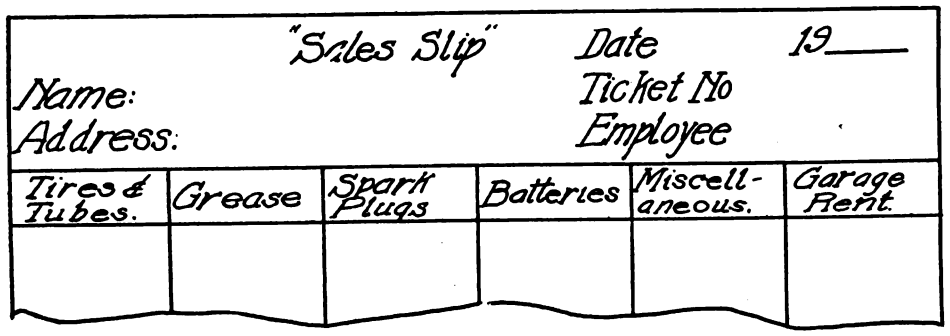
Value of a Credit System.

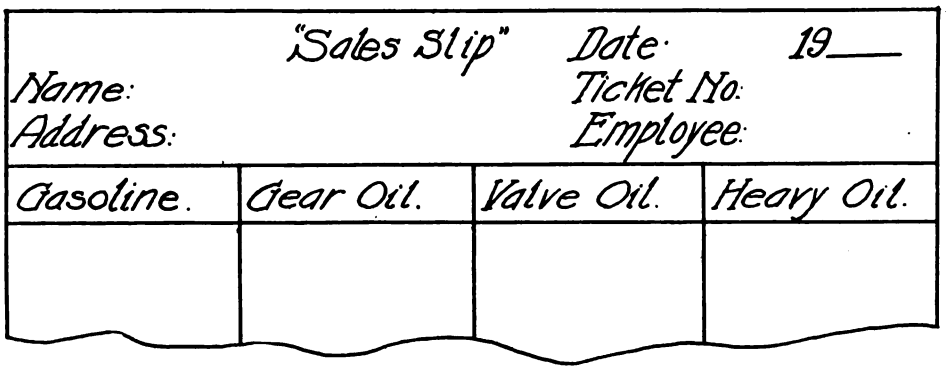
But the purpose of this article is not to discuss the advantages or the disadvantages of the credit business, but rather to place before the auto dealer and the garage man methods whereby he can conduct his business upon a more profitable basis and speed up collections. As all have to do business on a credit basis the information presented should be of decided value.

There is but one right way to do a thing, and there is but one right way to install a proper credit system and that is to start right at the bottom and build up. Therefore, the very first thing for the dealer to do is to see that every article of stock is provided with a price ticket, upon which can be entered the name of the article, the manufacturer, the cost, the selling price, to whom sold and by whom sold. These tickets should be in the form of shipping tags and should be placed on every article of size, such as machines, tires, jacks, tools, etc. For smaller articles, such as spark plugs, piston rings, etc., a small sticker may be used.

In the repair and garage department a shipping tag ruled and printed in such a manner as to accommodate the entering of the name of the car, the name of the owner, the name of the workman, the date the car was brought in and the day repaired. The reverse side of this tag should be so ruled as to allow the entering of the labor, material, etc., used in making the repair. (Note illustrations of both shipping tags.)

Sales slips should be provided upon which the employee making a sale or repair may enter the date, the name and address, and the article or articles, etc.,





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"Labor Ticket." Date 19__

Name.
Address.
Car.
Ticket No

Hours	Kind of Labor	Workman.	Rate	Am't.

Foreman.

which are to be charged to the customer. Three separate sales slips should be provided, one for the purpose of recording all sales of supplies, one for sales of gasoline and oils, and one for recording repair work and garage rent. (Two of these tickets are herewith illustrated.)

Sales Slips as Reference.

When an employee sells supplies or gasoline and oils or makes a repair on a car, he should fill out the proper sales slip and turn it into the office, together with the price tickets detached from the article sold if tagged. The bookkeeper will enter the charges on his ledger from the sales slips and then the sales slips and the price tickets should be filed for reference should occasion arise for their examination.

For the purpose of keeping these sales slips and price tickets on file for immediate reference, an index file system should be provided for each one. Both files should be four by six inches, as both the sales slips and the price tickets are this size. The index drawer for filing the price tickets should be equipped with guide cards running "A to Z" and should have a capacity of at least 1250 cards.

Additional drawers may be added as the business demands. As the price tickets come into the office the bookkeeper will file them in this index drawer behind the correct guide card. For instance, if the salesman sells an automobile to Oliver Summers he will detach the price ticket from the car and enter upon it the name of Mr. Summers and his own name, and, together with the sales slip, he will send both to the office and the bookkeeper will file the price ticket behind the guide card "S" in the index drawer.

Now should it become necessary to refer to the price ticket for the purpose of determining some fact, all that is necessary is to open the index drawers and behind the guide card "S" will be found the original price ticket as it was taken off of the car the day it was sold.

How to File Sale Slips.

The index drawer for filing the sales slips should be equipped with plain guide cards with one cut. The one cut style has a tab extending a little above the body of the card upon which may be entered the name of the customer behind which the sales slips of that customer are filed.

As soon as the bookkeeper has transferred the charge from the sales slip to the ledger sheet he will file the original sales slip behind the guide card in this index drawer bearing this customer's name. Whenever a new account is opened a guide card bearing the new customer's name may be added. The cards should be filed alphabetically, and more drawers may be added as the business demands.

With this system all sales can be traced back to the employees making them in case of any dispute. A customer may come in, after receiving his monthly statement, and state that there must be some error—that he did not buy an article specified in his statement on that date—that there must be some mistake in transferring the charge. All the book keeper needs to do is to refer to the sales slip index drawer and locate the original sales slip and, if necessary, he may tell from it the man making the sale and prove the correctness of the charge through him.

The advantages of having the price tickets and sales slips on file for reference are many and a great many disputes will be settled without difficulty and ill feelings.

The Ledger Accounts.

The next thing will be to provide a suitable ledger in which to keep the accounts. There are a great many systems of keeping accounts sold commercially, any if which is good, but for the auto dealer and the garage man I would recommend a loose leaf ledger system.

The ledger should be an extension post type allowing the insertion or removal of accounts without the necessity of a new ledger. Ledger sheets should be 11 by 11 inches, and so ruled as to accommodate the entering of the date of each charge, along with a description of the sale and the amount of the charge; also columns for entering the credits and balances.

Every ledger account should be kept in duplicate by providing a plain ledger sheet of the same size as the ruled sheet to be placed directly following the main ledger sheet of each account, so that by placing a sheet of carbon paper between the two sheets a duplicate of each account may be made.

By doing this the original ledger sheet may be used as monthly statements, thereby saving a great deal of time in getting out bills, and this will also insure an itemized statement for each customer. The duplicate will be retained as a permanent record in the ledger until the account is settled.

The Utility of Controlling Sheets.

There should also be a controlling sheet for each account. These controlling sheets should be placed in the front of the ledger and an index of them kept, facilitating the finding of the various accounts. The pages for this controlling sheet should be of the same size as the ledger page, but of a little heavier material, as they last for a considerable length of time, and if not of heavier weight will soon become worn.

These sheets should be ruled in the same manner as the ledger sheets with the exception that they will not bear the name of the business, but will be ruled

(Continued on Page 66.)

"Price Ticket."

Article.
Description.
Manufacturer:
Cost:
Sell.
Sold To:
Sold By
Remarks:

Date Sold:

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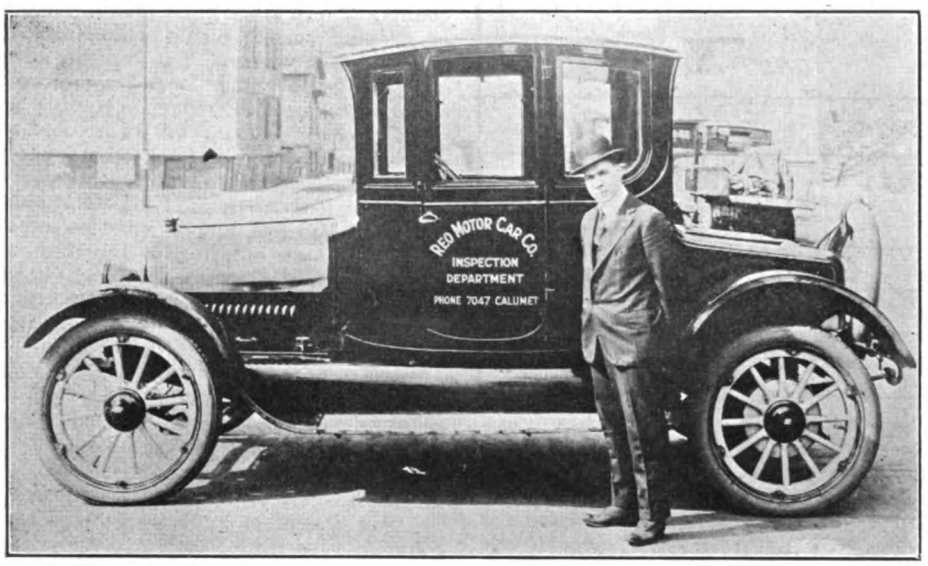
REO BRANCH GIVES EFFICIENT SERVICE



Walter Hoffman, the Capable Chicago Reo Service Man, and His Inspection Car.

"'IF IN Need of Help, Hail Hoffman,' is a slogan that is more than merely alliterative," says Major Harry Urwin, manager of the Chicago Reo branch. "We have found it has a tremendous merchandising value.

"If it is true that the satisfied customer is the best salesman, then I am justified in saying that this service slogan and what it represents, is one of our most productive factors.

"I don't mind telling the trade some inside facts about our methods, even though it be at the risk of others copying a plan that is so far exclusively our own. In fact I hope others will copy it because a dissatisfied customer injures all of us, regardless of what make of car he drives.

"Soon after taking charge of the Chicago branch I instituted the system of sending a competent mechanical man from the inspection department to voluntarily examine Reo cars wherever he finds them and advise owners if they are not running at top notch efficiency.

"This man's name happens to be Walter Hoffman, who has been with the Reo company 14 years, is thoroughly saturated with the Reo policy—Reo is his religion in fact—and he knows every nut, bolt and screw in every model the Reo company ever made.

"Moreover, he has a most pleasing personality.

"Hoffman has a Reo coupe which is comfortable, so that he can and does drive in all kinds of weather. In fact, bad weather is his best harvest time.

"He keeps everlastingly at it, calling on Reo owners in Chicago, which he has divided into zones so as to make it systematic and be sure that he will not overlook anyone.

"When he calls on a customer he presents his card and explains the object of his visit.

"For example: 'Good morning, Mr. Smith. My name is Hoffman, from the Reo inspection department. You have a Reo car and so far as the records at the service station show, you have not called on us for any help, aid or sympathy for quite a while, so in the ordinary course of my work I want to find out if your car is running all right and if you need any suggestions in regard to it. In fact, I should like to run it around the block and if you have five minutes to spare, perhaps you will go with me.'

"Usually Mr. Smith goes along and generally Hoffman will be able to make a few little adjustments—possibly to the carburetor, the cleaning of a spark plug or the tightening of a battery wire. It may be that it is a little more serious than any of those things. Perhaps one of the valves is sticking a bit or is not seating quite properly.

"Anything that Hoffman can do right then and there is done and everything else the owner may suggest—tightening spring clips or correcting other results of procrastination or neglect on the part of Mr. Smith himself.

"At the end of the day these inspections and adjustments are duly recorded on an inspection blank, which is turned into the service manager. Next morning the service manager writes to Mr. Smith and confirms what Hoffman has told him, incidentally quoting the report as to adjustments made and suggestions as to further work which should be done on Mr. Smith's car, ending the letter with the statement that of course there are no charges for Mr. Hoffman's services, inasmuch as that is part of our general service plan for keeping Reos out of the hospital.

"Sometimes Mr. Smith will, if he is not too busy, write us a nice letter of thanks for the courtesy extended by Mr. Hoffman—but even if he doesn't, we know how Mr. Smith feels about it and that another Reo booster is busy.

"Every owner in Chicago has received a card from us bearing a picture of Hoffman and the car in which he drives all the time. The card bears the suggestion, 'If you need help or advice, hail Hoffman.'

"As a result of this we frequently have calls by 'phone for Hoffman and in most cases we are able to give them the benefit of quick action.

"Hoffman starts out first thing in the morning and telephones the service station at 10 o'clock, 1 o'clock and 4 o'clock. This enables us to keep in touch with him while he is doing his routine work, and to tell him of any emergency cases.

"Another stunt, and one which has produced tremendous results, is his once-a-week trip to Grant park—the big space between Michigan avenue and the lake—where several hundred cars are parked all the time. The owners of these cars are nearly all in offices within a stone's throw of the parking place.

"Hoffman ferrets out the names of the various Reo owners from their license plates, calls them on the 'phone and notifies them that between 11 o'clock and 2:30 he will be at this spot so that, without loss of time, the owner can if he desires run over and have a little chat with Hoffman about his car.

"These are busy times for the Reo service man and the way owners avail themselves of the opportunity is the best evidence of their appreciation of the plan.

"Every Reo owner has come to enjoy an added degree of comfort from his driving of his car when he knows that in case he needs help, all he needs to do is to 'Hail Hoffman' and that the smiling service man will soon be on the spot."

PAID $16,000 FOR PARKING SPACE.

Tired of being haled into court by traffic policemen, for parking his car in public spaces beyond the legal length of time, Philip Rosenbach, art connoisseur of Philadelphia, has just paid $16,000 for a stable property near his place of business. Mr. Rosenbach was forced to park his car in the street while at his place of business, as day storage is at a premium and access to public garages is difficult. He will convert the property just purchased into a private garage and will be free from the annoying attentions of the vigilant traffic squad in the future.

GILL SALES STAFF AUGMENTED.

The sales staff of the Gill Manufacturing Co., Chicago, has recently been augmented by the addition of F. F. Fulton, formerly sales manager for the Inland Machine Works, St. Louis. Mr. Fulton will devote his time with the Gill organization to working as a special representative doing constructive sales work in conjunction with the various distributors of the well known Gill piston rings.

OVERLANDS MADE GOOD RECORD.

In the recent army transport tour from Washington to San Francisco, three of the new Overland Fours, acting as scout cars, covered 5055, 4743 and 4387 miles respectively, and no repairs with the exception of tire changes were necessary. One car made two changes, another three and the third six.

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ACCESSORIES, EQUIPMENT AND TOOLS FOR THE GARAGE AND REPAIR SHOP

Rie Nie Liquid Radiator Cement stops the leaks and forms a seal to withstand the jar of rough roads. When left in the radiator it automatically seals any new leaks which may develop, the manufacturer states.

Rie Nie liquid cement, it is claimed, will prolong the life of the radiator by keeping it free from rust and scale accumulations, and works effectively in alcohol or any other form of anti-freezing

solution. Used by steam fitters and plumbers in repairing hot water plants and steam boilers; also by automobile repairers for repairing cracked water jackets in engine cylinders.

Manufactured by the Durkee-Atwood Co., Minneapolis, Cleveland and Detroit. Prices on application.

"Cincinnati" Portable Electrical Grinders are particularly adapted for use in automobile and truck service stations and garages. These grinders are wound for direct and alternating current of any voltage, and the speeds are adapted for the particular current and the size wheel carried.

All motor windings are of the highest grade material and fully enclosed and protected. Dust hoods are fitted on the spindle to protect the bearings and windings from emery, dust and dirt. All spindles are ground.

The bearings of tool post grinders are of special bronze cone shaped and adjustable to wear by means of an adjusting screw in the motor caps. The end play is taken up by adjusting the round nut on rear end of spindle. No part of the motor housing is used as a bearing. Bench and floor grinders are fitted with annular ball bearings on both ends of the armature spindle.

The motor cap at one end of the grinder is fitted with an adjustable container, which holds the outer race of the ball bearing and both are locked in the motor cap by means of a threaded nut. The inner race of the ball bearings is locked to the armature shaft by means of a special designed dust cap doing away with all friction. Grease cups are provided on each end of the motor for bearing lubrication.

All motors are air cooled by means of a

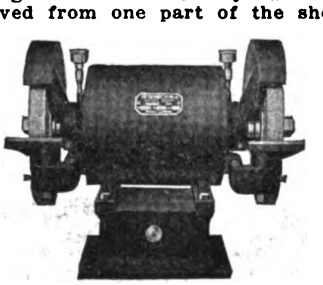
fan on the armature shaft, which forces a continuous circulation of air through the holes in the end caps. The brush holders are enclosed and fully protected. They are easily accessible and brushes can be readily renewed when necessary.

The bench and floor grinders are suitable for grinding of all kinds; also for buffing and polishing. They are equipped with two detachable tool rests and wheel guards; also with patented starting switch which is of the quick make and break type, and is entirely enclosed in the base of the motor.

Tool post grinders are made with horizontal free hand feed, also without feed. They are especially adapted for grinding lathe centers, cutters, reamers, dies, tools, etc., and for surface, parallel and internal grinding jobs of all kinds. They can be clamped in a vise for ordinary bench work.

All grinders are sent out complete ready for work and with all attachments included.

"Cincinnati" electrical grinders have a great advantage over the ordinary belt driven grinders in that they can readily be moved from one part of the shop to



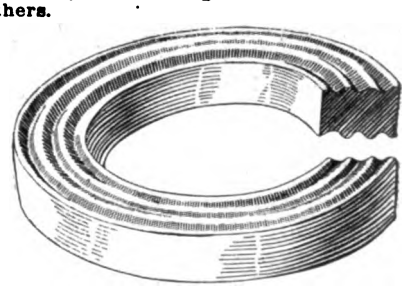
another. Grinders are made for all classes of work in sizes ranging from ¼ horsepower to three horsepower. Direct current and alternating current.

Manufactured by the Cincinnati Electrical Tool Co., 1501-3-5 Freeman Avenue, Cincinnati, O. Prices and literature on application.

The Red Devil Corrugated Lock Washer is designed for automotive work requiring a locked fastening that is absolutely secure. The washers have contact on six points, three on the washer and three on the nut and are easily loosened when it is desirable to remove them.

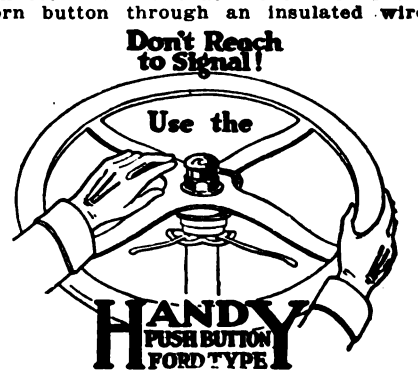
The washers are made of special manganese oil tempered steel, having a gun metal finish that is weather proof and rust proof.

Corrugated washers are constructed in such a manner that they are guaranteed to hold tight under the most extreme vibration. Washers are packed for shipment in 100, 250, 500 or 1000 in a box; also in smaller assortments packed conveniently in a bag for motorists and others.



Manufactured by the Smith & Hemingway Co., Inc., 130 Colt Street, Irvington, N. J. Price, No. 130 assortment, 15 cents; No. 140 assortment, 20 cents; No. 190 assortment, 25 cents.

Handy Push Button for Ford Cars is a horn push button that fits the top of the steering post of the Ford car, taking the place of the hexagon nut usually placed there to keep the wheel tight on the steering post. The base of the button is hexagonally shaped so that it may be screwed down tight, holding the wheel in place. A set screw is provided at one side that makes the fastening permanent. The wire connection is made at the center of the horn button through an insulated wire



leading from the button to the horn, while the button is grounded through the nut fastening the button to the steering post.

It is claimed that this button is a decided improvement over another button that this concern has been manufacturing in the past, which proved very popular with the trade. It is not necessary to remove the hand from the wheel while operating the horn button, as the button is within easy reach of the wheel rim.

The button is made from the best of material and is easily attached in a few moment's time without the use of tools.

Manufactured by the Handy Products Co., Cleveland, O. Price, 60 cents complete ready to attach.

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A-1 Storage Battery Charging Clip consists of a special patented one-piece, acid-resisting bronze clip that is attached to battery terminals when charging storage batteries in service stations.

The clip is claimed to be made from the highest grade of acid-resisting bronze, lead coated, adding additional protection from the acid of the battery. Its one-piece construction is stated to eliminate the danger of springs slipping out of place and short-circuiting the battery or opening the charging circuit. The pointed teeth of the clip insure positive contact

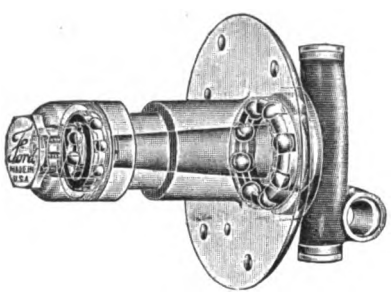
with the terminal of the battery. Jaws open 1½ inches, allowing plenty of space to fit all terminal bolts.

Positive screw connection is provided on one of the legs of the clip for connection to the charging source, while the long screw of the wire connection acts as a stop, limiting the amount of pressure applied to the hinge of the clip, insuring lasting tension. The clip has a rated capacity of 50 amperes.

Manufactured by Charles F. Hartung, Higgins building, Los Angeles, Cal. Prices, less than 10, each 25 cents; lots of 10 to 100, each 23 cents; lots of 100 or more, each, 21 cents.

Goodrich National Ball Bearings for the Ford and Chevrolet 490 Cars consist of the proper number of balls, properly spaced in a holder that may be slipped on to the bearing cone of the Ford or Chevrolet front axle, taking the place of regular loose balls. The material from which the cage holding the balls and the balls are made is of the highest grade obtainable and while low in cost they give results both in steering and driving that make them a necessity.

The manufacturer states that Goodrich National Ball Bearings will reduce the friction of the front axle fully 33 per cent., as the balls being separated do not have a tendency to ride one another, and

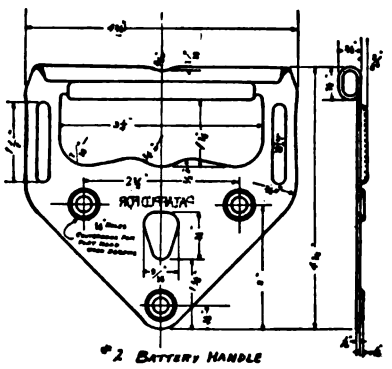


that they are free from crushing strains. The results obtained mean a big saving in repair bills, as it claims that the bearings do not wear out as quickly, balls do not break as readily and wobbly, hard steering front wheels are remedied.

Manufactured by the Goodrich-Lenhart Manufacturing Co., Hamburg, Pa. Price, $1.50 for complete set of four, including balls ready to install.

Mueller Battery Handles No. 2 are a new product that has recently been placed on the market for battery service station trade. These handles are lead coated, have a cut-out section in the center and a place for an identification tag at the top of the grip.

The handles are made of steel by a special process, giving them long life. There is ample room for the repairer's knuckles when handling a battery equipped with them. Screw holes are upset at the edges, giving them added strength, and any acid that is accidentally spilled has a chance to flow away from the screw holes so that they are not injured by acid. The grip is



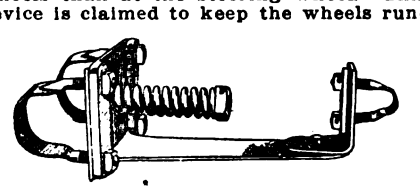
No. 2 Battery Handle

of a heavy mounting, making a very serviceable handle for replacement purposes.

Manufactured by the Mueller Electric Co., 423 High Avenue, Cleveland, O. Prices on request.

The Simplicity Adjustable Steering Device for Ford Cars consists of a double clamp that attaches to the center of the front axle and a second clamp that attaches to the steering tie rod, also a bracket joining the clamps having a spring tension attached to it that offers the necessary resistance to the side pull of the wheels exerted upon the tie rod.

The purpose of the device is to relieve the driver, in steering, of the wobbling effect of the Ford steering system, which effect is felt to a greater extent at the wheels than at the steering wheel. This device is claimed to keep the wheels run-



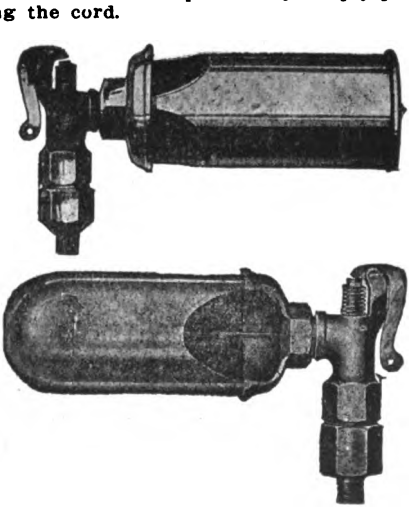
ning in a straight line when driving ahead and when swinging corners or turning to allow the steering wheel to be turned with the same freedom as when the device is not attached.

The device is easily attached in less than one hour and is guaranteed to prevent the chafing of the tires and the grinding out of the bearings, due to uneven running of the front wheels.

Manufactured by the Simplicity Wheel Co., Grand Rapids, Mich. Price, $3.

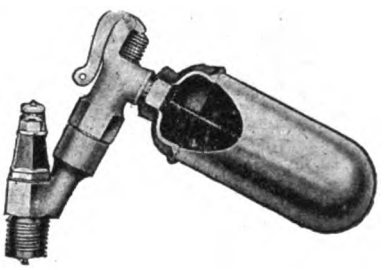
The Buell Explosion Whistle is as its name implies an explosion whistle that operates from the explosion of the gas in the combustion chambers of an automobile or truck engine when the engine is in operation.

The whistle is screwed into a petcock opening, is connected by a cord with the steering wheel of the vehicle and is blown at the will of the operator by simply pulling the cord.



The whistles are made from the best of material in three styles, as well as a type for cars not equipped with pet cocks, where the whistle is placed in the spark plug opening, a special spark plug attachment being required, as follows:

Ford, ½ inch plug; Maxwell and Briscoe, ⅞ inch plug; Buick, Oakland and Chevrolet, ⅞ inch extension plug. Standard Splitdorf spark plugs are used in connection with Buell whistles. As the temperature of the gas passing through the whistle is nearly 3000 degrees Fahrenheit, only the best of materials and design will with-



stand it. Consequently malleable iron and steel are found necessary in constructing the Buell whistles, giving proper radiation to the parts subjected to this terrific heat. No attempt has been made to see how cheap the whistles can be made, but how well, with the result that the manufacturer is able to give the purchaser a positive 10-year guarantee service.

Manufactured by the Buell Manufacturing Co., Cottage Grove Avenue, at 30th Street, Chicago, Ill. Prices, chime, $6; single tone, $4.25; single tone with Ford plug, $5.50.

Practicool Drinking Fountain No. 2 has a capacity of 72 pounds of ice, which will last about three days under normal conditions. Besides being equipped with a Glauber bubbler, it is also equipped with the cooler-ator, which is a galvanized, cast iron water chamber, holding three times as much water as a 40-foot coil of ⅝-inch lead pipe, and will, therefore, effect a 20 per cent. reduction. It is sufficient to reduce 40 gallons of 70-degree water at 50

degrees. The fountain is durably constructed, being made of heavy iron with a galvanized iron ice chamber. Granulated cork is used for insulation. Connected with waste and supply pipes it requires no attention, the manufacturer claims.

Manufactured by the Glauber Brass Manufacturing Co., Cleveland, O. Price, $75. Three other types are also manufactured.

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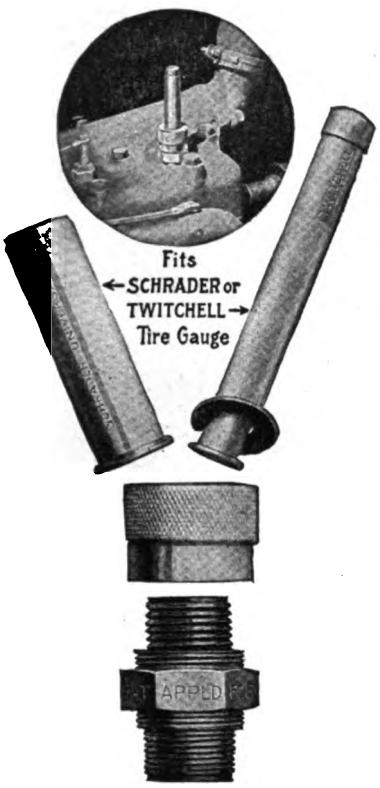


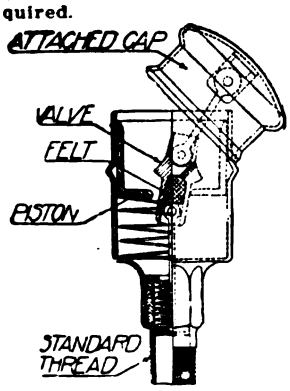
The Duplex Compression Tester is for detecting weak cylinders, and is made to fit spark plug openings of either ⅛ inch or ⅞ inch. It is used with either a Schrader or Twitchell tire gauge fitting and a special nipple, and has a knurled nut fitting the top of the nipple that holds the tire gauge in place. To use the tester, remove the spark plugs and insert the nipple into the opening. The tire gauge is set on the top end of the nipple and the knurled nut passed down over it. A washer or gasket is inserted between the nut and the flanged edge of the tire gauge, and when tightened with the nut forms an air tight joint.

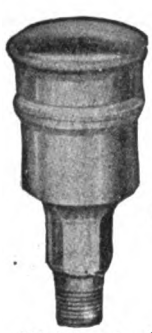
With the tester in place the engine is turned by hand and the tire gauge will show the compression of the cylinder in pounds. Testing the other cylinders in like manner will show the cylinders that are weak.

The manufacturer claims that the tester will determine if the valves need grinding, if the piston rings are fitting tightly, or if the gaskets leak compression; in other words, will be able to detect troubles that otherwise would not be found unless the engine was torn down.

Manufactured by the Casey Hudson Co., 357-61 E. Ohio Street, Chicago. Price, $1.

The Felix Oil Cup, the maker states, embodies a new principle in oil cup construction, as heretofore cups have been used solely for the use of grease and have been used on the compression principle, whereby the Felix oil cup is made to use oil only and to supply this oil in the quantities needed to the bearings when required.





The cup in shape resembles the regular compression cup, differing from it only in the interior construction. The interior is fitted with a movable piston, fitting the sides loosely and moved by spring action. A coiled spring, resting on the bottom of the cup, causes the piston to rise and fall as necessary. The cover of the cup is fitted with a hinged joint at its inside center and to this is hinged a short arm, connected by a second hinged joint to a valve.

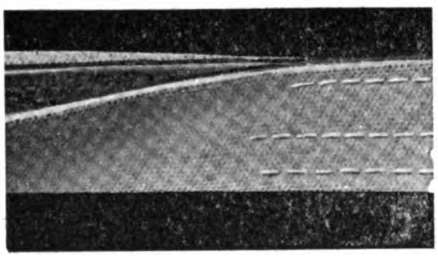
The lower end of the valve is connected to a spring in the lower section of the cup by a rod having a washer integral with it and fitting beneath the spring. After filling the cup with oil, to operate, lift the cover; by so doing the valve is lifted, allowing a portion of the oil to pass through the center of the piston and flow down into the bearing. This is to allow the oil to flush the bearing. At ordinary times the valve is self-operating and will supply the oil in moderate quantities as needed.

It is claimed that this device is an improvement over the usual compression grease cups and that oil, being a bettor lubricant, will lubricate the bearing. to better advantage.

Manufactured by the Felix Mfg. Co., 4437 N. Clark Street, Chicago. Prices on application.

Blue Ribbon Cork Filled Transmission Band Linings differ from the regular transmission band linings for Ford cars in that they are lined with cork and the cotton fabric is specially treated with a compound that makes the band wear to a point where it cannot be further adjusted, the maker states.

It is a built-up lining consisting of fabric with a strip of cork inserted between the layers of fabric. The strip of cork, on account of impervious qualities resisting oil and moisture, does not lose its elasticity and therefore provides a permanent and literally pneumatic cushion to Blue Ribbon linings, making a soft and



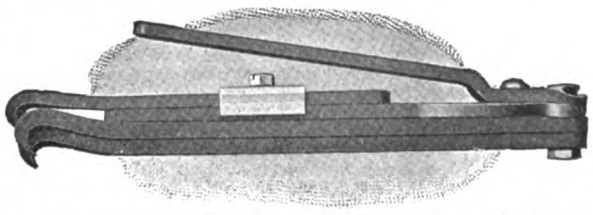
progressive engagement possible, it is claimed.

To further increase the resistance toward grabbing, the fabric is treated with a compound under heat and pressure which not only imparts softness to it, but also reduces its tendency to glaze.

Manufactured by the Right Motor Specialties Co., 1326 Michigan Avenue, Chicago. Price, per set of three with solid brass rivets, $2.50 in the states, $3 in Canada.

The Lawco Rim Tool is used for the removal of shoes from demountable rims and is composed of four levers, fastened at a common center. Three of the levers are formed with a hook end for fitting over the rim edge, one of them being adjustable for different size rims.

It is claimed that this tool is adapted to practically all of the demountable type rims on the market. If an owner has a rim that this tool will not readily open, the manufactured will gladly send directions for setting the tool for this particular rim. When folded the Lawco rim tool may be packed in the tool box.



Manuf..ctured by the F. H. Lawson Co., Cincinnati, O. Price on application.

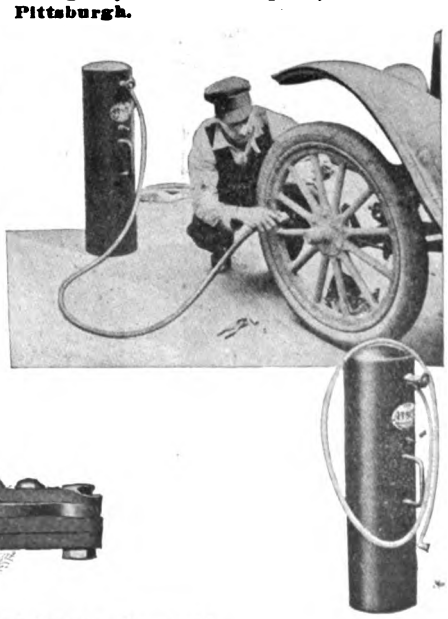
Atsco Portable Service Tank is an emergency tank to be used by the garage and service station for inflating tires of passenger cars and light trucks that have new tires fitted at a distance from the service station or garage.

It consists of a tank 36 inches in length and 10 inches in diameter, constructed of heavy sheet copper with all joints brazed. It is equipped with a carrying handle, shut off valve, length of heavy air hose and an automatic air valve for connecting to the valve of the tube to be inflated; also provided with a valve at the side for refilling with air from the shop source of air supply.

The outfit is shipped from the factory ready for use and filling with air is all that is necessary to prepare it for use. The working pressure is 250 pounds and the tank is tested to 500 pounds pressure at the factory. The tank is of a convenient size and is easily handled by one man. It is placed in the rear of the emergency car ready for use.

When operating the tank, simply open the valve on the tank, connect the automatic valve to the tire by pressing down and the tube is inflated quickly. Other tanks manufactured by this company are genuine copper-brazed, electric or acetylene welded or riveted. All sizes of tanks are made and for many purposes, such as for air pressure storage, underground storage of liquids, etc.

Manufactured by the Air-Tight Steel Tank Co., Pittsburgh, Pa. Price of the emergency air tank complete, $24.50 f. o. b. Pittsburgh.



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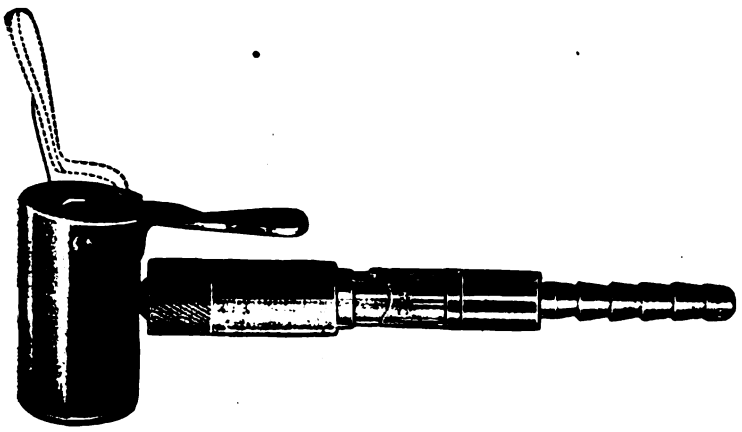
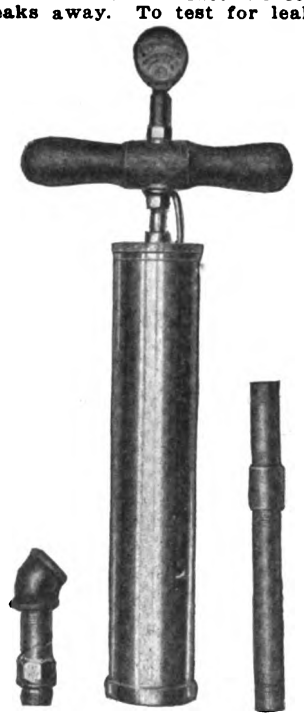


The "Whistler Thumb Lock" comprises the "Thumb Lock" air hose connection and the "Whistler" automatic safety tire pressure regulator. It is applied to the valve by pressing down the small lever in the head of the chuck with the thumb. The small calibrated collar is set with the fingers to the pressure desired. The engine is started and when the pressure in the tire for which the calibrated collar is set is reached air will exhaust, giving forth a whistling sound. No more air can be put into the tire.

Manufactured by the Automatic Safety Tire Valve Corporation, 1765 Broadway, New York. Price, $2.

Hempy-Cooper Motor Tester is a device for testing the compression of a gasoline engine and also shows by its pump where and what leaks occur in the engine cylinders causing the engine to loose power.

The tester is screwed into the spark plug opening of a cylinder, the piston is brought to its top position on the compression stroke and by means of the indicator at the top of the pump handle, there is shown the compression of the combustion chamber and also how fast the compression leaks away. To test for leaks, the



pump handle is forced down, causing air to be forced into the cylinder. A hissing sound indicates that a leak is present and may be found either in the valves or around the piston rings.

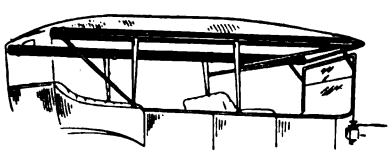
The tester is of particular value to service stations and garages, as by its use considerable time is saved in determining troubles due to loss of compression and locating these troubles. The tester consists of a cylinder with suitable connections and fittings for connecting to any spark plug opening. It is fitted with a plunger similar to that used in a tire inflation pump, but the rod differs from the ordinary air pump by having the rod constructed of a hollow tube, which passes up through the handle to the indicator.

It is claimed that other faults can be found by the Hempy-Cooper tester, such as loose bearings, loose piston rings, piston slap, and for each there is a positive indication. Testing and adjusting may be done as the work progresses.

Distributed by the Fairbanks Co. Administrative offices, New York; sales offices in many of the principal cities. Prices and literature on request.

The No-Fault Pocket for Ford Side Curtains are made of double texture leatheroid, lock stitched. The No-Fault pockets extend the full length of the top on each side and easily hold the three curtains that are used on each side of the Ford car.

The pocket is divided so that the rear curtain may be dropped independent of either of the others and is loosened by the passenger or the operator on the seat by simply unbuttoning four small clasps on

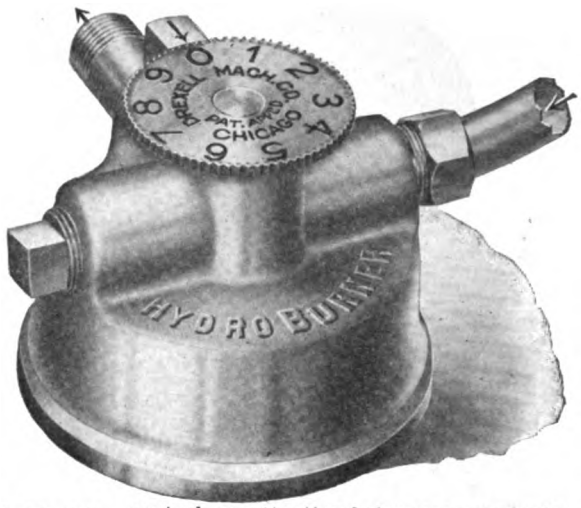


each pocket and dropping the curtain. The curtains are always fastened at the top so that all that is necessary is to fasten them at the bottom, or if the operator wishes all curtains may be dropped. It is easily installed by anyone handy with a hammer in a few moments.

Manufactured by the No-Fault Specialty Co., Box 17, Stoneham, Mass. Price, for touring cars, $4.50; for roadsters, $3.50.

The Hydroburner is a new instrument which takes the air and hydrogen vapors from the top of the radiator and draws them into the manifold above the carburetor in measured quantities according to the demands of the engine. The case contains an automatic valve and a diaphragm acting as dash pot in a water chamber and is so disposed that the valve, which is normally closed, is timed automatically and does not open until 15 seconds after the engine is started. This, the maker states, eliminates the trouble experienced in starting engines when devices of this kind are used. The water chamber is kept constantly charged by condensed vapor from the radiator.

In the top of the dial is a wheel which is numbered one to nine and can be set by the driver at some number where the engine is found to perform the best results. This feature, the maker states, limits the opening of the valve, prevents too much hydrogen and air being admitted to the cylinders and does away with dash



control, no attention being necessary after it is once set.

The instrument is attached to the manifold with one-eighth inch standard pipe thread and can be connected in the same opening where the vacuum tank enters by using a ⅛ inch tee.

A 5/16 inch copper tube is attached to the instrument and extends through the radiator to the under side of the filling cap. A check valve is placed over the end, opening inwardly, against a light spring. This valve is designed to prevent water from getting into the pipe when the radiator is being filled. A special rubber gasket is furnished for making the joint where the tube passes through into the radiator and no soldering operation is required in attaching. The case is made of aluminum and weighs four ounces. The device has a capacity for all sizes of motors used in automobiles, trucks and tractors.

Manufactured by the Drexell Machine Co., 115 E. S. Water Street, Chicago. Price, $5.50.

Easyon Tire Chains consist of a set of eight single chains, four for each wheel, that are attached to the spokes of the

wheel by special leather covered fasteners fitting over the tire and rim.

Easyon chains are cross chains of a patented design and the manufacturer claims they will not injure the paint and varnish

of the spoke or rim or the rubber of the tread. It is further claimed that Easyon chains will not bump while passing over pavings and that they exert a very strong pull in mud and snow.

Manufactured by Woodworth Manufacturing Corporation, Niagara Falls, N. Y. Prices, 3 and 3½ inches, $4 per set; 4 and 4½ inches, $5 per set; 5 and 5½ inches, $6 a set.

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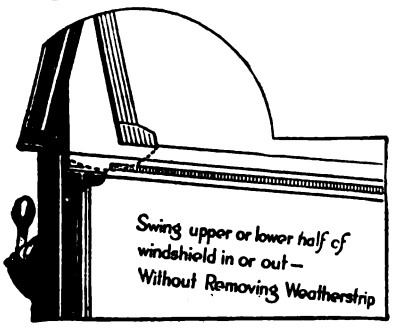
Tri-Co-2-Way Windshield Weatherstrip allows opening the windshield two ways, either in or out. The weatherstrip is constructed of rolled metal, specially made, nickel plated and polished, fitted with a flexible rubber, forming an air tight and water tight seal across the channel of the windshield.

The use of this weatherstrip makes possible the opening of the lower glass inward for ventilating purposes without removing the weatherstrip. The weatherstrip is made in such shape that it clings to the glass regardless of the thickness



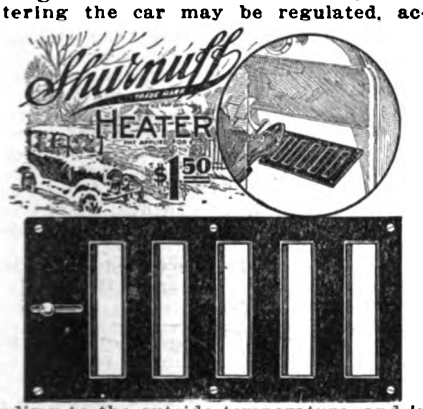
of the glass, the manufacturer claims.

Made in three sizes, known as 36½, 38½ and 40½ inches, but may be cut to fit any glass. It is attached to a Ford windshield by fitting the lower glass, rubber on the outside, allowing the rubber to fold downwardly between the upper and lower glass, forming a perfect seal.

Manufactured by the Tri-Continental Corporation, Buffalo, N. Y. Prices on application.

The Shurnuff Heater for all cars may be installed on the front foot board or in the tonneau. Heat from the exhaust pipe and engine is used when installed in the front of the car and heat from the muffler when installed in the rear compartment.

The heater is provided with a damper arrangement so that the amount of heat entering the car may be regulated, according to the outside temperature, and in summer may be entirely shut off.

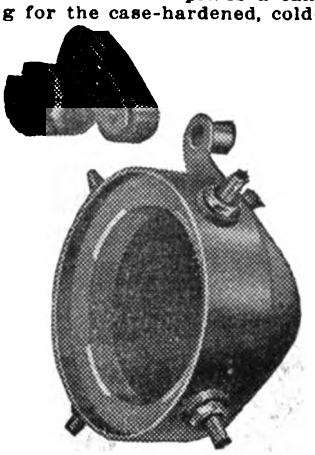


The Shurnuff heater is 9¾ inches long and 5½ inches wide and is neatly finished in nickel. The heater is easily installed by sawing an opening in the floor boards and fastening the heater by six screws. Each heater is packed in a box with screws and installing directions.

Manufactured by the Shurnuff Manufacturing Co., 3147 Locust Street, St. Louis, Mo. Price, $1.50.

The Tri-Co Timer for Ford Cars is constructed entirely of cold rolled pressed steel, making a timer that is practically indestructible. The fiber ring is of the best known hard Egyptian fiber, inserted in the case under pressure and dressed to a smooth surface. All contact points are insulated through the shell and are fitted with hard fiber washers and hexagon nuts. Terminal points are fitted with standard 10/32-inch machine screw thread to which the regular Ford terminals may be quickly adjusted.

An improved dust proof automatic spring top oiler insures a means of thoroughly lubricating the working parts, at the same time preventing the entrance of dust and dirt into the timer case. The brush construction comprises a cantilever housing for the case-hardened, cold-rolled



steel roller. Spring tension is maintained by a compression spring of fine steel wire firmly held in a recess of 1/8 inch, eliminating the possibility of breakage or injury through vibration. The spring tension brings an even pressure to bear at all times on the roller, insuring steady contact. The Tri-Co Timer is fully guaranteed by the manufacturer.

Manufactured by the Tri-Continental Corporation, Buffalo, N. Y. Prices on application.

Tilton Endless Woven Fan Belts are made of fabric by a patented process that finishes the edge in such a manner that it will not fray in use. Tilton belts have proved after a season of use that they will not stretch, this feature having been cared for in the making.

Comparing a Tilton belt that has been in use for a time with a new belt, proves that the length of the used belt is the same as the new belt, the manufacturer claims.

ENDLESS TILTON WOVEN FAN BELTS

Tilton belts are made by a special process by which the manufacturer is able to make an endless belt that meets all requirements of a high-grade fan belt and is free from thick spots that would cause it to jump when passing over pulleys. These belts are fabricated on a machine which makes the belt in one continuous piece.

The Tilton endless woven belt retains its pliable and resilient features even

though the stretching features of the fabric have been removed.

Tilton belts are claimed to be oil, heat and stretch proof and of the highest quality obtainable.

Sold by Edward A. Cassidy Co., Inc., 280 Madison Avenue, New York. Prices from 50 cents to 60 cents each according to the car. Sizes for all cars on application.

"Gredag" Lubricant for Transmissions and Differentials and general cup use is made from a formula developed by Dr. E. G. Acheson. Gredag is a blending of the highest quality grease with exactly the right proportion of 99.9 per cent. pure gritless graphite. This combination produces a very fine lubricant.

Gredag is made from the best fats and oils obtainable. Long cooking and continuous stirring in steam jacketed kettles assure complete saponification and an absence of free fats. This is given as the reason why Gredag will not break down

under long continuous use and why it will not gum or corrode bearings.

During the cooking process a special graphite is added, after being mixed with oil to insure permanent diffusion. This special graphite is made in electrical furnaces at 7500 degrees Fahrenheit, which volatilize all other elements, leaving only the pure, unctuous, smooth graphite. When Gredag is used the tiny particles of

GREDAG
A WONDERFUL LUBRICANT

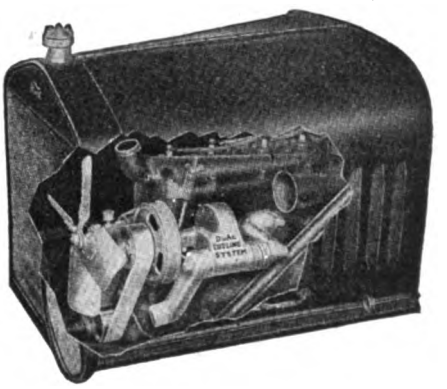
graphite are carried by the grease to the bearings and find lodgment in the minute inequalities of the surface of the metal, producing the nearest to a frictionless bearing obtainable in mechanics, it is claimed.

Manufactured by the Acheson Graphite Co., Lubricant Department, Niagara Falls, N. Y. Prices on application.

The DuAl Cooling System for Ford Cars, Tractors, Trucks and Power Attachments consists of a special pulley leather covered, for the crank shaft, circulating pump equipped with two pulleys, and a special high-speed fan. The driving belts are 1½ inches wide, constructed of cord material similar to that used in the construction of cord tires.

The circulating pump is attached to the side of the engine, by regular Ford bolts, and is easily applied in about 30 minutes time without the use of special tools.

The DuAl centrifugal circulating pump, special fan and drive, has several patented features. The pump body, swinging on



the water line, permits positive belt adjustments. Adjustment for the fan is provided by a winged nut and spring attachment at the fan.

The belts are easily removed in case of repairs to the engine and the pump may be swung out of the repairer's way, while work is being done on the engine.

Manufactured by the DuAl Manufacturing Co., 1424 Nicollet Avenue, Minneapolis, Minn. Price, $25, including all necessary fittings and instructions. Ten days' trial, money refund proposition. Agents and dealers wanted.

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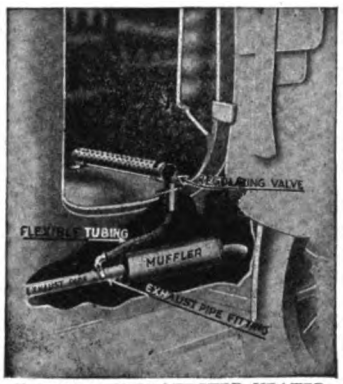
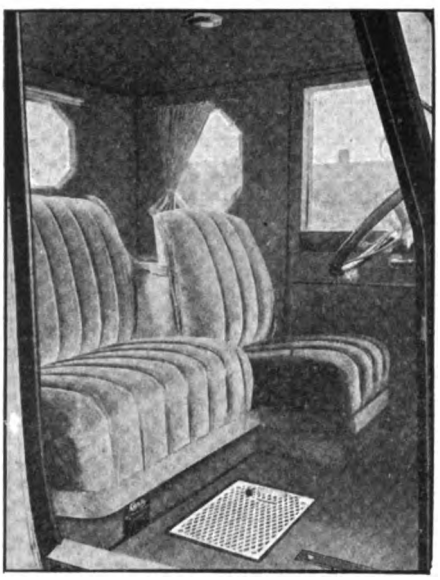
The Utility Protected Foot Rail Heater for the passenger car is operated by the



How UTILITY PROTECTED HEATER Is Attached to the Exhaust

heat from the exhaust. The heater is attached to the floor of the car, either in the front or rear compartment, by boring two small holes in the floor for the heating pipes to pass through. Screws in the brackets fasten the heater to the floor. The heater is connected by a short length of flexible tubing to the exhaust pipe ahead of the muffler, and the heater is controlled by a small damper that allows the admission of more or less heat as desired. The heater is covered with a perforated nickel plated protector.



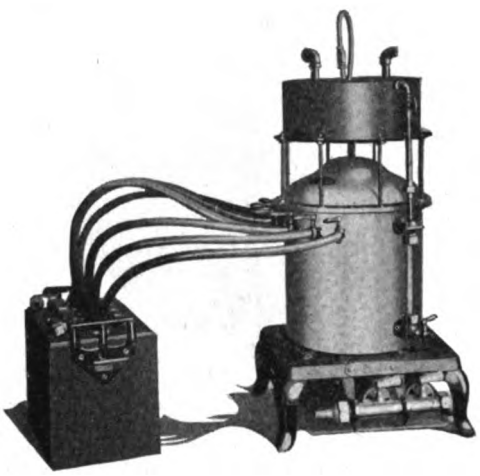
The manufacturer states that the heater will not burn the feet resting upon the protector, that the heat may be turned off or on without burning the fingers, and that the operation of the heater does not affect the running of the engine. The heater is made in four models: For all cars, for front seat, for Fords and other small cars and for eight-cylinder cars.

Manufactured by the Hill Pump Valve Co., Archer Ave., Canal and 23rd Streets, Chicago. Prices range from $9 for the Ford size to $25 for eight-cylinder cars. When ordering state outside diameter of the exhaust pipe ahead of the muffler, or make, year and model of car.

The "Ibsco" No. 3 Combination Battery Steamer and Still is a useful device for the battery service station and battery repair department of the garage. The boiler is of 14-gauge spun aluminum. There are no seams to leak and the boiler might get red hot without danger of leaks or injury it is claimed.

A water gauge shows the height of the water in the boiler. Six brass cocks, to which the hose is attached, provide a means of using the steam generated for steaming open storage batteries. The cocks are so made that the hose is attached without the use of fasteners. The steamer will open one 12-volt battery or two six-volt batteries at a time in five minutes.

The still is located above the boiler, has an outlet through a length of pipe and a valve and may be connected by copper tubing having a coil immersed in a pan of



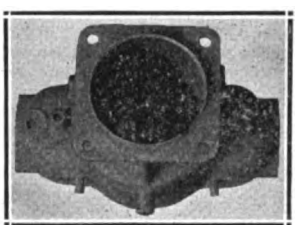
water or other container. The capacity of the still of one gallon of distilled water per hour is at a cost of about one cent per gallon, the maker states.

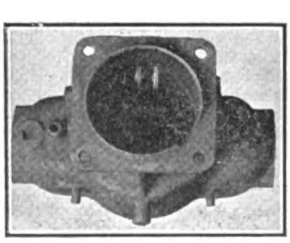
The steamer and still are operated by a gas burner, inserted in the base, which, it is said, is quick in steaming. The steamer is easily accessible for cleaning by unscrewing the bolts that fasten the boiler dome to the boiler, unscrewing the union above the water gauge and lifting off the top, or, if same is held by the water pipes, slide the boiler right off the burner, clean and reassemble.

Manufactured by the Illinois Battery Steamer Co., Peoria, Ill. Prices, No. 1, $50; No. 2, $32.50; No. 3, $50; No. 1 combination, $65.

The New Process for Repairing Scored Cylinders, known as the "Wizard Process," is a method whereby chemicals are employed in the repairing of scored cylinders, air and sand holes, cuts, etc., of automobile engine cylinders.

The Wizard process fills the scores or cavities in the cylinders caused by loose wrist pins with an alloy, carefully compounded and smoothed down to the face of the cylinder, the same piston and rings being used after the repair is made. The





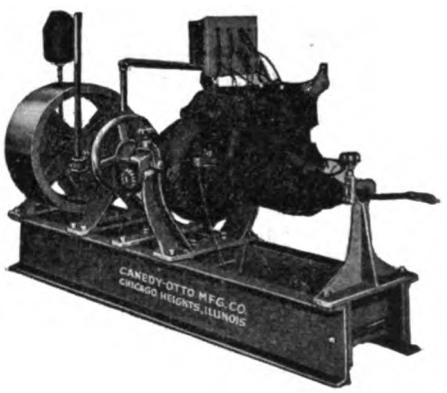
alloy used has unusual heat resisting qualities, and while it is applied in a hard state it forces its way into the pores of the iron, and, it is stated, never works out.

This process does away with the necessity of regrinding, reboring or warping. In the "Wizard Process" heat is not used, so that warping of the walls of the cylinders is impossible. The company states that it has repaired cylinders by this process that have been in constant use for years and guarantees the process to the trade.

Manufactured by the Wizard Scored Cylinder Repair Co., 53 Peoples Bank Building, Wilkes-Barre, Pa. Prices and literature on request.

The Canedy-Otto Burning-in and Testing Machine for Ford Engines is for the service station and garage repair shop making a specialty of Ford engine repair work. It has all the necessary equipment, such as coil support, gasoline tank and water connections, so that after the burning-in process has been completed on the bearings the engine may be tested on the stand to further limber up the bearings and prove that it is running properly.

As a burning-in machine for engine bearings, the machine requires from 6 to 10 horsepower, and it occupies little space. The features that the manufacturer emphasizes are that the machines represent ac-

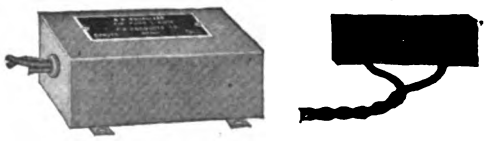


curacy, durability and good workmanship, and that they are built to perform every required operation with good results, at a saving of from four to five hours on bearings alone.

In burning-in bearings they should be burned the way that the crankshaft rotates in the assembled engine and this is possible in the Canedy-Otto machine. The net weight of the machine is 775 pounds; total height, 32 inches; width of base, 18 inches; diameter of flywheel, 23 inches; length over all, 76 inches; total width, 28 inches; weight of flywheel, 350 pounds; face of flywheel, nine inches; height from bottom of base to center of main shaft, 20¾ inches.

Manufactured by the Canedy-Otto Manufacturing Co., Chicago Heights, Ill. Prices on application.

"4 A Straight Equalizer" for Ford Lights, without the dimming feature, comprises a small box-like device that takes the current from the Ford magneto and transforms it in the electro-magnetic principle so that the light will burn with the same brilliancy regardless of the speed of the car. For a slight additional cost a dimming device may be attached that works in conjunction with the equalizer,



giving a dimming effect to the head lights when passing other cars. The light is of a powerful intensity at low engine speeds.

A storage battery is not necessary, as the device works solely on the main current supply from the magneto. It does not interfere with the ignition and enables the operator to sound the horn without dimming the light when all lights are burning. The regular Ford lamps (9-volt, 2 candlepower) are used.

Manufactured by the 4 A Products Co., Denver, Col. Price of the equalizer, $5; equalizer and dimmer, $6.

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The B & L Electric Gas Primer for Gasoline Engines is a device to facilitate starting during cold weather and to do away with the troubles encountered when trying to start the engine on cold gasoline. Advantage is taken of the fact, in constructing B & L electric primer that gasoline brought to a working temperature by heat supplied by an electric current will start the engine much more readily than will gasoline that has not been heated.

The B & L electric primer consists of a dash pull button and switch located on the dash within easy reach of the operator and connected to a plunger pump located on the top of the primer and connected to the gasoline feed line, the switch being connected by an insulated copper wire to an insulater terminal on the primer and by an insulated wire to the positive terminal of the storage battery.

The primer consists of a cylinder, with a coil suitable for heating, installed inside and connected to the terminal and one side, and a ground connection at the other. The coil is composed of suitable resistance wire to heat in from five to 15 seconds after the switch is closed.

The primer is attached to the intake manifold by a nipple and is provided with

a small tube that has a small opening to allow the warm gasoline to flow into the manifold in a small jet or stream.

To operate, the switch is closed, allowing the coil to heat; the primer pull button is pulled forward quickly and allowed to drop back into the dash. In this manner a supply of gasoline and air from the fuel line is forced into the primer tank, is warmed by the coil and flows from the tank into the intake manifold. The engine is turned by the starting motor while the priming operation is taking place, so that the gas may be the more readily drawn into the combustion chamber.

The manufacturer claims that this device may be attached to practically all systems using a storage battery for starting, lighting and ignition, or starting and lighting alone. For Ford cars a special primer is manufactured. This device is applicable to cars of either gravity, vacuum or force feed, by locating the primer in the positions recommended by the manufacturer. The voltage of the coil must correspond to that of the battery used on the car, and, in ordering, the buyer should specify voltage used and whether wiring is grounded or two wire system.

Manufactured by the Auto Distributing Co., Plainfield, N. J. Price, $15. Fifteen days trial allowed under the guarantee. If not satisfactory money will be refunded.

Guarantee Visible Gasoline Pump for filling stations and garages, consists of a curb stand equipped with suitable pumping device and a five-gallon glass bottle mounted at the top, protected by wire screening. Above this glass bottle is a globe with an electric light that may be lighted at night, showing plainly the lettering on the globe, "Filtered Gasoline."

The pump is operated by a small electric motor in the base. The gasoline is drawn from a tank buried in the ground and forced to the elevated bottle in the quantities desired and in plain sight of

the purchaser. From the bottle the gasoline flows by gravity to the tank of the car.

The manufacturer claims that with a visible tank the trade is more satisfied and that sales of gasoline greatly increase. It is claimed that the Guarantee Visible Pump will handle all grades of gasoline through the same pump without any changes in the pump being necessary; that it is not affected by temperature and that no gasoline is held above ground only as used. Inspected and approved by the National Board of Fire Underwriters.

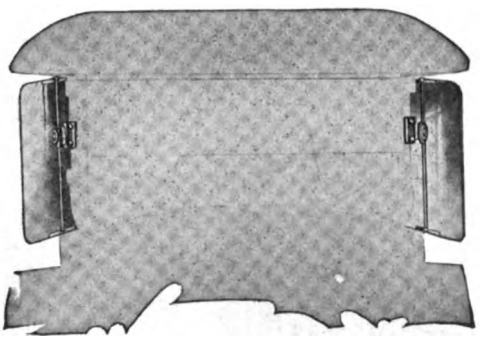
Manufactured by the Guarantee Liquid Measure Co., Pittsburgh, Pa. Prices and literature on application.

"Stik-Tite-Lily-White" is a pure, white, all elastic tube patch. The manufacturer claims that the material is made of a preparation of cured and uncured stock which cannot be separated by heat or otherwise after once united. It is sold under guarantee.

Manufactured by the Cincinnati Auto Specialty Co., 312-14 Main Street, Cincinnati, O. Prices, 50 cents to $4, according to size. Made in four sizes for the motorist and shop use.

The Perfection Side Windshield is a new device that is attached to the windshield at the sides and its purpose is to deflect the wind pressure of the windshield away from the passengers. The deflector is attached by a single bracket to the side upright of the windshield and is allowed to swing in or out as occasion requires.

The glass of the deflector is extra heavy and is supported by means of a rod, passing through the glass five inches down from the top and at the bottom by a clip over the edge of the glass and fastened to the rod. In this manner the full weight of the glass is carried by the bottom clip and the rod fastened to it. Nickel fittings are used throughout and these are rust proof and match the nickel finish of the



car. All parts of the deflector are guaranteed by the manufacturer against defective workmanship and material.

Manufactured by the Perfection Windshield Co., 409 N. Capitol Avenue, Indianapolis, Ind. Price, finished in black enamel, nickel trimming, $22.50; full nickel finish, $27.50.

The Joly Spark Plug has the shell and porcelain integral, with the electrode passing through the center of the porcelain to the sparking points of the shell. Two sparking points, diametrically opposite each other, are cast in one piece with the shell and are positioned equidistant from the center electrode.

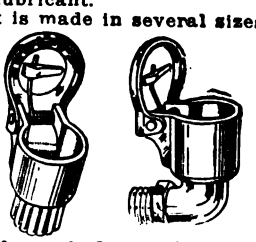
The manufacturer claims that the Joly spark plug cannot develop carbon, leak compression, short circuit, cause pre-ignition or fail to synchronize between explosions. He states that this plug in a different form was used for airplane engine ignition during the war and proved endurance for 70 to 80 hours of continuous service in that class of work.

Manufactured by the Lyons Ignition Co., 215-219 Fourth Avenue, New York; factory, Paterson, N. J. Price, automobile type, $1.50 each; airplane type, $3 each.

The Rex Oil Cup features a self-closing top and a self-lubricating cup that is filled with either felt or cotton. Lubricant is supplied to the felt or cotton filling and flows to the bearing by pressure of a spring.

Rex oil cups may be fitted to any slow moving bearing, and the manufacturer claims that the bearing will be assured of plenty of lubricant.

The Rex is made in several sizes and in



four models, each designed for some particular point of lubrication. For example, model A, which is not threaded, is to be used in drilled holes, and is driven home with one stroke of a hammer. It is also made in different lengths and sizes to meet all requirements. Model B is threaded and is for general use. Model C differs from model B in that the stem is located at right angles. Model D has the stem located at a 45-degree angle and is made any length to suit conditions.

Manufactured by the Autoware Corporation, Detroit. Prices range from 30c up.

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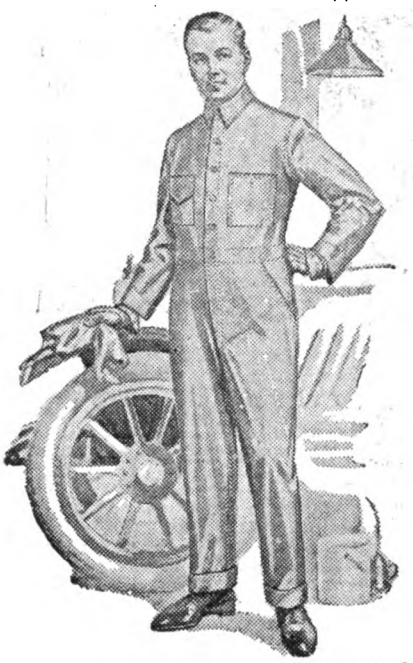


"Outerall" the Economy Garment for the motorist, repairer and children consists of a one-piece suit that is slipped on over the regular clothes, keeping them free from oil, dirt and dust.

The Outerall is a particularly neat, comfortable garment, heavily reinforced throughout, and is made especially for several lines of trade. The style for repairers, machinists and motorists, is fitted with extra pockets of ample capacity and may be purchased either open at the neck or with collar, as desired.

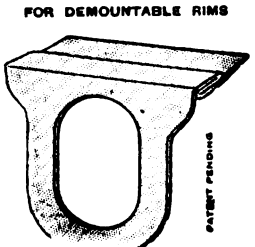
Also made for children of all ages from two to 14 years as play garments. These garments are loose fitting and do not bind the limbs of growing children.

Outeralls are made in both khaki color and overall blue with white stripes for children and in khaki or olive army shade for the mechanic and motorist.

Manufactured by the Michigan Motor Garment Co., Greenville, Mich., with sales agencies in many of the largest cities. Prices on application.

Tri-Co Rim Tightener for demountable rims that have become loose and squeak on the rim contacts. The rim tighteners are shims finished in army zinc so that they will not corrode or rust and are to be fitted underneath the demountable clamp to take up whatever play is between the rim of the wheel and the demountable rim.

TRI-CO
RIM TIGHTENER
FOR DEMOUNTABLE RIMS



It is stated that the rim tighteners will take up all play between the rims and prevent the rims from squeaking.

Manufactured by the Tri-Continental Corporation, Buffalo, N. Y. Price per set of 20, $1.

The Outlook Windshield Cleaner with the rubber roller and a type for every car embodies several tried and proven principles. The windshield cleaner is attached in a few moments by simply attaching to the top frame of the windshield. The roller is placed on the inside and the rubber scraper on the outside. To operate, the operator grasps the rod carrying the roller and simply sweeps the scraper across a space of the windshield. The roller serving the double purpose of keeping the cleaner tight upon the windshield and giving a free movement to the cleaner.

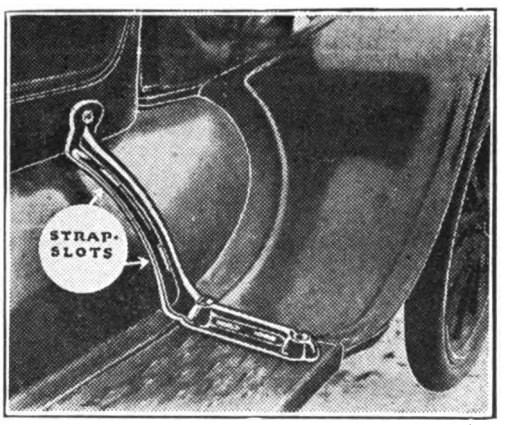
Windshield cleaners are made for cars

having the windshield fitted tight at the top; these are attached either by boring a hole in the glass of the shield or through the frame at the top. Cleaners of this type are also adapted for closed cars.

Manufactured by the Outlook Co., Cleveland, O. Prices and literature on request.

Prince's Bracefords for the Ford Car is a patented device that is attached to the body and the running board of the Ford car, greatly strengthening the running board. Slots are cut in the sheet stamping, from which Bracefords are made, allowing straps to be inserted so that luggage may be carried.

The device is attached to the body by



drilling a hole and inserting a bolt, while the running board end is fastened by two bolts through the running board. The Bracefords fit the apron of the car snugly so that there is small chance for running board or apron noises.

Manufactured by the Prince Manufacturing Co., 109-11 South Salem Avenue, Sumter, S. C. Price per set of four, $4.25.

The Sutter Flap is designed to control the temperature of the cooling medium of an automobile radiator and is made of leatherette material lined with a wool like substance to protect the painted surface of the radiator from being damaged.

The cover is fitted over the top and sides of the radiator, while the flap covers the front and is raised and lowered by a cord fastened at the top of the flap, passing through a tube inserted in the radiator top in one of the air passages, across the top of the engine to a hole bored in the dash, passing through this opening and being controlled by the driver from the seat.

Spring tension is provided in the flap for rolling the curtain and cord when the flap is dropped, keeping the flap in a rolled position when not in use.

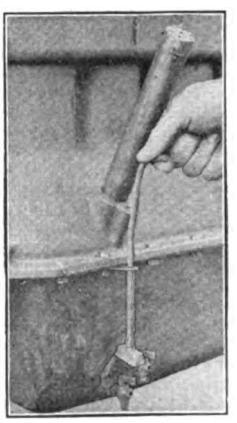
It is stated that the flap may be raised and lowered when the car is in motion as readily as when the car is standing still.

Sizes are as follows: Small, 13 inches wide by 13 inches high; Dodge, 16 inches

wide by 13 inches high; medium, 16 inches wide by 17½ inches high; large, 18 inches wide by 17½ inches high.

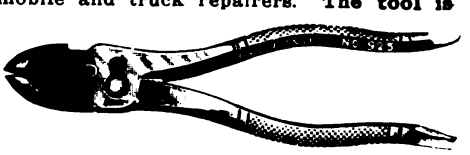
Manufactured by the Sutter-Mayhew Co., 174 Canfield Avenue, Detroit, Mich. Prices on application.

Holton Oil Tester for 490 Chevrolet Cars consists of a short rod having an offset handle, a plate that is attached to the base of the engine and a spring that supplies the necessary tension to keep the rod from becoming noisy. The lower end of the rod has a fitting attached that fits the wing of the wing handle of the oil petcock. To operate the tester the handle is depressed till the fitting at the lower end fits over the wing of the petcock. Turning the handle opens the cock, allowing the oil to flow out. This device is particularly desirable as the method of testing allows the operator to reach the high and low level petcocks without soiling the hands or clothing.



Manufactured by the Holton Hood Clip Co., 65 Shelby Street, Detroit, Mich. Prices on request.

"Red Devil" Combination Slip Joint Plier is a tool of great value in making repairs, due to its adjustable jaws, which are suitable for holding objects of an irregular shape, and is especially useful to automobile and truck repairers. The tool is



made of forged steel, having dentyne, knurled handles of the proper shape and nickel plated. The tool also combines with it as a plier, a screw driver and wire cutter. Sizes 6½, 8 and 10 inch.

Manufactured by the Smith & Hemenway Co., Inc., 130 Colt Street, Irvington, N. J. Prices on application.

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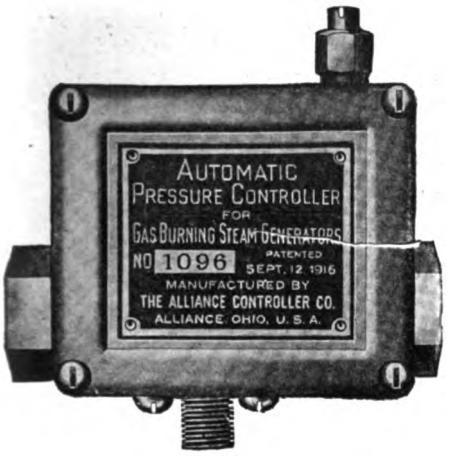
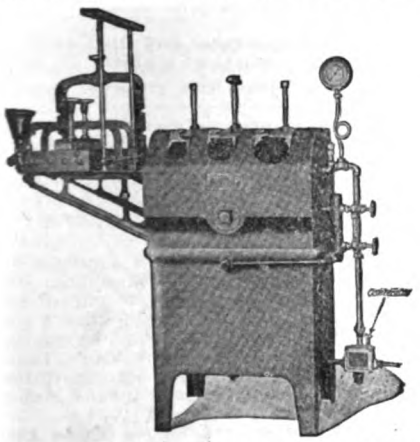
The Alliance Controller for the vulcanizer is said to give absolute control of the steam pressure at the vulcanizer. The device is attached to the gas feed and also to the steam pipe leading from the boiler. When the steam pressure reaches a certain point the gas is automatically cut down, till the falling of the steam pressure allows the gas to be turned on again, allowing the steam pressure to be brought up to the proper point.



The principle is that by using this device the gas fuel for the vulcanizer is kept down to a low consumption point, thus reducing the cost for fuel and at the same time keeping the steam at a steady, even pressure, a point that is much desired in vulcanizing.

Besides the saving in the fuel and the steady steam pressure, the operator is relieved of the duty of turning the gas off and on by hand, allowing him the extra time so gained for doing other work that will be more profitable.

The Alliance Controller is guaranteed to give absolute satisfaction and to accomplish the purpose for which it was intended when installed and adjusted according to instructions which accompany each controller.

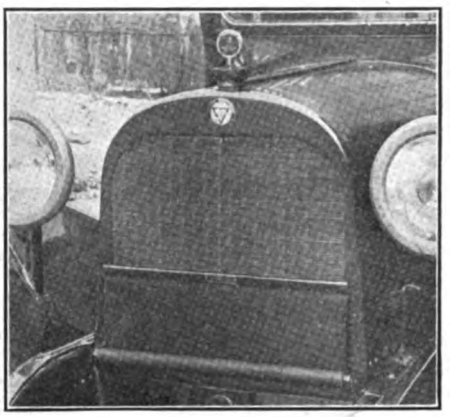


The gas is controlled by valves both at the inlet and the outlet of the controller, so that the control is positive.

Manufactured by the Alliance Controller Co., Alliance, O. Price, $7.50.

The Mayhew Curtain is an adjustable radiator shield of the roller-curtain type, controlled from the driver's seat by a cord running through the dash, over the top of the engine, passing through a tube inserted in the top of the radiator core in an air passage and connecting with the cross bar of the flap at its top.

The flap is fastened to the sides of the radiator by means of supports similar to those used for suspending a roller window curtain, while the roller operates similar to a curtain roller. The flap is raised and lowered and caught at any desired point, as with a window curtain, and may be



raised or lowered when the car is in motion.

The Mayhew curtain is made of the best of materials, but not of as heavy material as the Sutter flap. Its use is primarily for warming up the engine quickly at the start, regaining the heat in the cooling system that is lost when the car is standing.

Manufactured by the Sutter-Mayhew Co., 174 Canfield Avenue, Detroit, Mich. Prices and literature on request.

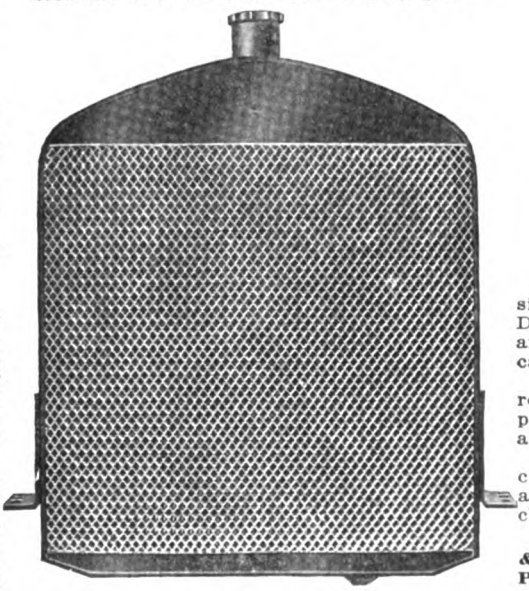
"Comfy-Drivers" consists of two electric hand warming pads for the steering wheel. The pads are laced to the rim of the wheel, one at each side, and connected to the lighting system of the car by two silk covered wires.

Current when the switch is on is obtained from the storage battery when the

car is standing and the generator when the engine is operating at a speed of 12 miles per hour or better. The warming pads are connected in multiple for all ordinary 6-7-volt systems.

Manufactured by the Main Electric Co., Cleveland, O. Price, $5 per pair.

Standard Radiator for Ford Cars is a replacement radiator that combines a larger cooling surface of the honeycomb type with a core that fits the regular Ford shell. It is made throughout of brass material. The tubes are continuous from top to bottom and are made integral with the tank's top and bottom. After the radiator is assembled the tube ends are soldered by pouring melted solder over the face of the core.

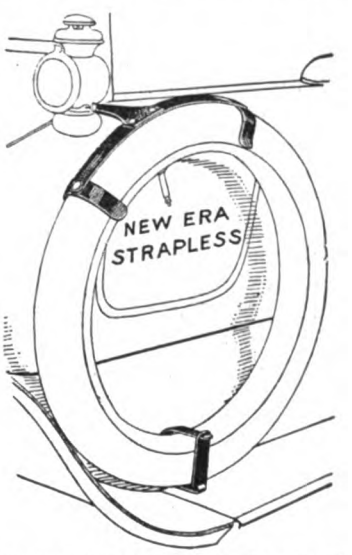


The Standard radiator is sold direct to dealers and large users on a C. O. D. plan and may be returned at the end of five days if not satisfactory.

Manufactured by the Standard Radiator Co., Inc., Springville, N. Y. Prices, radiator complete less shell, one in a crate, $15.50; in lots of five, $15; in lots of 50, $14.50; price of shell, $1.50.

New Era "Instant" Tire Carrier for All Cars consists of a tire carrier for one or two tires attached at the rear of the car body by brackets and a patented locking device that is locked and unlocked in a few minutes time. Fastening chains and unwieldy locks are eliminated, the carrier adding materially to the general appearance of the car.

The Instant Tire Carrier is made in several sizes and for use on all cars, special



sizes being manufactured for the **Ford**, Dodge and Chevrolet cars. These **sizes** are built similar to the carriers for **larger** cars.

Wrenches or tools are not required in removing a tire from the carrier, as the patented lock at the bottom is thief proof and holds the tires securely in position.

The brackets for the carrier are interchangeable from the side to the rear and any forgeman can make the necessary changes in a few minutes time.

Manufactured by the New Era Spring & Specialty Co., Grand Rapids, Mich. Prices on request.

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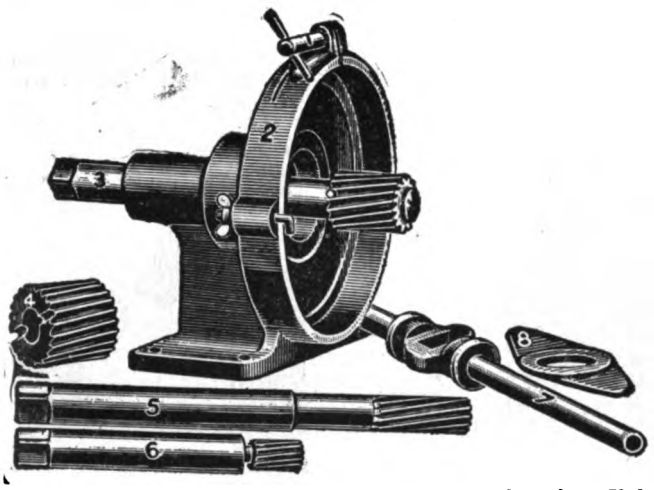


Transmission Bushing Reaming Machine for Ford Gearsets is a device which reams the transmission drums and triple gear, securing perfect alignment by means of the long bearing in the rear of the machine which guides the reamer and prevents any inaccuracy in the work. It is stated that it is possible with this device to overhaul completely the transmission and triple gears in 30 minutes, securing a perfect fit of all bushings in that length of time.

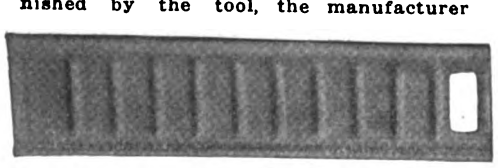
All reamers are especially designed with spiral flutes and do practically all of the cutting on the point of the reamer, the flutes serving to give a final finish by scraping slightly.

Manufactured and sold by the Fairbanks Co. offices in New York and branch in many of the larger cities. Price, complete with reamers for transmission drums and triple gear, $72.

The Auto Lad Three-in-One Trouble Tool is for use when a car or truck is stuck in the mud or the vehicle loses traction. It is small and is carried in the tool box. In case of necessity it is inserted either at the front or rear of the rear wheel, the power is applied and the wheel

regains traction on the corrugated surface of the Auto Lad device.

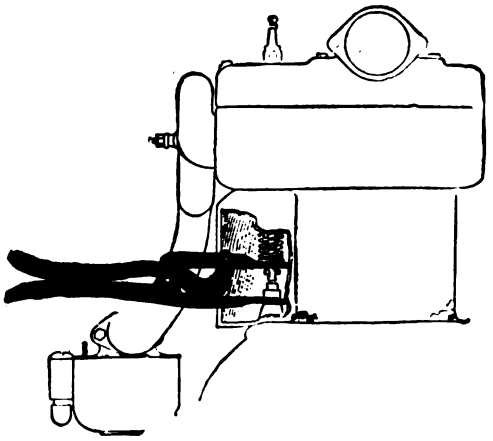
The tool is guaranteed. It may be used as a shovel when so needed. The tool is inserted under the tire for several inches, held by the hand or fastened by a rope. Power is applied and the traction furnished by the tool, the manufacturer



claims, will get the car or truck out of the mud.

Manufactured by the Aisteel Manufacturing Co., 15 Carlyle Street, Battle Creek, Mich. Prices on request.

American Valve Lifter for Ford Engines is a unique device for compressing the spring of the valve and allowing the removal of the pin or key that locks the spring to the valve stem. It is made of malleable iron, occupies but little space in the tool box and when in use automatic-



ally locks, allowing the use of both hands while removing the pin and the valve. It consists of two forked ends, the handles for compressing the valve spring and the automatic locking device. The forked ends slip around the ends of the push rod and the valve, allowing a good grip in compressing the spring.

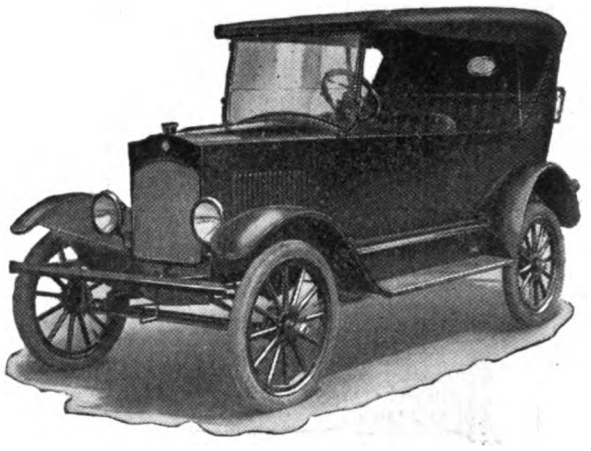
Manufactured and sold by the Fairbanks Co., New York. Price, 60 cents.

The Hudson Crank Case Repair Arm for Ford Cars consists of a cast bracket which, in case of a broken engine support on the Ford engine, may be fitted into place and bolted to the frame of the car and the crankcase of the engine in a few

HUDSON CRANK CASE REPAIR ARM

minutes, making a repair that is at once practical and durable. Brackets are interchangeable and will fit either side. Two bolts fasten the bracket to the engine, while one bolt fastens the bracket to the frame. It can be attached by anyone handy with tools in a few moments.

Manufactured by the Hudson Motor Specialties Co., Real Estate Trust Building, Philadelphia. Price, $1.50.

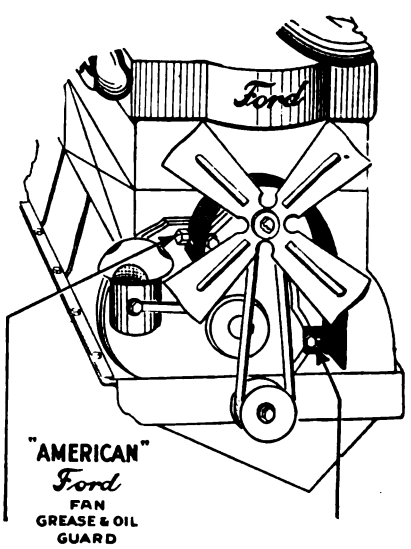


The Autowa Five-Passenger Straight Line Bodies for Ford Chassis are furnished with a one-man top, slanting two-piece windshield, front and rear bumpers, carrier for two tires, special design full crown fenders, side, front and rear dust shields; linoleum covered, metal bound running boards; hood to match the body in color and a special radiator, which is said to have 50 per cent. more cooling capacity than standard.

The Autowa bodies are designed primarily for the motorist who wishes a body of distinctive design which embodies refinements of the larger and more costly bodies. The Autowa is a hand-made body, constructed of well seasoned wood, all joints mortised, glued and screwed and reinforced by irons at every straining point. Autowa bodies are marketed through dealers, but in case there is no dealer near they will be sold direct.

Manufactured by the Ottawa Body Co., Ottawa, Ill. Price complete, $285 f. o. b. Ottawa.

American Fan Grease and Oil Guard for Ford Engine consists of a shield of heavy



metal that is fastened to the fan support and the base of the engine, and is passed over the top of the fan pulley. The guard is wide enough so that oil or grease is not splashed out at the sides. By its use the interior parts of the hood and the exterior of the engine are kept free from the splash of oil and grease.

Manufactured by the American Valve Tool & Manufacturing Co., 354 West 50th Street, New York. Price at jobbers or direct, 50 cents.

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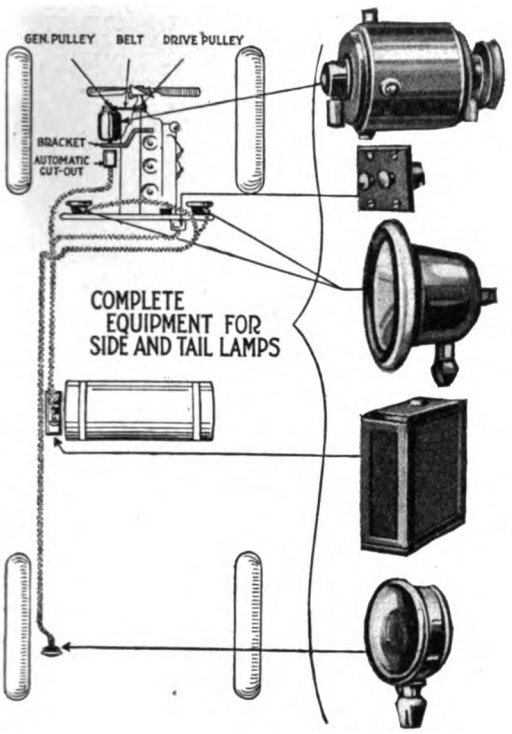
Electric Lighting Systems for All Models of Ford Cars consist of a lighting battery, generator for keeping battery recharged, two electric side lamps, electric tail lamp, all wiring, switches and full instructions for installing.



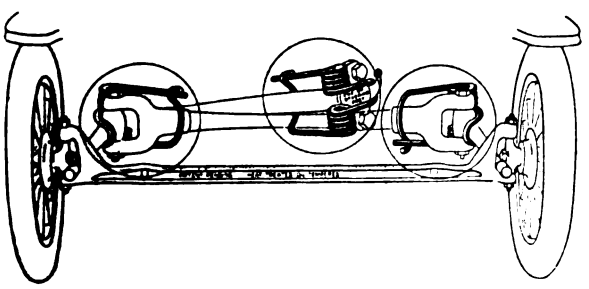
The manufacturer claims that this system may be installed in two to three hours without removing the radiator from the car. It does away with the kerosene side and tail lights entirely.

The generator is belt driven from the crankshaft pulley, the same belt being used to drive the fan. This system provides the Ford owner with a constant and easily operated electric lighting system for his car.

Manufactured by the Puritan Machine Co., Detroit, Mich. Price, $17.50. Some attractive territory still open.

The Handy Steering Arm, Shock Absorber and Anti-Rattler for Ford Cars is a spring device that is attached at the lower end of the steering post between the sector arm and rod and attached to the steering tie rod at each end where the tie rod is fastened to the spindle arm of the axle. The springs are formed of spring steel wire in the form of two springs with a loop in the center, having the ends fastened together by a hook. In placing them, the loop is first slipped over some holding support, such as a spindle arm, the springs positioning themselves at the end of the tie rod, while the ends are fastened around the tie rod. Three springs compose the outfit and the manufacturer claims that this device will stop the rattle of the steering gear, absorb the road shocks at the steering wheel and save the bushings of the front wheel spindles.

Manufactured by the Handy Manufacturing Co., Grand Rapids, Mich. Price on application. Guaranteed and money refunded if not satisfactory after three days trial.



The Groetken Complete Visible Measuring Gasoline Dispenser is equipped with the new Jumbo pump of five-gallon capacity which, it is claimed, can fill and deliver through the visible measuring dome 250 gallons of gasoline an hour.

The Groetken device is a curb outfit, standing seven feet over all, and is built to withstand hard usage. The large Jumbo pump is built to fill the dome rapidly.

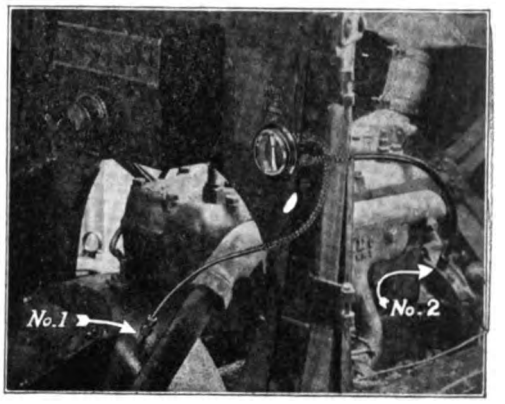
Underground tanks are furnished in two types. One is made of heavy boiler plate, hot riveted and welded, and is furnished in six sizes. The other is constructed of 14-gauge galvanized steel and comes in three sizes.

Manufactured by the Groetken Pump Co., Aurora, Ill. Prices and literature on application.

M-B Dash Oil Sight Feed System for Ford Cars makes use of the principle employed in the Ford, but carries it a step further.

With the device is included a template that is fastened to the top of the transmission cover by means of the two fastening screws, the index of the template giving the exact point at which a hole is to be drilled through the balance wheel case, tapping the flow of oil thrown off by centrifugal force from the balance wheel. Advantage is taken of the centrifugal force and the oil is led by a copper pipe to a sight feed in the dash. From the sight feed it flows by gravity to the timing gear case through a second tube connected by a nipple to the case and fitted in a hole drilled and threaded in the case.

A special fitting is supplied for attaching the tube to the balance wheel housing and this is supplied by the manufacturer, together with the template, dash gauge, piping, instructions, etc. The manufacturer claims that this device will supply the necessary oil for the timing gears and the connecting rods and other interior parts of the engine, even if the regular Ford oiling system becomes clogged. When the oiler fails to operate it is an indication that the supply in the reservoir is low and needs replenishing, and 1½ quarts of oil will be necessary to fill the reservoir to the upper pet cock or gauge level.



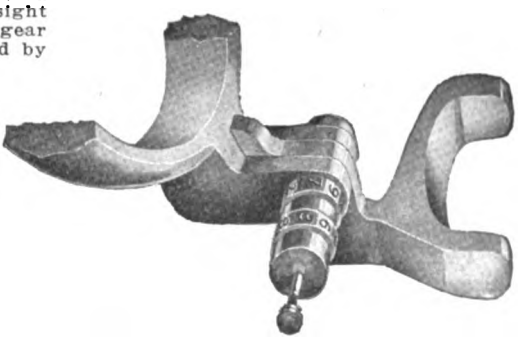
The device is easily attached in an hour, it is claimed, and when properly adjusted will show the condition of the oil being used and the amount flowing to the timing gears.

Manufactured by the More-Burdick Manufacturing Co., 5 S. Wabash Avenue, Chicago. Price, $8.50.

Permu Safety Lock for Automobiles and Trucks is a new locking device of the combination type and is fastened to the steering post of the car by a clamp and two screws. The locking arm has two positions, one, when not in use, which allows it to drop down out of the way of the wheel, and the other, when in use, with the fork of the arm fitting around a spoke of the steering wheel. The combination lock is located at one side of the locking arm and is easily accessible for the owner when unlocking.

The manufacturer states that the lock is thief proof, that it cannot be removed by cutting, as the metal used in its construction is hardened steel; that the combination of each lock is entirely different from any other, and that it may be unlocked by the owner in less time than if he had to reach for a key. The lock is not of the tumbler type and a thief accustomed to tumbler locks would find it difficult to open. A record of each combination is kept by the manufacturer and the original number is sent with each lock in an envelope separate from the lock.

Manufactured by the Whittington Manufacturing Co., Montrose, Pa. Prices: Ford cars, $12.50; for all other cars, $17.50.



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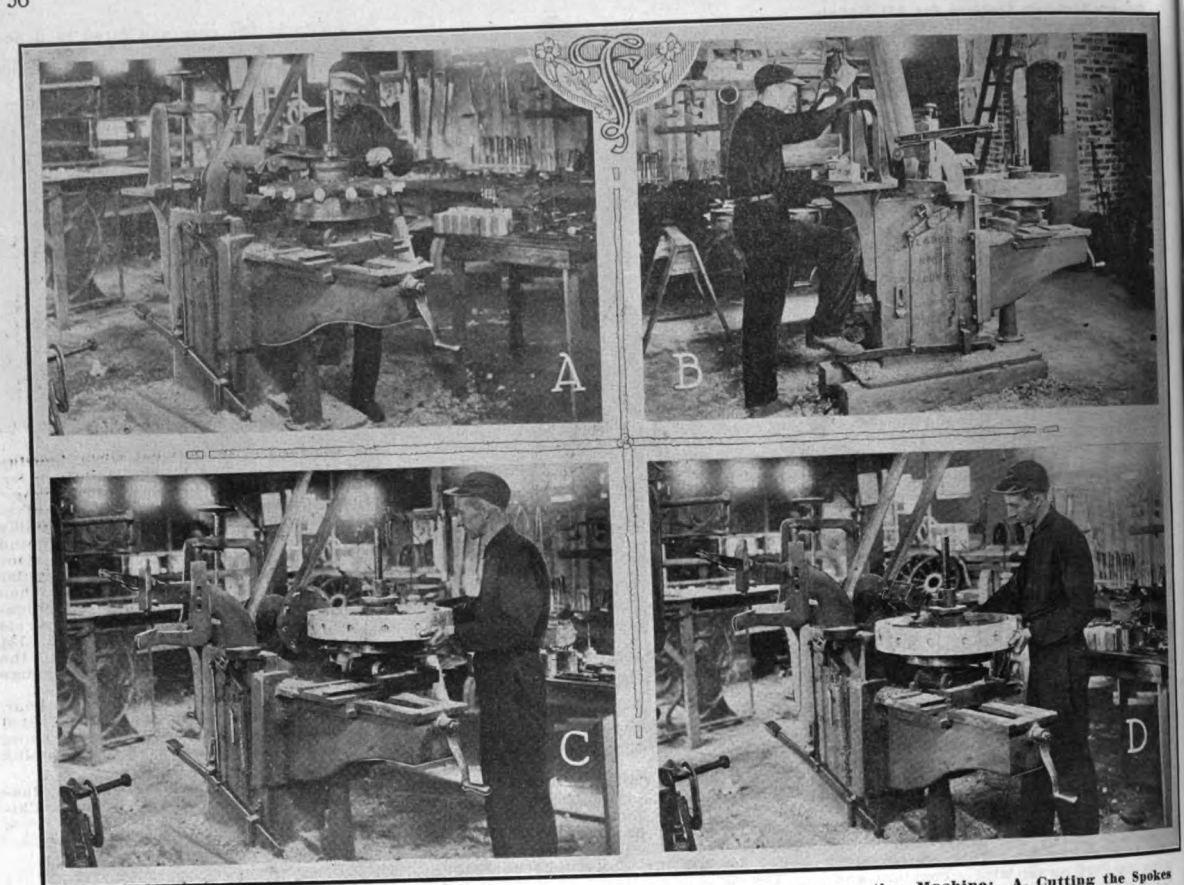

Rebuilding a Wheel for Pneumatic Tire Installation on a Roach & Kane Multiple Operation Machine: A, Cutting the Spokes and Making the Tenons; B, Boring the Felloe Blocks; C, Dressing the Face of the Rim; D, Dressing the Edges of the Rim.

(Continued from Page 41.)

done and no delays are experienced after the start has been made.

Mr. Feltham's experience has been largely with truck tires. Prior to connection with the Goodyear company he was in charge of the stock room of one of the largest passenger car service stations in Rhode Island, and when he went to the Goodyear branch he found that there was a disposition of the salesmen to devote themselves to passenger car tires because truck tires did not seemingly give the same degree of satisfaction to the buyers.

At that time practically all the truck tires were constructed with fabric bases, and these were pressed on to wheels that were fitted with steel felloe bands. The tires could not be held securely on these bands unless "frozen" by rusting, and many of them loosened quickly after installation and replacement was necessary. Frequently the tires were shed and trucks were delayed until replacement was made.

First Hand Knowledge of Service.

Mr. Feltham believed that with the increase of trucks and the perfection of tires the really big business for tire salesmen would be with truck owners and he undertook to develop the custom of users of trucks. There was but one tire press in Rhode Island, and that was small and manually operated. He found the owners wanted to have tire work done when the trucks were idle and to meet this requirement he sold tires during the business days of the week and worked evenings, Saturday afternoons and Sundays installing the tires he had sold. There were emergency requirements to be sure, but he and other tire salesmen learned very much to their inconvenience that a great deal of their business depended upon their willingness to place their spare time at disposal of their customers. The experience gained by this enforced labor later proved to be very valuable, although the work was regarded as a hardship at the time.

When the change in construction of truck tires, from fabric to steel bases, was made, the first power press was set up at the Goodyear branch, and the owners could be assured of better tires and a much improved service. The number of trucks in use was then such that the work necessary on them could not be done at week ends and there was need of better systematizing it so far as meeting the needs of the owners was concerned.

Mr. Feltham's activities in time became almost exclusively with the truck department and it was knowledge of the needs and the existing facilities for truck owners with reference to tire service that impelled him to engage in business.

Station Equipped for General Work.

The equipment of the station was determined to cover the entire range of work that might be obtained. The tire press is a McCall, having capacity of 300 tons pressure, which is more than sufficient to remove or install the largest tires, 42 by seven inches dual being the maximum that has been worked on with this press. The initial cost was greater than that of a smaller press, but there has been no occasion for duplication of press work, which would often happen with a machine of lesser capacity. Instead of using water in the pumpage system of the press the best hydraulic oil was obtained, and besides insuring against deterioration by rust, and against freezing, the thorough lubrication minimized the consumption of electric power, three important factors in press operation and maintenance.

The station service was planned to include wood wheel maintenance, and a shop was equipped with a No. 6 Kane & Roach wheel machine, a band saw and a combination grinder and buffer. The wheel machine was necessary from the fact that wheels subjected to climatic changes shrink and swell and under load and tractive and braking stresses are frequently loose and may, when examined upon removal from a vehicle, require more or less restoration. Or the wheels may be so deteriorated that replacement is necessary. Or the owner may wish to change from solid to pneumatic tires, in which event the diameter of the wheel is reduced by shortening the spokes and

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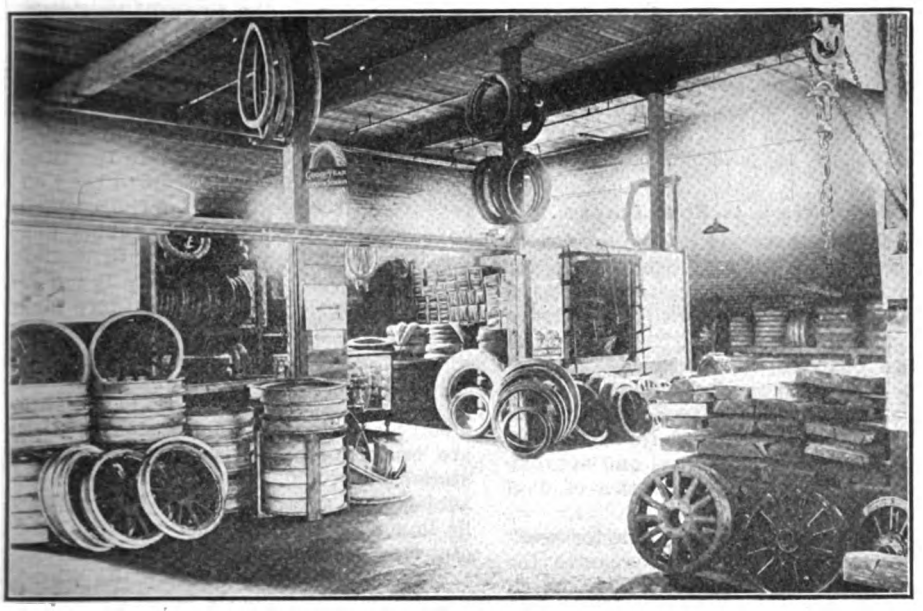


Tire Stock Room and the Steel Rim and Band Department and a Corner of the Lumber Store of the Station, from the Center of the Main Floor.

fitting a new rim, and an S. A. E. band or felloe rim installed.

Economy of Combination Machines.

This wheel work must be finished and equal to the original construction, and possibly must restore defects that have developed in service from inferior quality of material or faulty workmanship. The material used in the wheel work must be highest grade and thoroughly dried. The combination machine is decidedly the best for a shop of this kind, where the operations are not continuous, for changes for any one work can be made with practically no loss of time, the cost is low as compared with that of a number of single work machines and comparatively little space is required, yet the shop has what is equal to the facilities of a factory. Necessarily the workers must be highly skilled.

This machine will do any work for a wheel up to 42 inches and it will take a rim 13 inches wide and seven inches thick, which is the largest size that has yet been found practical for trucks. The machine will saw spokes and cut them to length, cut spoke tenons, bore felloe block, dress fellow faces and rims, all of these to scale and pointer settings that insure accuracy. In addition to this the shop has a band saw and a combination buffer and grinder. The other general tools include a drill press, which is serviceable in innumerable works, and a forge and anvil, where fittings of any kind can be made or adapted where there is need of change, and general forge welding of metals done in the event of breakage or other need.

Vulcanizing Shop Equipment.

The vulcanizing shop is exceedingly complete, its equipment including both steam and electric vulcanizing machines. The steam units are Akron-Williams, and these are two in number, the first having capacity for pneumatic tires from three to five inches cross section, and the second a model R having capacity for pneumatic tires from six to nine inches inclusive cross section. The largest pneumatic tires built for trucks are 48 by 12 inches, but these are so rarely used that no provision has as yet been made for sizes larger than those specified.

The electric vulcanizing machine, which has just been installed, can be utilized for any type of pneumatic tire, no matter what the wheel or cross section diameter. Electric vulcanizing is a process very recently developed, which is claimed to afford better results than with steam. It is especially recommended for retreading tires. Statement is made that where the fabric or cord of a tire is not damaged it can be retreaded, no matter what the condition of wear, and that the life after repairing will compare very favorably with that of the original tires.

Quality of Electric Vulcanizing.

With reference to this process, it differs with steam vulcanizing in that a tread that is fully "cured" is vulcanized to the tire casing, and that this does not subject the remainder of the tire section or the tire, which was originally fully cured when made, to another period of extreme heat. Claim is made that when a rubber compound is once cured, as in the manufacture of a tire, a second heating to a curing or vulcanizing temperature will affect its wearing qualities. The second heating to an excessive temperature, such as causes the rubber to become plastic or semi-fluid, is obviated, for the application of the electric heat is between the tread and the tire carcass, and on but a small area of the tire. Not only this, the temperature can be very finely regulated.

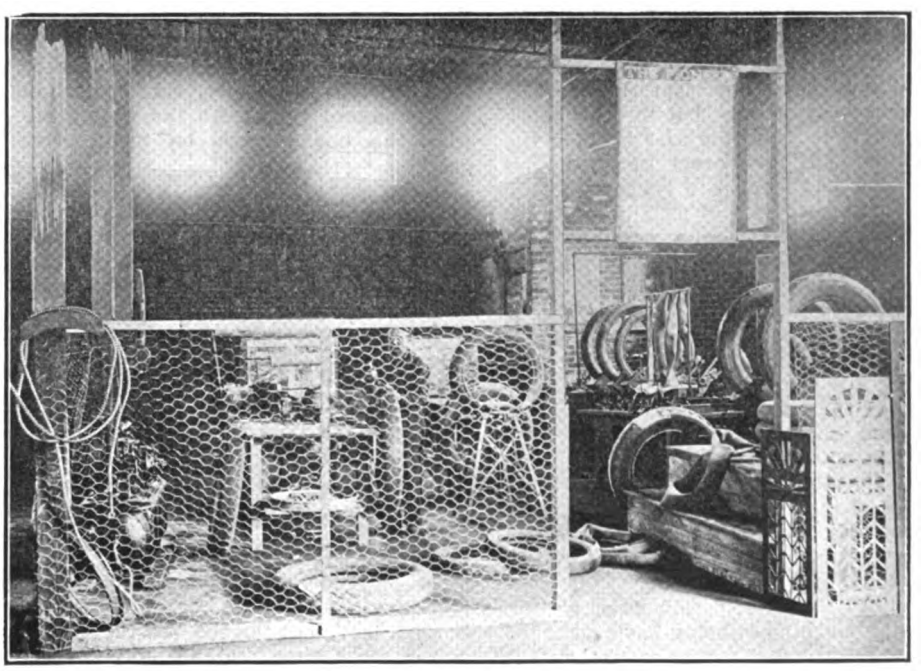
With reference to the use of electric vulcanizing, this process has the approval of the largest manufacturers of tires, and there is reason to believe that it will be found superior for truck tires, which are subjected to heavier loads and consequently the endurance must be maintained at the highest point possible when repairs are made.

Business Established by Hard Work.

The business was not established without hard work and it was in a sense a repetition of the experience with the Goodyear branch in that the business hours of the day were devoted to selling and the tires sold were installed evenings, Saturday afternoons and Sundays, Mr. Feltham doing all of the work he could.

The owners of trucks were first impressed that the object was to afford service that would first of all insure them getting high grade tires, that these tires would be installed to best meet their requirements, and there would be no lost time of the trucks unless through conditions that could not be anticipated.

Salesmanship, according to Mr. Feltham's standard, is not selling truck owners what they think will best serve him, but what the salesman knows will be the most economical when every factor is considered. The buyers are advised of



Part of the Vulcanizing Department, Which is 40 by 80 Feet, and Equipped for Steam and Electric Repairing Tires Up to Nine Inches Cross Section.

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what types and size in the judgment of the salesman are the best suited for the work done with the trucks.

Truck Tires Seldom Large Enough.

Practically every truck manufacturer equips his machines with tires that are recommended for the weights of the chassis, body and load within certain limitatons, and generally, because large tires cost money, no provision is made for excessive loading. That is, there is no large factor of safety in tires. If the tires are stressed beyond the point of endurance by overloading they are quickly destroyed, and a single overload, hauled but a short distance, may be the cause of rapid wear. If the tires are larger than what would be recommended for a given type of vehicle and weight, the probability of destruction is reduced, as the tires are increased in size.

Fast driving has practically the same effect as overloading, especially if the drive is for a long distance with few or no stops. The condition of the road driven over is a third factor of importance. The care of the driver is another element. If the driver starts with harsh engagement of the clutch, if he accelerates his truck quickly and if he applies the brake sharply the wear of the tires will be excessive as compared with easy clutching, careful acceleration and gradual braking.

The tire that will endure overloading and the other conditions that have been specified must necessarily be larger and will cost more money than those of the truck will of the average factory equipment. Trucks will be sold with any size tire required by a buyer, but with rare exceptions what is known as standard equipment is accepted without regard to conditions because of the first cost, and often this assumed saving is extremely costly, for the difference in price might mean a very largely increased tire mileage and without the losses of the time of the truck for making changes.

Owners Only Consider First Cost.

The truck is sold by the manufacturer as a rule without making provision for exceptional conditions that could result in rapid wear of tires, but the tire salesman ought to know the uses made of the machine and have exact knowledge of the needs and be able to advise the owner. Truck owners will usually endeavor to obtain the last mile possible from tires and will use what good judgment would dictate discarding with the belief they are economizing. When a tire is worn so thin that, as compressed under a load it has no cushioning effect, all shocks are communicated to the mechanism of the machine and rapid mechanical wear follows. There are some conditions, as when driven on smooth asphalt, when the tires can be worn until the flanges of the rims or bases contact with the surface, without damage to the machine, but such roadway is not common.

The average truck owner will wear tires until they are in ribbons or so thin that the machine is being badly pounded and will demand of a service station that new tires be installed without loss of service time, expecting that his patronage is worthy of the entire facilities being devoted to his work whenever it is offered. This demand is practically the same and for that reason there is necessity of having an organization in a station of this kind that will do work as expeditiously as possible, but do good work.

Careful Work Is First Purpose.

In the Feltham station no endeavor has been made to establish records for removing and putting on tires, but the purpose is to do the work as rapidly as is practical. Whenever possible notice of tire changes are asked for, so that there shall be plan made for handling it with the least delay. As a rule from 20 to 25 minutes is required for taking off and putting on a front tire, and approximately an hour for a rear tire of dual type.

When a truck is brought in for work the driver is instructed to remove the wheel that is first to be worked on, if more than one tire is necessary, and bearings are not removed by the shop workers unless the driver or the owner is present. The wheel removed is put on to the press and the work of removal continued as the press is operated, so that there shall be no cessation of press operations as long as these are necessary. After the tire has been taken off the wheel is examined and the condition noted.

Condition of Wheel Is Important.

If the tire is solid and the wheel is not in need of repair the new tire is put on, but not infrequently a wheel will be found in such condition that it may be dangerous to use. The owner is notified and if he sanctions the work a new wheel is taken from stock, the hub and bearings of the old wheel fitted, and the tire put on. This gives the owner practically a new wheel and the cost is low because the work is done in connection with the tire installation. Were this done separately the expense would be considerably more and the loss of service time would add materially to the charge for the tire and tire installation. There are instances, of course, where more or less fitting is necessary, but if the hub is a standard type, with the shop facilities the change can be made very quickly.

In the event that larger tires are to be put on the wheels must be adapted for them and various works are necessary, such as putting on new wheel felloes, new S. A. E. bands, felloe extensions and other means of fitting the wheel and tire. If the change is to be made from solid tires to pneumatics the diameter must be reduced and the spokes cut off and a new felloe made. This work is done by machine and the time is minimized.

Some Obstacles to Fitting Tires.

All sorts of conditions are met in fitting the tires, for occasionally the wheels will need trueing, the felloes may not be to standard dimensions, or the felloe is to be beveled so that the tire base will not have a solid seat the entire width. In such instances the tire installation requires more time and not infrequently there may be necessity of building the felloe diameter with shims or layers of burlap so that the tire will be firmly retained on the wheel.

Some trucks are equipped with steel or malleable iron wheels, which are hollow, and the handling of these must be with equal care to insure the fit of the tires. Instances have happened where the tires have been exceedingly difficult to take off because of irregularity of the rims, which have been dinted through the rubber and the tire bases from contact with an immovable object. Great pressure is necessary to force the tires off, and there may be need of cutting the bases, and before the new tires can be installed the rims must be restored. In some instances this is done by making patterns and forming metal plates to fit the depressions, which are brazed on. The rims cannot be restored by trueing, and they cannot be subjected to great heat. The plates must be immovable and for that reason a bad dint may necessitate a great deal of work that was not apparent before the wheel was off, but is obviously imperative. The great stresses to which tires and wheels are subjected can be realized when a wheel rim may be dinted through from 1½ to three inches of rubber compound and a ⅜ inch steel tire base.

Results of Mechanical Neglect.

Practically every tire installation has some condition where careful judgment is necessary. Not infrequently the wheel spindles or axles are bent, tire rods and spindle pivots worn, wheel bearings loose, wheels out of true, and similar conditions that will cause excessive wear on the tires, and misalignment of wheels is not uncommon. Restoration is necessary if the tires are to be kept so as to give good mileage.

With rare exception every tire will show usage that is advised against by tire experts, and cutting of solid tires by driving in car tracks is often noted. The condition of tires is so important and so much economy is obtainable through careful driving and adjustment, that a system of inspection of the wheels of trucks on which are tires sold by the Feltham station has been inaugurated. An inspector visits the garages where the trucks are kept and takes all the time that is necessary to learn the condition of the tires each month, examining them with an electric torch, for this work is generally done at night.

Each Tire Sold Is Inspected.

An individual report is made for each truck and for each tire, and the record shows the name and address of the owner, make of truck, number, the date and the mileage, and covers good condition, overloading, speeding, car tracks, rough roads, tread cuts, non-skid device and wheel alignment and the influence of these factors upon each tire. In addition to condition the inspector makes recommendation that will in his judgment prevent excessive wear or deterioration.

A copy of the report is sent to the owner. The inspector does not establish responsibility, but directs the owner's attention to conditions as they are found, so that they may be changed and tires conservated. This information is extremely valuable in dealing with buyers, because it is practical to determine all

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claims for adjustment equitably and with exact knowledge. Owners are impressed with the fact that the one object is to advise them so they will obtain the greatest value, and sales have been refused in instances where the salesmen were convinced that the owners could not obtain practical results unless the tires recommended were used.

The station has several salesmen whose work is principally with truck owners and records of their visits and the information obtained by them are made daily so that precise information with reference to any customer or prospect is always available. These salesmen have cars and with them are able to cover a large area outside of Providence and the towns and cities surrounding it.

Practical Methods of Teaching Drivers.

With the object of educating the drivers and owners to practical tire economies several gatherings have been held at the station Sundays, invitations being extended to them personally and by letter, at which talks have been made by tire experts and work demonstrated, and moving pictures shown to illustrate conditions that every generally obtain and which can be obviated wholly or in part. These "Conservation Days" are held at intervals, and the drivers and owners are encouraged to relate experiences. They are impressed that drivers as a whole are not to be condemned nor criticised, but are to be taught what will be to their advantage to learn. These formalities are followed by lunch and the resources of the station are shown.

Owners of trucks up to 3½ tons are demonstrated possibilities with pneumatic tires, the station having the exclusive agency for the Presto attachment, with which the largest pneumatic tire can be changed on the road by one man as readily as the smallest. This equipment can be adapted to any wheel if the tire rim has one flange and a removable ring, or two removable rings. The rim is split diagonally into two sections and on each of these is welded at one end a notched jaw that fits a short welded-on jaws and studs inside the rim. The rim stud on the other end of the section, the is readily separable by prying out the locking ring, removing one side ring and forcing the jaws off the studs. One short lever is the only tool required.

The rim, when assembled, can be carried with an inflated tire, and with an engine pump a damaged shoe may be changed or the tube replaced, without much labor. If a hand pump only is available a change can be made, but inflation will necessitate work in ratio to the size of the tube. Lifting the tire does not require much effort. The rim can be taken off or put on by a small boy. The Presto attachment must be adapted to the rim at the factory and this requires reasonable time, but once adapted the rim will serve for years. Before the Presto attachment was invented roadside changes of large tires was impracticable without special tools and a good deal of labor was entailed. With it one man can do any work quickly and with less delay than would be necessary with a passenger car tire.

DEVELOPMENTS IN CLUTCHES AND UNIVERSAL JOINTS.

The Merchant & Evans Co., manufacturer of the well known and widely used Hele-Shaw clutches, M. & E. grease cups, etc., whose principal works, warehouses and offices are in Philadelphia, has designed and produced several new automotive devices for which unusual efficiency is claimed.

One of these is the M. & E. oil-tight universal joint, which the company states meets a very obvious demand for such a device. Its great simplicity and strength and the fact that it embodies all of the best points worked out by automotive engineers for war service, renders it ideal for the service for which it is designed. The working parts consist of two hardened and accurately ground bushings, which are driven into two tough steel drop forgings, a block being inserted between the yokes of these forgings for centering and supporting the pins. Very large bearing surfaces have been provided so that the pressure per square inch shall be as small as possible. They are made in four sizes to fit all conditions of work. These joints have been run on tests 22,000,000 turns at speeds of 40 to 200 revolutions a minute, under varying summer and winter conditions, without change or loss of oil or injury to packing.

The Merchant & Evans Co. reports another important development in its new M. & E. dry disc clutches, which are made in two sizes, known as models 10 and 12. These clutches are of the unit power plant type and will go into any open flywheel, and are constructed to fit standard types of S. A. E. bell housings. The light main spring pressure is multiplied by three levers and produces strong spring pressure on the discs. The friction surfaces are large, which adds to the life of the clutch. The adjustment is very simple and is made by a unique arrangement of steps on the cover plate.

Detroit Felt Recent Coal Shortage

The automotive industries at Detroit felt the effect of the coal miners' strike to a greater or less extent, and it is reported that 50,000 to 60,000 men were thrown out of work temporarily by the enforced closing of plants on account of the shortage of fuel. Nearly all the automobile plants of Detroit obtain their power from the Detroit-Edison Co., and it was obliged to curtail the supply to the motor car factories, as they were classified as non-essential industries.

The Employers' Association of Detroit announced its unrestricted cooperation with the power company in the attempt to conserve fuel, until the need for restriction should be over. Among the important concerns affected were the following: Hudson Motor Co., closed until further notice, 6000 men out; Cadillac Co. announced half time schedule; all Detroit plants of the Studebaker Corporation, closed, employing 5000 men; Continental Motors Corporation to lay off 800 men; Federal Motor Truck Co. and Timken-Detroit Axle Co., closed releasing between 5000 and 6000; Dodge Brothers, closed, 18,000 men; Lincoln Motor Co., one department, 800 men; Northway Motor and Manufacturing Co. was ready to shut down; Fisher Body Corporation closed, 14,000 men.

The Maxwell Motor Co. closed a week for annual inventory, but reopened as it had a supply of coal on hand to last for several weeks. The Packard Motor Car officials stated that they would not be immediately affected as they had several days supply and anticipated that the fuel situation would be relieved before this stock was exhausted. The Wilson Body Co. stated that it would be able to keep going, as it gets its power from outside sources and was augmenting its store of coal with wood.

The Hupp Motor Co. made an effort to operate on its own power and avoided laying off 1600 men. Officials of the Ford Motor Co. claimed that they had sufficient fuel to operate their own plant for the immediate future. At Pontiac, Mich., the Oakland Motor and General Motors Truck companies posted notices of indefinite suspension of operations. General Motors officials at Flint, Mich., said that the coal shortage was not yet threatening any shut downs of its factories as the power plant supplies were sufficient to last a minimum of eight weeks. Approximately 25,000 men are employed.

In Detroit, in general, business hours were reduced, train service cut and street cars went unheated.

WILL HANDLE CURTIS TIRES.

The Glouster Supply Co., 1308 Racine street, Cincinnati, O., has taken agency for the distribution of Curtis hand-built tires for Cincinnati and the surrounding territory.

The Curtis tire is built by the Curtis Tire and Rubber Co., Muskegon, Mich. Although up to the present time most of the Curtis tires have gone to large fleet owners, the increased manufacturing facilities have enabled the company to build rapidly for large distribution.

AUTO BODIES AND SUPPLIES.

The Rubay Co., automobile bodies and supplies, has been incorporated with $800,000 capitalization in Delaware by T. L. Corteau, P. S. Drew and M. M. Clancy, Wilmington.

TO DISTRIBUTE TIRES.

The American Tire Distributing Co., New York, has been chartered in Delaware with $200,000 capitalization by George Jason Waters, Wilton C. Salmons and Meyer Morris, New York.

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RECORD OF BUILDING OPERATIONS FOR DECEMBER

Contracts Made and Plans Contemplated for Alterations or Erection of Garages, Repair Shops, Service Stations and New Plants.

CONTEMPLATED PLANS AND SPECIFICATIONS.

Birmingham, Ala.; Cruse-Crawford Manufacturing Co.; one-story garage; $150,000.

Birmingham, Ala.; Ike Alder; one-story garage; $40,000.

Haleyville, Ala.; B. J. Cowart; two-story brick garage; $121,000.

Monroeville, Ala.; Mrs. J. L. Wiggins; one-story garage, 60x70.

Montgomery, Ala.; Exide Battery Co.; one-story garage; $14,000.

Scottsboro, Ala.; Jacobs & Soffey; one-story garage; $3000.

Florence, Ariz.; Sam Carlos Garage; one-story garage; $14,000.

Phoenix, Ariz.; P. L. Tregaskes; one-story garage, 50x137; $86,000.

Phoenix, Ariz.; J. W. Stone; one-story garage; $9000.

Bentonville, Ark.; E. B. Gillian and J. A. Vaughan; one-story garage; $10,000.

Fayetteville, Ark.; J. C. Fugitt; one-story garage; $25,000.

Little Rock, Ark.; L. Collomore; one-story garage; $12,000.

Little Rock, Ark.; Benton Hardware Co.; one-story garage, 50x150; $10,000.

Little Rock, Ark.; Standard Garage; one-story garage; $10,000.

Lonoke, Ark.; S. S. Glover; one-story brick and stone trim garage, 100x120; tar and gravel roof, concrete roof; $22,000.

Fresno, Cal.; Devaux Motor Co.; one-story garage, 50x100.

Los Angeles, Cal.; Standard Oil Co.; one-story garage; $63,000.

Los Angeles, Cal.; Muller Brothers; one-story garage; $12,000.

Los Angeles, Cal.; Maxwell-Hoffman Co.; one-story garage, 100x150.

Los Angeles, Cal.; J. F. Hansford; one-story garage, 90x140; $20,000.

Los Angeles, Cal.; Mrs. O. H. Hallam; one-story garage, 75x150; $17,000.

Los Angeles, Cal.; Charles L. Davis Garage; one-story garage; $19,000.

Los Angeles, Cal.; Whiting Co.; one-story garage; $14,000.

Los Angeles, Cal.; Mrs. Cameron E. Thom; one-story garage, 55x150.

Los Angeles, Cal.; F. S. Albertson; one-story garage; $37,650.

Modesto, Cal.; T. J. Wisecarver; one-story garage; $35,000.

Oakland, Cal.; H. E. Osuf; one-story garage; $9000.

Oakland, Cal.; Avilla & Loper; one-story garage; $10,000.

Riverside, Cal.; Keystone Garage; one-story garage; $25,000.

Sacramento, Cal.; A. Elkus and E. Kay; one-story garage; $7000.

Sacramento, Cal.; A. H. Moeller; one-story garage, 80x160.

San Francisco, Cal.; Edward Cerruti; one-story garage; $22,925.

San Francisco, Cal.; Rousseau & Rousseau; one-story garage; $100,000.

Tulare, Cal.; W. D. Ford; one-story garage; $10,000.

Ukia, Cal.; Ukia Garage Co.; one-story garage; $10,000.

Denver, Col.; Frank L. Bishop; one-story garage; $1500.

Denver, Col.; Beatrice E. Turre; one-story garage; $6000.

Denver, Col.; Cadillac Motor Co.; one-story salesroom; $100,000.

Grand Junction, Col.; John A. Spratt; one-story garage; $40,000.

Greeley, Col.; E. H. Auto Supply Co.; one-story salesroom; $10,000.

Holly, Col.; Edward Jones; one-story garage; $20,000.

Holly, Col.; Holly Auto Co.; one-story garage; $20,000.

Lamar, Col.; Lamar City Garage Co.; one-story garage, shop and salesroom; $10,000.

Loveland, Col.; Square Deal Garage; one-story garage; $2000.

Pueblo, Col.; Pueblo Motor Co.; one-story salesroom; $30,000.

Pueblo, Col.; Frank C. Triebes; one-story garage, 82x120; $28,000.

New Britain, Conn.; Municipal Garage; one-story garage; $15,000.

New London, Conn.; Avery Garage; one-story garage, 90x90; $40,000.

Hartford, Conn.; A. C. Hine Co.; one-story garage; $98,000.

Wilmington, Del.; Philip Sklut; three one-story garages; $1100.

Wilmington, Del.; White & Co., 216 N. Broad street, Philadelphia; one-story brick garage, salesroom and service station, 90x150; at 31st and Market streets; $75,000.

Wilmington, Del.; George Seeds; eight one-story garages; $1200.

Jacksonville, Fla.; N. L. Snelson; one-story garage; $10,000.

Jacksonville, Fla.; O. P. Woodcock; one-story service station, 52x105; tile floors, plate glass front; $12,000.

Jacksonvile, Fla.; Jordan Motor Co.; one-story brick salesroom and service station, 50x105.

Jacksonville, Fla.; William A. E. Staver; one-story salesroom, 30x45.

Jacksonville, Fla.; Max O. Schuman; one-story garage; $1800.

Miami, Fla.; South Florida Sales Co.; one-story salesroom; $50,000.

Miami, Fla.; Jenkins & Frey; one-story garage, 45x140.

Miami, Fla.; C. J. Martin; two-story concrete block garage; $10,000.

Pensacola, Fla.; Ford Automobile Agency; one-story garage; $20,000.

Quincy, Fla.; C. R. Shaw; one-story garage, 60x100; $15,000.

St. Petersburg, Fla.; Beard & French; two-story concrete block garage; $3600.

St. Petersburg, Fla.; C. R. Albright; one-story garage and service station; $7100.

Stuart, Fla.; Babcock Garage; one-story garage; $10,000.

Vero, Fla.; Cleman Garage; one-story garage, 50x100.

Americus, Ga.; Will G. Turpin; one-story garage; $25,000.

Atlanta, Ga.; George M. Hope; one-story garage; $50,000.

Atlanta, Ga.; J. Flenan; one-story garage; $25,000.

Atlanta, Ga.; W. H. Brannon; three-story fireproof garage; 175,000 square feet floor space; turntables and other equipment; $500,000.

Columbus, Ga.; Mortin Realty Co.; one-story garage, 74x147; $12,000.

Columbus, Ga.; B. B. Battle; one-story garage, 74x147; $12,000.

Columbus, Ga.; Marshall Morton; one-story garage, 74x147; $12,000.

Crawford, Ga.; Gray Boland; one-story garage; $5000.

Dublin, Ga.; E. S. Street; one-story garage and salesroom, 24x81; $65,000.

Eastman, Ga.; Leroy Pharr and L. H. Reynolds; one-story garage; $10,000.

Ellaville, Ga.; Schby County Motor Co.; one-story brick and concrete garage, 60x100; metal roof, concrete floor; $10,000.

Griffin, Ga.; Automobile Co.; one-story salesroom; $10,000.

Macon, Ga.; Frank Gunn; one-story garage; $22,000.

Pembroke, Ga.; Pembroke Motor Co.; one-story salesroom; $10,000.

Boise, Ida.; Shank Auto Co.; one-story garage, 100x120.

Lewiston, Ida.; Small, Kennedy & Hoyst; one-story garage; $10,000.

Champaign, Ill.; T. N. Smith; one-story garage, 100x110.

Chicago, Ill.; B. A. Gramm, Wayne and Scott streets; two-story garage, salesroom and service station, 70x190, at 2439 Wabash avenue; $150,000.

Chicago, Ill.; Charles Lange & Brother, 2726 Armitage avenue; three-story garage and salesroom, 72x125; $125,000.

Chicago, Ill.; People's Stock Yards State Bank, 1542 W. 47th street; one-story brick garage, 50x85, at Gross avenue and 47th street; $7000.

Chicago, Ill.; A. A. Staverle, 133 W. Washington street; one-story public garage, 98x125, at 4700-6 Kimball avenue; $20,000.

Chicago, Ill.; D. E. Gardber, 1318 Winnemac avenue; one-story private garage, 18x43, rear 1318 Winnenac avenue; $15,000.

Chicago, Ill.; J. E. Ohrenstein, 105 S. Dearborn street; one-story garage, 25x100; $800.

Chicago, Ill.; J. C. Johnson, 1667 N. Famcisco avenue; one-story brick garage, 30x48, at 1519-11 W. Monroe street; $5000.

Chicago, Ill.; E. A. Bondin, 12 W. Garfield boulevard; one-story public garage, 50x235, at 5057-59 Broadway; $30,000.

Chicago, Ill.; Fred Madson, 2018 Lincoln avenue; two-story garage, salesroom and shop, 110x170; at 201 Lincoln avenue; $30,000.

Chicago, Ill.; Gramm-Bernstein Motor Truck Co.; one-story salesroom and service station; $225,000.

Decatur, Ill.; G. W. Weyl; one-story garage; $15,000.

Galesburg, Ill.; John Dakberg; one-story garage; $8700.

Galesburg, Ill.; A. B. Cox; one-story garage; $15,000.

Joliet, Ill.; P. J. Killeen and D. D. Gene; one-story garage, 52x180.

La Grange, Ill.; West Suburban Motor Co.; one-story garage; $75,000.

Lincoln, Ill.; S. D. Jarvis; one-story garage; $35,000.

Litchfield, Ill.; C. Spence; one-story garage, 66x66.

Newton, Ill.; John H. Shup; one-story garage, 60x140.

Newton, Ill.; O. A. Davis; one-story garage, 60x140; $10,000.

Pontiac, Ill.; Carothers & Abbott Auto Co.; one-story garage, 102x117.

Stonington, Ill.; Fred Leach; one-story garage, 50x134.

Springfield, Ill.; Buick Auto Co.; two-story brick and reinforced concrete garage, 50x150; $80,000.

Springfield, Ill.; Ford Service Garage; three-story garage, sales and display rooms, repair shop, service and storage stations, 60x220; $150,000.

Tuscola, Ill.; Thomas Smith; one-story garage, 100x110.

Tuscola, Ill.; Thomas L. Wright; one-story garage, 100x110.

Algiers, Ind.; Robert Motor Co.; one-story brick and concrete commercial garage, 80x100, 221 Saguin street; $30,000.

Bluffton, Ind.; Grove Garage Co.; two-story brick and concrete garage, 35x140.

Fort Wayne, Ind.; W. M. Gazer; one-story garage; $7100.

Gary, Ind.; Dorman & Sykes; one-story garage; $95,000.

Indianapolis, Ind.; A. W. Bowen; one-story garage; $10,000.

Jeffersonville, Ind.; Clifford Bensinger, 346 Spring street; two-story brick and reinforced concrete garage and salesroom, 110x140, at Wall and Maple streets.

Loogootee, Ind.; William Mosier; one-story garage and service station; $5000.

Monticello, Ind.; H. & B. Auto Sales Co.; one-story brick garage, salesroom and service station, 53x165; $50,000.

Montmorenci, Ind.; William Burkle; one-story garage, 60x190; $10,000.

Monon, Ind.; H. & B. Auto Sales Co.; one-story brick and stone trim garage, salesroom and service station, 83x100; $40,000.

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Muncie, Ind.; Byan & Sears; one-story garage, 31x115; $15,000.

Muncie, Ind.; Dodge Motor Co.; one-story salesroom; $15,000.

Remington, Ind.; James Gilbert; one-story brick garage, 75x150; $10,000.

Shoals, Ind.; Abraham Hawkins; one-story garage, 50x70.

Spencer, Ind.; Spencer Automobile Co.; one-story brick and stone trim garage, 65x130; $30,000.

Cedar Rapids, Ia.; Corn Belt Motor Co.; one-story garage and salesroom, 35x55; $20,000.

Clarinda, Ia.; Opitz Motor Co.; one-story salesroom and repair shop, 70x140.

Des Moines, Ia.; Exide Service Station; one-story service station, 66x88.

Lineville, Ia.; G. W. Malleston; one-story garage, 40x100.

Marshalltown, Ia.; Rude Auto Co.; one-story garage; $75,000.

Sheffield, Ia.; Ray Wood; one-story garage, 80x150.

Cawker City, Kan.; Ellis Winkel; one-story garage, 50x150.

Gross, Kan.; Highway Garage; one-story garage; $2000.

Junction City, Kan.; R. H. Grentner & Son; one-story garage and repair shop, 48x125.

Liberal, Kan.; Liberal Motor Co.; one-story garage, 50x140; $25,000.

Pittsburg, Kan.; Richard B. Davis; one-story garage; $5000.

Sedgwick, Kan.; Peter Martens; one-story garage, 50x70.

Topeka, Kan.; George H. Siedhoff; one-story garage, 75x140; $10,000.

White Cloud, Kan.; Casteel & Casteel; one-story garage, 46x135.

Wichita, Kan.; Wichita Auto Co.; one-story garage and salesroom, 87x140; $40,000.

Wichita, Kan.; New Buick Garage; one-story garage; $100,000.

Ashland, Ky.; J. H. McClary; two-story brick garage, 50x93; first floor cement floor; second floor, wood floor; composition roof; $15,000.

Augusta, Ky.; Wolfe & Work; one-story garage, 62x157.

Bowling Green, Ky.; Davidson Brothers; one-story garage, 50x50; $10,000.

Danville, Ky.; E. P. Faulconer; one-story garage; $25,000.

Elizabethtown, Ky.; Taylor Watkins; one-story garage; $5000.

Elizabethtown, Ky.; Horace McCullum; one-story garage, 40x60.

Grayson, Ky.; Darl Holcomb and Ellis Hall; one-story garage, 40x80.

Lebanon, Ky.; J. C. Miller; one-story garage, 135x150.

Lexington, Ky.; Phoenix Garage; one-story garage; $50,000.

Lexington, Ky.; Mammoth Garage; one-story garage, 35x64.

Louisville, Ky.; A. V. Thompson; one-story garage, 50x180.

Louisville, Ky.; A. G. Roland; one-story garage; $15,000.

Louisville, Ky.; Thomas J. Nolan; one-story garage; $12,000.

Louisville, Ky.; Embry-Weir Motor Co.; one-story garage, 60x300; $50,000.

Louisville, Ky.; Victor Kostel, 411 E. Jefferson street; one-story brick garage, 25x105, at 413 E. Jefferson street; $8000.

Maysville, Ky.; Capron Brothers; one-story garage, 62x140.

Paducah, Ky.; Central Service Station; one-story garage; $25,000.

Winchester, Ky.; Clyde Gaines; one-story garage; $40,000.

Crowley, La.; Crowley Motor Co.; two-story brick garage, 68x100; $20,000.

La Fayette, La.; Renshaw Motor Co.; one-story garage; $20,000.

Bangor, Me.; Bangor Motor Co.; one-story garage, 112x240.

Baltimore, Md.; Fred Rob, care Dewitz & Webb, 232 St. Paul street; one-story brick garage, 60x200; composition or slag roof, cement floor, steam heat and electric lights; $30,000.

Baltimore, Md.; Edward J. Storck, Munsey building; one-story brick garage, 28x92; $5100.

Baltimore, Md.; Merin Brothers, 1024 E. Baltimore street; three-story brick, 50x72, at 1504 Guilford avenue; $25,000.

Baltimore, Md.; Home Laundry Co.; one-story garage, 83x270; $40,000.

Baltimore, Md.; Max Calvalercheck, 28 W. Lexington street; one-story garage, 32x77.

Baltimore, Md.; Philip J. Kreamer; one-story garage, 60x140; $10,000.

Emmitsburg, Md.; Glenn and Charles Ohler; one-story garage, 50x70.

Hagerstown, Md.; Augustus Ludwig; one-story garage; $20,000.

Trego, Md.; Howard R. Buck; one-story garage; $5000.

Westminster, Md.; B. F. Shriver Co., 83 Main street; one-story private garage, 66x195; $2000.

Boston, Mass.; American Architectural Iron Works; one-story garage, at 115-119 Liverpool street; $30,000.

Boston, Mass.; Allen Automobile Co.; one-story garage; $350,000.

Cambridge, Mass.; Mr. O'Connell, 48 Rindge avenue; one-story public garage, 40x100; $20,000.

Everett, Mass.; National Garage Co., care W. W. Partridge, School and Carey streets; one-story public garage, 60x120, on Revere Beach parkway; $30,000.

Fall River, Mass.; Leon E. Danforth; one-story garage; $75,000.

Lawrence, Mass.; Pacific Mills; one-story garage; $40,000.

Lynn, Mass.; J. Callum, 27 Neptune street; one-story reinforced concrete garage, 75x85, at Washington and Suffolk streets; $25,000.

New Bedford, Mass.; Frederick W. Greens, Jr., 25 Chancery street; one-story public garage, 53x107; $12,000.

Somerville, Mass.; Daniel E. Hear, 13 Clyde street; one-story concrete block public garage, 55x100, at 189 Cedar street.

Worcester, Mass.; Bertram L. Handleman; one-story garage, 150x200; $200,000.

Worcester, Mass.; James Miles & Son, 393 Main street; one-story public garage, 60x93, at 353 Pleasant street; $13,000.

Albion, Mich.; Henry Tuchtenhager, 201 S. India street; one-story brick public garage, 69x75; $20,000.

Battle Creek, Mich.; Postum Cereal Co.; one-story garage, 132x162; $25,000.

Detroit, Mich.; Hugh T. Miller, 320 Lightner building; one-story public garage, 50x169, at Michigan avenue and Eighth street; $18,000.

Detroit, Mich.; J. F. Towar, 54 E. Ferry avenue; two-story public garage, 50x100; $50,000.

Grand Rapids, Mich.; Universal Car and Service Co., Grand Rapids Saving Bank building; one-story garage, 150x156; $35,000.

Harrison, Mich.; W. E. Green & Co.; one-story garage, 40x100.

Hillsdale, Mich.; Pinkman & Wright; one and two-story brick garage, 150x270; $40,000.

Halton, Mich.; Murphy & Monette; one-story garage, 40x80.

Saginaw, Mich.; Fred A. Brenner; one-story salesroom and service station, 60x120; $40,000.

Alexandria, Minn.; P. A. Johnson Auto Co.; one-story garage, 50x90.

Duluth, Minn.; Pioneer Auto Co., 328 E. Superior street; one-story brick and concrete garage, 75x100, at Fifth avenue and E. Superior street; $15,000.

Fairbault, Minn.; Anderson Motor Co.; one-story garage, 44x130.

Glencoe, Minn.; L. P. Albrecht; one-story garage, 46x66.

Minneapolis, Minn.; E. C. Gale; one-story garage; $12,500.

Minneapolis, Minn.; Clarkson, Lindley & Hill Holding Co.; one-story garage and shop; $68,000.

Onamia, Minn.; R. E. Johnstone; one-story garage, 50x120.

Pine River, Minn.; B. A. Michener; one-story garage, 75x140; $20,000.

Virginia, Minn.; Dodge's Garage; one-story garage; $50,000.

Wyoming, Minn.; E. T. Luttige; one-story tile and stucco public garage, 45x70; $8000.

Clarksville, Miss.; W. J. Herin; two-story brick supply station, 25x90.

Greenville, Miss.; Automobile Sales Co.; one-story garage; $22,000.

Greenwood, Miss.; E. K. Murick; one-story brick and stone garage, 137x150; $30,000.

Fair Grove, Mo.; Willard Womack; one-story garage, 75x150.

Gallatin, Mo.; Gallatin Motor Co.; one-story brick and stone trim garage, 120x130; $30,000.

Joplin, Mo.; Joplin Supply Co., Fourth and Wall streets; two-story concrete garage, 75x125.

Kansas City, Mo.; A. Spurman, 2140 Kansas street; one-story brick and stone trim garage, 30x80, at 305 Woodland avenue; $5000.

Kansas City, Mo.; J. W. McMurray; one-story garage, 60x75; $25,000.

Kansas City, Mo.; Dr. Wood's Estate, care S. E. Edwards, 502 Massachusetts avenue; one-story brick and stone trim garage, 130x132.

St. Louis, Mo.; Edward Hunkin, 5914 Washington avenue; two-story brick garage, 45x50.

St. Joseph, Mo.; Staedtler Bakery Co.; one-story garage; $2000.

Gazoo City, Mont.; Muriff Motor Co.; one-story garage; $6000.

Beaver City, Neb.; Hugh A. Lapham; one-story garage and shop, 48x75.

Beatrice, Neb.; Rains Auto Co.; one-story service station; $50,000.

Havelock, Neb.; W. R. Johnson; one-story garage, 75x140.

Prosser, Neb.; Edward H. Lewis; one-story garage; $1600.

Morristown, N. J.; R. C. Good, care Valentine Smith, 501 Fifth avenue, New York; two-story brick and hollow tile garage, 25x52; $25,000.

Newark, N. J.; Joseph Robinson, 63 Madison avenue; two-story reinforced concrete garage, 56x87, at 65-67 Madison avenue; $25,000.

Newark, N. J.; Alexander Dalvia; one-story garage; $4000.

Newark, N. J.; Julius Church; one-story garage; $15,000.

Newark, N. J.; William Kaufman; one-story garage; $8000.

Newark, N. J.; Louis Hockman; one-story garage, 35x100 and 25x40.

Newark, N. J.; Herby D. Cohen, 43 Sterling street; one-story brick garage, 50x134, at 66-68 13th avenue; $16,000.

Newark, N. J.; Beyer Corporation, 711 S. 14th street; one-story brick garage, 80x50x100, at southeast corner S. 14th street and Springfield avenue; $20,000.

Albany, N. Y.; Daniel P. O'Connell Garage & Storage Co.; one-story garage; $50,000.

Brooklyn, N. Y.; Julius Hockman, 575 Greene avenue; one-story brick garage, 75x100, south side Mererole street, west Leonard street; $25,000.

Brooklyn, N. Y.; John C. William, Woolworth building, New York; one-story brick garage, 30x91; east side Pearl street, south Concord street; $12,000.

Brooklyn, N. Y.; Scranton & Lehigh Coal Co., 308 Livingston street; one-story brick garage, 50x92, northwest corner Nevins and De Graw streets; $12,000.

Brooklyn, N. Y.; Emanuel Lipkowitz, Berry and North First streets; one-story brick garage; $10,000.

Brooklyn, N. Y.; J. Geoghegan, Ninth street and Sixth avenue; one-story brick garage, 20x100, south side 13th street, east Seventh avenue; $4000.

Brooklyn, N. Y.; Safe Construction Co., 125 Bristol street; one-story garage, 98x200; $50,000.

Brooklyn, N. Y.; Liberty Wvona Co., 106 Bristol street; one-story brick gorage, 100x150; $50,000.

Brooklyn, N. Y.; Morris Goetz, 241 E. 26th street; one-story garage, 97x131, south side Bergen street, west Classon avenue; $40,000.

Brooklyn, N. Y.; R. & E. Building Co., 50 Court street; one-story fireproof garage, 100x200; south side Lexington avenue, west Ralph avenue; $40,000.

Brooklyn, N. Y.; Firrozi & Son, Inc., 2064 Pacific street; one-story brick garage, 100x118, east side 18th street, south 86th street; $35,000.

Brooklyn, N. Y.; Benjamin Fenster, 189 Pulaski street; one-story brick garage, 100x100, west side Myrtle avenue, east Lewis avenue; $28,000.

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Brooklyn, N. Y.; Abraham Barasch, 301 E. 16th strect; one-story brick garage, 50x100, at 29th street and Fourth avenue; $25,000.

Brooklyn, N. Y.; D. Stryker, 49 Sumpter street; one-story brick garage, 60x100; $8000.

Brooklyn, N. Y.; Norman Holding Co., 690 Broadway; two-story brick garage, east side Richmond street, north Dinsmore place; $45,000.

Brooklyn, N. Y.; C. Katz, 392 Bushwick avenue; one-story brick garage, 164x200, north side Grattan street, east Porter avenue; $40,000.

Brooklyn, N. Y.; Walzer Brothers Corporation, 44 Courth street; one-story brick garage, 85x160; northeast corner Third and Bedford avenue; $25,000.

Brooklyn, N. Y.; C. P. Cannella, 1163 Herkimer street; one-story brick garage, 110x190; south side Atlantic avenue; west Eastern parkway; $20,000.

Brooklyn, N. Y.; D. Aqudello, 500 Fourth avenue; two-story brick garage, 20x60, west side Fourth avenue, south 12th street; $6000.

Brooklyn, N. Y.; B. W. Dorfman, 26 Court street; two-story garage, 140x200; at Tillary, Pearl and Adams streets.

Brooklyn, N. Y.; L. & A. S. Building Co., 44 Court street; two-story brick garage, 88x99; northeast corner Perry street and Atlantic avenue.

Brooklyn, N. Y.; G. Geswaldi; one-story brick garage, 50x75; northeast corner Ninth and Vernon avenue; $9000.

Brooklyn, N. Y.; Miss Augusta C. Bryan, care Walter H. Volckening, 35 W. 39th street, New York; two-story garage, 60x100; $15,000.

Brooklyn, N. Y.; M. Giancoutberi, 47 Flushing avenue; one-story brick garage, 38x100; southwest corner Flushing avenue and N. Oxford street; $7000.

Brooklyn, N. Y.; Max Rothschild; one-story garage, 85x100; $28,000.

Brooklyn, N. Y.; F. W. and E. W. Roe; one-story garage, 100x200.

Brooklyn, N. Y.; Manhattan Auto Co.; one-story salesroom; $10,000.

Brooklyn, N. Y.; Frances Garage, Inc.; one-story garage; $5000.

Brooklyn, N. Y.; M. & K. Construction Co.; one-story garage, 100x150.

Brooklyn, N. Y.; Bell Realty Co.; one-story garage, 137x142; $30,000.

Brooklyn, N. Y.; Richard Carve; one-story garage; $7000.

Brooklyn, N. Y.; A. Rockmore, 50 Court street; one-story brick garage, 100x100; south side 15th street, west Eighth street; $20,000.

Brooklyn, N. Y.; Isidor Polivnick, 571 Powell street; one-story brick garage; $20,000.

Brooklyn, N. Y.; A. S. Castelane, 937 Third avenue; one-story brick garage, 50x100; north side 36th street, east Third avenue; $12,000.

Brooklyn, N. Y.; Peter Schwartz; one-story brick garage, 66x75, at Morgan and Meeker avenues; $7000.

Buffalo, N. Y.; Michael Parucki, 1072 Sycamore street; one-story concrete garage, 32x130, at 1510 Broadway; $5000.

Buffalo, N. Y.; H. L. Wright; one-story brick garage and salesroom; $10,000.

Buffalo, N. Y.; F. P. Kane, 324 W. Genesee street; one-story concrete garage, 39x59x15; at 320-2 W. Genesee street; $4500.

Long Island City, L. I., N. Y.; Partler Realty Co., 93 Webster avenue; one-story brick garage, 50x200; east side Vernon avenue, north Webster avenue; $10,000.

Long Island City, L. I., N. Y.; New York and Queens Electric Light & Power Co.; one-story brick garage, 38x201; east side Radde street, north Jane street.

Lockport, N. Y.; Ford Garage and Salesroom; one-story garage, 60x145.

Medina, N. Y.; J. J. Walker; one-story garage and salesroom, 26x60; $15,000.

New York, N. Y.; Stackpole-Northrup Garage; one-story garage; $10,000.

New York, N. Y.; Motor Hall, Inc.; one-story garage; $25,000.

New York, N. Y.; Ever-Ready Service Corporation; one-story garage; $50,000.

New York, N. Y.; East 169th Street Realty Corporation; 1474 Shakespeare avenue; one-story brick garage, 118x200; $60,000.

New York, N. Y.; J. Eisenberg, 1351 Eastern Parkway, Brooklyn; one-story brick garage, 115x171; west side Coney Island avenue, south Caton place; $50,000.

New York, N. Y.; Klein Improvement Corporation, 438 W. 213th street; one-story brick garage, 50x90; at 6-8 E. 135th street; $15,000.

New York, N. Y.; Nicola Romano, 3535 Holland avenue; one-story brick garage, 25x89; $6000.

New York, N. Y.; W. J. Lory, 521 W. 162nd street; one-story garage, 100x190, at Walton avenue and 175th street; $50,000.

New York, N. Y.; Mary A. Howley, 406 W. 34th street; one-story brick garage, 73x119, at northwest corner 176th street and Boston road; $20,000.

New York, N. Y.; Mahor Garage Corporation; one-story garage; $25,000.

New York, N. Y.; M. G. & R. Garage Corporation; one-story garage; $10,000.

New York, N. Y.; S. H. Garage Corporation; one-story garage; $10,000.

New York, N. Y.; Community Motor Car Supply Co.; one-story service station; $20,000.

Schenectady, N. Y.; C. G. Van Rensselaer, 505 State street; one-story brick and concrete garge, 32x120; $12,000.

Asheville, N. C.; Buncombe County Commissioners; two-story concrete and concrete block garage, 30x50.

Charlotte, N. C.; White Motor Co.; one-story garage; $15,000.

Durham, N. C.; Overland Motor Car Co.; one-story garage and service station; $15,000.

Durham, N. C.; O. W. Holloway; one-story garage, 50x90.

Gastonia, N. C.; A. A. Maier; one-story garage; $6000.

Gastonia, N. C.; L. N. Patrick; two-story garage, 60x117.

Greensboro, N. C.; McGleamery Automobile Co.; two-story concrete garage; $90,000.

Greensboro, N. C.; Greensboro Automobile Service Co.; one-story tile service station; $3500.

Greensboro, N. C.; G. W. Calkins; one-story garage; $10,000.

Greensboro, N. C.; George W. Collins; one-story garage; $10,000.

High Point, N. C.; Christ Bamballs; one-story garage, 34x175.

Lumberton, N. C.; James McNair; one-story garage, 106x132.

Salisbury, N. C.; S. E. Williams; one-story garage, 73x176.

Winston-Salem, N. C.; W. H. Clinard; one-story garage, 80x88.

Minot, N. D.; Automobile Service Corporation; one-story service station and repair shop; $10,000.

Akron, O.; A. O. Wood Motor Co.; one-story service station and repair shop; $50,000.

Cincinnati, O.; Bauer Auto Sales Co.; one-story salesroom; $45,000.

Cincinnati, O.; Christ Erhardt; one-story garage, 50x100.

Cincinnati, O.; G. Hellman; one-story garage, 24x100.

Cleveland, O.; G. A. Tenbusch, 1836 Euclid avenue; eight-story garage, 100x150, at Huron road and E. 12th street; $600,000.

Cleveland, O.; David Andrews, 2108 Superior viaduct; one-story brick garage, 50x200; $30,000.

Cleveland, O.; Cleveland Motor Car Sales Co., 1628 Euclid avenue; two-story brick garage and show room, 75x150, at Prospect avenue and E. 40th street; $100,000.

Columbus, O.; Columbus Oldsmobile Co.; one-story service station and repair shop; $70,000.

Columbus, O.; M. G. Sherman; one-story garage, 50x200.

Columbus, O.; Taylor-Armstrong Co.; one-story salesroom, 50x200.

Columbus, O.; Armleder Auto Sales Co.; one-story salesroom; $30,000.

Dayton, O.; Gen City Auto Sales Co.; one-story garage and salesroom; $100,000.

Dayton, O.; Dayton & Frog Auto Co.; one-story garage; $28,000.

Dayton, O.; Charles Echell; one-story garage; $24,000.

Dayton, O.; H. O. Symes; one-story garage, 50x125; $10,000.

Dayton, O.; County Auto Co.; one-story garage; $16,000.

Dayton, O.; Realty Co.; one-story garage; $10,000.

Dayton, O.; Superior Auto Sales Co.; one-story salesroom; $25,000.

Dayton, O.; Postal Motor Vehicle Service; one-story garage, 60x100.

Greenfield, O.; Ortman Motor Car Co., Washington House, O.; one-story brick and stone trim garage, salesroom and storage station, 44x162; $25,000.

Hamilton, O.; Miami Motor Car Co.; one-story garage, 50x185; $50,000.

Kenton, O.; Arnett Auto Co.; one-story garage; $5000.

Lima, O.; Gramm-Bernstein Truck Co.; one-story garage; $225,000.

Lima, O.; Clem Thompson; one-story garage, 50x200; $15,000.

Marion, O.; Guy Stoltz; one-story garage, 49x93; $18,000.

Massillon, O.; Strong Auto Supply Co.; one-story service station; $10,000.

Middletown, O.; Jacob Weber; one-story garage; $3000.

Norwood, O.; Chris Erhardt; one-story garage, 60x100.

Shelby, O.; Simon Small & Son, Bird building, Mansfield, O.; one-story garage, 21x160; for Ohio Seamless Robe Co.; $15,000.

Steubenville, O.; D. Brandt; two-story brick commercial garage, 50x95; $35,000.

Toledo, O.; George Webber; one-story brick garage, 60x100, at Locust and Summit avenue; $20,000.

Bristow, Okla.; B. F. Curran; one-story garage, 50x125.

Edmond, Okla.; Wantland Motor Co.; one-story brick and stone garage, 50x150.

Muskogee, Okla.; E. W. Mangson, St. Louis, Mo.; one-story brick auto building, 100x110; $20,000.

Nash, Okla.; Roy Gibson; one-story garage, 52x130.

Oklahoma City, Okla.; McClelland-Century Motor Co., 825 Broadway; two-story brick, stone and reinforced concrete garage, 50x140.

Oklahoma City, Okla.; A. J. Doherty, Fort Worth, Tex.; two-story reinforced concrete garage, 50x140; $40,000.

Oklahoma City, Okla.; Magnolia Petroleum Co.; one-story brick filling station; $5400.

Tulsa, Okla.; Percy Ellington, 418 N. Main street; one-story brick and cement garage, 60x140; $15,000.

Portland, Ore.; Vick Brothers; one-story garage, 100x100; $40,000.

Portland, Ore.; Mitchell Lewis & Staver Co.; one-story garage, 100x139; $80,000.

Portland, Ore.; Floyd Halladay; one-story garage, 50x100.

Portland, Ore.; E. H. Cahalin; one-story garage, 100x115.

Portland, Ore.; C. F. Bartan; one-story garage, 50x160; $3000.

Allentown, Pa.; William H. Hilbert & Co., 436 N. 11th street; one-story brick and concrete garage, 28x60, at 517-19 N. Poplar street; $10,000.

Donora, Pa.; Rigelon Motor Corporation; two-story brick and concrete commercial garage, 68x100; $40,000.

Harrisburg, Pa.; A. H. Shaeffer, 88 S. Cameron street; two-story brick public garage, 51x91, at 11th street and Johnstown road; $25,000.

Pittsburgh, Pa.; Otto Shepherd; one-story garage, 100x200.

Philadelphia, Pa.; Neel-Cadillac Co.; 10-story concrete sales and service station; site block bounded by Fairmount avenue, Pennsylvania avenue, Olive and 25th streets; about 50,000 square feet floor space; $1,000,000.

Philadelphia, Pa.; J. Waldow; two-story garage, 50x121, at 705-11 Tasker street.

Wilkes-Barre, Pa.; George S. Welsh, Coal Exchange building; one-story frame and shingle garage, 22x24; $3000.

Reading, Pa.; Flicker Estate, care Earl Flicker, Merchants Hotel, Third and Penn streets; two-story reinforced concrete public garage, 90x90, at Third and Cherry streets; $30,000.

Reading, Pa.; Franklin Garage Co.; one-story garage; $50,000.

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Scranton, Pa.; S. E. Williams, Coal Exchange building; one-story brick public garage; for F. L. Peck, 101 E. Market street; $75,000.

Wilkes-Barre, Pa.; Luther Roth; one-story garage, 80x106; $50,000.

Wilkes-Barre, Pa.; W. S. Lee; one-story garage; $50,000.

Providence, R. I.; L. M. Koehler; one-story garage; $30,000.

Columbia, S. C.; R. W. Gibbs; one-story garage; $2000.

Columbia, S. C.; A. E. Jenkins; one-story brick automobile building; $120,000.

Columbia, S. C.; Capital City Garage; one-story garage; $2500.

Gaffney, S. C.; B. L. Hames and Edward Watson; one-story garage, 38x70.

Greenville, S. C.; Thomas M. Walker Co.; one-story garage and salesroom, 25x110; $12,000.

Greenwood, S. C.; C. C. & J. P. Wharton; one-story garage, 50x90; $80,000.

Spartanburg, S. C.; Elwood F. Bell; one-story garage; $50,000.

Flandrau, S. D.; George Pilling & Son.; one-story garage, 50x100.

Davis, S. D.; Clausen Garage; one-story garage, 25x40.

Madison, S. D.; Coffey Brothers; one-story garage, 50x50.

Newell, S. D.; Newell Garage; one-story garage; $25,000.

Sioux Falls, S. D.; R. S. Brooks; one-story garage; $55,000.

St. Lawrence, S. D.; Highway Garage; one-story garage; $20,000.

Chattanooga, Tenn.; Arnold Garage; one-story garage; $10,000.

Clarksville, Tenn.; R. R. Acre and W. W. Outlaw; one-story garage, 75x150; $20,000.

Huntingdon, Tenn.; R. E. Ware; one-story garage, 115x240; plate glass front, fireproof, install full garage equipment, overhead trolley 2-5 H. P., A. C. electric motors, battery charging plant with 750 to 1200 watt motor generator, built in preheater for welding plant.

Jasper, Tenn.; A. R. Pryor; one-story garage, 100x100.

Memphis, Tenn.; David Dermon; one-story brick garage and filling station; $48,000.

Memphis, Tenn.; Memphis Motor Transportation Co.; one-story garage, 72x100.

Athens, Tex.; Jackson Brothers; one-story garage, 50x120.

El Paso, Tex.; J. H. Duckett; one-story brick garage; $10,000.

San Antonio, Tex.; Dr. A. A. Brown; one-story garage; $35,000.

San Antonio, Tex.; A. H. Halff; one-story garage, 76x124; $18,000.

Sherman, Tex.; North Texas Motor Co.; one-story brick and concrete auto building, 50x100; $20,000.

Sulphur Springs, Tex.; A. B. Davis; one-story garage; $50,000.

Texarkana, Tex.; Southwestern Gas Electric Co.; one-story garage, 50x100.

Van Alstyne, Tex.; Yoder Brothers; one-story garage, 50x100.

Yoakum, Tex.; Cook Motor Co.; one-story garage; $25,000.

Mt. Pleasant, Utah; Selly-Hinckley Auto Co.; one-story garage, 56x200.

Salt Lake City, Utah; Seely-Hinckley Garage; one-story garage, 56x200.

Bristol, Va.; Hamilton Bacon Co.; one-story garage, 70x90.

Leesburg, Va; Leon H. Frye; two-story brick and concrete garage, 45x100.

Norfolk, Va.; Bell Motor Co.; one-story garage; $15,000.

Richmond, Va.; Dixie Poster Advertising Co., 14 S. Seventh street; one-story garage, 28x42; $3000.

Richmond, Va.; Dahumum Corporation, 10th and Main streets; two-story brick public garage and show room, 66x140; $40,000.

Richmond, Va.; John E. Carr; two-story garage, 40x120.

Tazewell, Va.; L. A. Tynes & Co.; one-story garage, 60x138; $25,000.

Winchester, Va.; Daniel W. McIlwell; one-story garage, 84x188.

Bellingham, Wash.; Smith Motor Co.; one-story garage; $20,000.

Centralia, Wash.; Central Motor Supply Co.; one-story garage, 75x102; $15,000.

Ferndale, Wash.; Highway Garage; one-story garage, 40x70.

Kent, Wash.; Kent Motor Car Co.; one-story garage; $15,000.

Moclips, Wash.; A. Larson; one-story garage, 100x140; $3000.

Raymond, Wash.; L. V. Raymond; one-story garage; $60,000.

Seattle, Wash.; M. R. Wood; one-story garage; $5000.

Seattle, Wash.; J. W. Goodwin; one-story garage; $30,000.

Seattle, Wash.; Frank Forrestal; one-story garage, 60x108; $35,000.

Seattle, Wash.; Chanslor-Lyon Co.; one-story garage, 120x121.

Seattle, Wash.; Inner Circle Property Co.; four-story garage; $130,000.

Seattle, Wash.; George E. Large; one-story garage, 60x90; $9000.

Seattle, Wash.; University Garage; one-story garage; $100,000.

Spokane, Wash.; Drs. H. S. and Frank Martin; one-story garage, 60x142; $15,000.

Spokane, Wash.; E. M. Pansie; one-story garage, 35x95; $4000.

Spokane, Wash.; E. M. Harris; one-story garage; $10,000.

Tacoma, Wash.; Commercial Garage; one-story garage, 100x120; $40,000.

Tacoma, Wash.; J. L. Carmon; one-story garage, 50x120; $30,000.

Toppenish, Wash.; W. W. Sheano Auto Co.; one-story garage; $15,000.

Beckley, W. Va.; Bair Brothers; one-story garage, 50x100.

Elkins, W. Va.; Elkins Garage; one-story garage, 90x150; $75,000.

Fairmount, W. Va.; T. W. Bell; one-story garage, 40x60.

Huntington, W. Va.; Gutman Auto Sales Dome; one-story garage, 40x200.

Huntington, W. Va.; L. D. and R. L. Behring; one-story garage; $8000.

Logan, W. Va.; Armour & Co.; three-story garage, 57x85.

Mannington, W. Va.; T. W. Bell; one-story garage, 40x60.

Star City, W. Va.; Kanfeld Co.; one-story garage, 40x50.

Williamson, W. Va.; Williamson Service Garage Co.; two-story brick and stone trim garage, 50x100; concrete floors; $30,000.

Edgerton, Wis.; Edgerton Motor Co.; one-story garage, 60x132; $20,000.

Janesville, Wis.; Janesville Auto Co.; one-story garage, 34x44; $30,000.

Marion, Wis.; Hoffman Brothers; one-story garage, 40x80.

Milwaukee, Wis.; O'Neil Oil & Paint Co., 237 Water street; one-story garage, 60x72, at Water and Pierce streets; $7000.

Milwaukee, Wis.; Auto Sales Co. of Menominee; one-story garage, 60x100.

Reesville, Wis.; Bennizer & Newlerger; two-story garage, 50x100; $10,000.

Rice Lake, Wis.; T. H. Field Auto Co.; one-story garage, 132x150.

Sheboygan, Wis.; North Side Garage; one-story garage, 40x96.

Tomah, Wis.; Henry & Henry; one-story garage, 50x150; $14,000.

CONTRACTS AWARDED.

Wilmington, Del.; W. H. Hollingsworth; one-story garage, 10x16; for W. H. Klair, 303 W. Eighth street; $5850.

Wilmington, Del.; Spirer Construction Co., 876 Jefferson street; one-story garage, 41x109, at 403 French street, for Isadore Keil, 405 King street; $12,000.

Wilmington, Del.; Martin Tomczyk, 431 S. Broome street; one-story garage, 50x105, at 24th and Market streets, for Mrs. Victoria Jowlak, 431 Broome street.

Gainesville, Fla.; J. S. Edenfield; one-story buff brick and concrete filling station; tile roof, gasoline and air pumps; for J. R. Fowler; $3500.

Albany, Ga.; Arthur E. Ittner; three-story pressed brick front auto building, 105x210; metal ceiling, plate glass windows, cement floor, for Commercial Car & Machine Co. Lessee, Barker Motor Co.

Thompson, Ga.; E. A. Hogan; one-story service station, for P. A. Bowden; $20,000.

Joliet, Ill.; Hansen & Peterson Co.; two-story garage, 50x75, for Spangler Motor Co., 614 E. Jefferson street; $20,000.

Chicago, Ill.; Mrs. E. Grace, 5420 Sheridan road; one-story garage, 22x26; $3400.

Chicago, Ill.; G. A. Peterson and E. J. Hull, 7339 Harvard avenue; one-story garage, 55x137, at 7437-39 Vincennes avenue; $8000.

Chicago, Ill.; E. F. Wiegel, 9629 S. Seeley avenue; one-story garage, 50x60, at 9205-9 S. Western avenue, for W. Renan, 9113 Western avenue; $9000.

Chicago, Ill.; Holton Seeley & Co., 140 S. Dearborn street; one-story garage, 50x125; $20,000.

Chicago, Ill.; A. W. Quonstrom, 6734 Paxton avenue; one-story garage, 19x76, at 1530-32 E. 67th street; $20,000.

Chicago, Ill.; C. A. Bergstrom, 7806 Peoria street; one-story garage and salesroom, 60x124, at 820-22 W. 59th street; $20,000.

Chicago, Ill.; William Hammerstein, 2235 S. Troy street; one-story garage, 25x42, at 2235 S. Troy street, for Frank and Felix Musjkluski; $3000.

Chicago, Ill.; E. E. Wafal, 140 E. Dearborn street; one-story garage, 12x27, at 32 Throop street, for Barnhard Brothers & Spindler, 32 Throop street; $3000.

Chicago, Ill.; B. Boshes, 3125 W. 15th street; one-story garage, 22x38, at 1322 S. Kedzie avenue, for J. Kaplan, 1322 S. Kedzie avenue; $3000.

Elgin, Ill.; Charles Geitz & Son; two-story garage and repair shop, 63x154, at Douglas and North streets; for C. S. Hubbell; $35,000.

Ft. Wayne, Ind.; H. Wehrenberg & Son, 806 Madison street; one-story commercial garage, 86x90, at Barr and Main streets, for Samuel Foster, 417 East Columbia avenue; $30,000.

Gary, Ind.; Perry Stevens, 583 Broadway; two-story garage, 85x135, for J. J. Reynolds; $50,000.

Indianapolis, Ind.; D. W. Bohannon, 1156 King avenue; one-story garage, 38x141, at 1224-30 S. Eastern avenue, for Sanitary Milk Products Co., 1224 S. Eastern avenue; $8000.

La Fayette, Ind.; A. E. Kemmer, 644 N. Seventh street; two-story commercial garage, 66x132, for Roy Wallace, 1905 Thompson street; $30,000.

New Castle, Ind.; Cornell Engineering Co., Indianapolis, Ind.; two-story garage and salesroom, 50x165, for Ellis Sister; $35,000.

Sioux City, Ia.; J. Horn, 1209 Glass avenue; two-story garage, 40x144, for J. Mirkin, 1711 E. Seventh street; $25,000.

Topeka, Kan.; Lundgren & Carlson, 213 Jackson avenue; one-story brick and stone trim garage, 75x150, at Sixth and Van Buren streets, for R. Knowles; $45,000.

Lexington, Ky.; Frank Corbin; one-story brick garage, 80x120, and 40x80, for Graves & Manning, 124 W. Main street.

Louisville, Ky.; National Construction Co., Trade building; one-story garage, 75x200, for Funeral Auto Association, 707 Baxter street; $35,000.

Louisville, Ky.; George Rommel Co., 639 S. Campbell street; two-story garage and auto sales building, 60x200, at 845 S. Third street, for Embrey & Weir, 507 E. Broadway; $50,000.

East Boston, Mass.; G. Lombias, 54 Frankfort street; one-story public garage, 50x100, at 272 Pairs street, for A. Bandeza, 64 Porter street; $35,000.

Fall River, Mass.; Thomas E. Logan, 77 Sixth street; one-story public garage, 71x90, for J. A. Parker, 1856 Rodman street; $14,000.

Worcester, Mass.; George A. Fuller Co., 710 Board of Trade building; one-story public garage, 140x215, for B. L. Handleman, 36 Portland street; $100,000.

Minneapolis, Minn.; Pike & Cook Co., 415 S. Fifth street; one-story public garage, 20x75, at 1414 First avenue; $10,000.

Excelsior Springs, Mo.; Harry Elgin; two-story garage, 125x128, for Harry Silver.

Kansas City, Mo.; A. E. Madorie, 404 Reliance building; two-story sales and display room, 90x130, for Rice-Sturtevant Motor Co., 2710 E. 15th street.

St. Louis, Mo.; Kellerman Construction Co., International Life building; two-story brick garage, 138x200, at Channing and

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Lawton avenue, for Columbia Taxicab Co., L. W. Delmar building; $12,000.

Newark, N. J.; Miller & Son, 564 Main street; two-story garage, 100x150, at Central avenue and Bleecker street, for New Jersey Auto Co., 17 Halsey street; $80,000.

Newark, N. J.; Israel Feinsod, 402 Hunterdon street; one-story garage, at 61-63 River street, for Nathan Goldsmith, 3 Cherry street; $13,000.

Trenton, N. J.; A. Anglivarulo; one-story garage, 48x187, at 8-10 E. Front street, for Edward H. Zehnrer, 30 Tyler street.

Brooklyn, N. Y.; M. Shapiro & Son, 52 Vanderbilt avenue, New York; two-story garage, 68x125, east side Gravesend avenue, north Church avenue, for T. H. Schneider, 390 E. Fifth street; $75,000.

Clifton, L. I., N. Y.; American Concrete Steel Co., 1001 Essex building, Newark, N. J.; one-story garage, 30x61, at Center street and Simonson avenue, for Louis De. Jouge & Co.; $10,000.

Mariners Harbor, L. I., N. Y.; Staten Island Shipbuilding Co.; one-story garage, 35x50, east side Andrews avenue, north Richmond terrace; $5000.

New York, N. Y.; I. Langner, 700 Trinity avenue; one-story garage, 100x100, at 137th street, west Alexander avenue; $20,000.

Tompkinsville, L. I., N. Y.; American Concrete Steel Co., Essex building, Newark, N. J.; one-story garage, 30x60, for Louis De. Jonge & Co., Clifton, L. I., N. Y.; $18,600.

Wilson, N. C.; Welfare Auto Co.; four-story brick, stone and steel garage, 60x64; $80,000.

Akron, O.; Koegal Construction Co., 326 Central Savings & Trust building; one-story brick garage, 22x50, for E. B. Gile, 617 Second National Bank building; $5500.

Akron, O.; Carmichael Construction Co., Central Savings & Trust building; two-story brick garage, 66x165, for W. E. Wright Co., 887 Exchange street; $25,000.

Cincinnati, O.; William Miller, 2126 Elm street; one-story garage, 50x71x100; at Montgomery and Highland avenues, for Christ Erhardt, 3319 Drexel avenue; $17,000.

Cleveland, O.; C. A. Garson, 6408 Euclid avenue; eight-story public garage, 150x370, for Sixth Street Realty Co., Guardian building.

Cleveland, O.; W. I. Thompson & Co., 6110 Euclid avenue; one-story garage, shipping room and service station, 55x512, at 10,615 Madison avenue, for Parish & Bingham Co.; $150,000.

Cleveland, O.; J. G. Claxton, 214 Vicker building; two-story brick garage and display room, 65x150, at E. 152nd street and St. Clair avenue, for Overland Larick Co., 18,526 St. Clair avenue; $40,000.

Dayton, O.; Blachard Building Co., Schwind building; two-story brick and concrete garage and salesroom, 75x180, at 115 W. Second street, for Frank B. Heathman Motor Co., 220 W. Third street; $75,000.

Defiance, O.; Smith & Patton Motor Sales Co., 616 Clinton street; one-story public garage, 101x140; $20,000.

Lima, O.; Lima Motor Sales Co., Savings Bank building; two-story garage and salesroom, 72x219; $60,000.

Lima, O.; Lima Construction Co.; one-story brick garage, 59x200, for Rowland Brothers; $18,000.

Mansfield, O.; J. C. Kimble; two-story brick garage, 50x180, for Patterson Gatton & Son; $30,000.

Fairview, Okla.; Bush Brothers, 411 W. Grand avenue; one-story garage, 75x140, for Charles Wright.

Oklahoma City, Okla.; R. M. Crissman, 617 Southwest Reserve Bank building; three-story garage, 50x140, for S. A. Layton.

Tulsa, Okla.; W. C. Shaw Construction Co.; one-story brick and cement garage, at 115 N. Felton street, for Alfred Thoroughgood; $900.

Philadelphia, Pa.; F. F. Devine; one-story shop and garage, at 513 N. 61st street, for M. Boyle; $1500.

Philadelphia, Pa.; John Ashlin; one-story garage, 19x21; south side Kenilworth avenue, west Seventh street; for George Binkins; $1500.

Philadelphia, Pa.; William Steele & Sons Co.; one-story brick garage at 1514 N. High street, for O'Neill Brothers, Inc.; $3300.

Philadelphia, Pa.; Edward Holland; one-story garage, at 4834 Market street, for Shutes Laundry; $3000.

Philadelphia, Pa.; John Diringer; one-story garage, east side Cottman street, north Oxford Pike; $6000.

Philadelphia, Pa.; Potts Brothers & Cooperson; one-story brick service station at 1319-39 Wood street, for Guarantee Realty Co.; $27,000.

Philadelphia, Pa.; William J. Mitchell; one-story garage, 18x100, at 2518 S. 12th street, for S. Scott; $3100.

Philadelphia, Pa.; John A. Cadori; one-story brick garage, at 3545 N. Eighth street, for John Furlong; $25,000.

Philadelphia, Pa.; John McClatchy; 15 one-story garages, 18x24; north side Apsley street, west Pulaski avenue; $12,700.

Philadelphia, Pa.; E. E. Hollenback; one-story garage, 54x146, east side 30th street, north Race, for F. G. Vogt & Sons Co.

Philadelphia, Pa.; Doyle & Co.; two-story brick garage, 33x90, at 1218-20 N. 26th street, for Public Ledger Co.

Philadelphia, Pa.; William E. Hale; one-story garage, 18x110, west side 26th street, south Dauphin, for Harry Luchenmeyer; $5800.

Philadelphia, Pa.; Arthur S. Brown; one-story garage, east side 22nd street, for Mrs. George Trucksess; $11,500.

Philadelphia, Pa.; Parrish & Jackson; one-story garage, at 5211 N. Fifth street, for McHenry & Backling; $13,000.

Philadelphia, Pa.; J. D. Fisher; one-story garage, at 6141 Oxford street, for J. R. Van Roden; $2000.

Philadelphia, Pa.; Milton W. Young; one-story brick garage, at northwest corner 63rd and Woodbine avenue, for Walter B. Smith; $4700.

Philadelphia, Pa.; Famiglini; one-story garage, 16x16, at northeast corner 15th and Dickinson streets, for Myra Ciamchelli.

Philadelphia, Pa.; William Bushnell; one-story garage, at 2819 Mascher street, for E. F. Houghton & Co.; $9000.

Philadelphia, Pa.; George Bortier; one-story garage, 16x16, at 2201 Ontario street; $1000.

Philadelphia, Pa.; Pringle Borthwick; one-story garage, 22x45, west side Prospect avenue, south New street, for Gueker Brothers; $2500.

Philadelphia, Pa.; James Fernald; one-story garage, 20x28, east side 54th street, north Westminster avenue, for Edward Kautheim.

Pittsburgh, Pa.; Atlantic Land Co., 2101 Oliver building; one-story brick garage, 198x202, on Melwood street, near Baum boulevard, for Pittsburgh Taximeter Co.; $100,000.

Reading, Pa.; George H. Beecher, 611 N. Third street; one-story public garage, 30x90, at 228 N. Fifth street; $8000.

Providence, R. I.; E. H. Bigney, 17 Custom House street; three-story public garage, 78x132, for Edwin A. Smith Realty Co., Turks Head building; $75,000.

Gaffney, S. C.; Builder's Supply Co.; one-story brick show room, 36x66; concrete floor; for Edward Watson and B. L. Hames.

Columbia, S. C.; J. Monroe Wallace; one-story fireproof garage, 50x70, for Robert W. Gibbs, 1508 Sumter street.

Memphis, Tenn.; Union Motor Car Co.; one-story brick garage; $15,000.

Pearsale, Tex.; William Healy, San Antonio, Tex.; one-story fireproof garage, 65x117; concrete floors, reinforced concrete frame work, hollow tile walls, plate glass front, for W. J. Tyner; $25,000.

San Antonio, Tex.; Coleman & Jenkins; three-story concrete garage, 56x160; $54,224.

Norfolk, Va.; Graham & Co., Wethers building; one-story public garage, 55x93, at 19th and Granby streets, for Edgar J. Hecht, Monroe building; $10,500.

Green Bay, Wis.; E. H. Regal, 134 S. Adams street; one-story garage, 60x100, for DuBois & Haevers, 423 Pines avenue; $7000.

Milwaukee, Wis.; Foster Construction Co., Cassell building, Waukee, Wis.; one-story garage, 120x120, at Huron and Milwaukee streets; $15,000.

Milwaukee, Wis.; F. E. Carrigan, 78 13th street; one-story garage, 67x80, at 141 27th street, for Curtis Brothers; $11,000.

Ricketts, Wis.; Flour Brothers Construction Co., 54 State street; two-story commercial garage, 40x60, for Roseke Brothers; $10,000.

NEW CONCERNS RECENTLY INCORPORATED

Monthly Record of New Business Houses for which Charters Have Been Issued in the Various States and Classified According To Nature of Business.

NEWLY ORGANIZED MANUFACTURERS OF CARS, TRUCKS AND TRACTORS.

Dover, Del.; Cleveland Motor Trucks Corporation; $1,000,000; L. B. Phillips, M. S. Anderson, I. J. Baynes.

Dover, Del.; Murray Motor Car Co.; $2,000,000; M. L. Rogers, L. A. Irwin, M. M. Nichols.

Dover, Del.; Supreme Motors Corporation; $2,000,000; W. N. Loftan, Frank Jackson, Mark W. Cole.

Wilmington, Del.; Lorraine Motor Corporation; $31,500,000; to manufacture automobiles and parts for same.

Wilmington, Del.; Motor Car Specialty Co.; $100,000; to manufacture automobiles and automobile specialties.

Georgetown, S. C.; The Coastal Motor and Tractor Co.; $6000; to conduct a general automobile business; E. M. Doar.

PARTS AND FITTINGS MAKERS.

Wilmington, Del.; Elastic Auto Body Co.; $500,000; M. C. Kelly, S. L. Mackey.

Wilmington, Del.; Solid Rubber Tube Co.; $50,000; to manufacture tires, tubes.

Buffalo, N. Y.; Miles Electric Car Lock Corporation; $500,000; G. G. Canute, S. Johnston, J. R. Kingsley.

Lockport, N. Y.; Dittmer Gear and Manufacturing Corporation; $71,500; E. O. and A. H. Dittmer, G. W. Riley.

New York, N. Y.; Du Pont Motor Sales Corporation; $75,000; to manufacture engines and flying machines; D. Sanger, L. Sanger, J. A. Powers, 1778 Broadway.

New York, N. Y.; Robert-Irwin Manufacturing Co.; $30,000; to deal in automobile pumps; I. Berkowitz, A. Berkowitz, M. Rappaport.

Columbus, O.; The Perry Auto Top Co.; $100,000; Albert E. Jones, Fred Veroe, Frank L. Dean, G. M. Smith, P. Schneider.

Roanoke, Va.; Motor Activator Corporation; $25,000; to manufacture engines; Roy F. Dowdy.

GARAGE AND REPAIR SHOPS.

Dover, Del.; West Side Garage, Inc.; $150,000; Dallet H. Wilson, Howard A. Lehman, Robert A. Hamilton, Easton, Pa.

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Chicago, Ill.; Engelwood Motor Garage Co.; $2000; Charles Medworth, Benjamin H. Pruett, George Clime.

Chicago, Ill.; The Robineau Garage, Inc.; Samuel Robineau, Dwight P. Green, David Jacker.

Brooklyn, N. Y.; Chain Garage and Service Co.: $7000; H. E. and D. Mohr, H. H. Rubin, 451 Watkins street.

Brooklyn, N. Y.; Mahoney Garage Co.; $5000; M. E. and C. M. Mahoney, N. A. Ryan, 612 56th street.

Brooklyn, N. Y.; Whitehall Garage; $10,000; B. G. Smith, J. E. and A. L. Wood, 885 Union street.

New York, N. Y.; Oireo Auto Repair Corporation; $10,000; Sadie V. Lloyd, Edna S. Evans, Joseph M. Sullivan.

Buffalo, N. Y.; Automatic Tire Machine Corporation; $1,500,000; to manufacture machines for weaving and rubberizing tire fabric; W. A. Schagger, H. G. E. Smith, S. H. Mullener.

Buffalo, N. Y.; Chambers Motor Co., Inc.; $40,000; to conduct a garage bus business; C. H. Chambers, M. E. Merwin, R. G. Kinkel.

Buffalo, N. Y.; Van Dusen Motor Sales Co., Inc.; $10,000; to conduct a general garage business; J. R. Van Dusen, H. R. Bernhardt, S. H. Millener.

Glen Cove, N. Y.; Hall-Ashmead Auto Sales and Repair Corporation; $20,000; L. C. Hall, C. H. Ashmead, J. C. Sheldon, 170 Broadway.

New York, N. Y.; L. L. M. Garage Corporation; $20,000; S. Lavietes, B. Lavietes, B. Miller, Hoe avenue.

New York, N. Y.; Mt. Eden Garage, Inc.; $20,000; C. T. Kurz, M. O. Kurz, 123 Mt. Hope place.

New York, N. Y.; The Normandie Garage: $10,000; M. Schneider, S. Berlin, J. G. Abramson, 30 Church street.

Columbus, O.; White Cross Auto Repair & Tire Co.; $25,000; Julius Diehr, Harry Vigor, Charles C. Poiries.

Chester, S. C.; The Automobile Machinery & Repair Co.; $20,000; to conduct a garage business; Paul Hardin.

Chippewa Falls, Wis.; Chippewa Buick Co.; $50,000; to engage in garage and automobile business; W. Henneman, J. J. Jaeckle, Walter A. John.

Elcho, Wis.; Elcho Garage, Ltd., Inc.; $5000; R. P. Guptell, George Handeyside.

Madison, Wis.; West Side Garage, Inc.; $2000; L. S. King, F. A. Neckash, C. B. King.

Milton, Wis.; Badger Garage Co.; $10,000; George E. Crosley, George M. Ellis, Archie H. Hurley.

Milwaukee, Wis.; Wisconsin Owner Supply and Repair Co.; $1000; A. J. Penney, H. F. Liepert.

Waukesha, Wis.; Badger Motor Car Co.; $35,000; to conduct a garage; Arner J. Huppert, Herman Poetsch, Herman N. Maurer.

ACCESSORIES, EQUIPMENT AND SUPPLIES.

Dover, Del.; Carlisle Tire Corporation; $33,000,000; J. S. Britz, Harris V. Bricsen, Edwin M. Simpson.

Wilmington, Del.; The Cell Tube Tire Co.: $300,000; to manufacture tires and tubes.

Wilmington, Del.; Highland Tire and Rubber Co.: $200,000; P. P. Reilly, Harry D. Macucheon, J. A. McCullough.

Wilmington, Del.; The Kentucky Tire & Rubber Association; $1,000,000; to manufacture rubber tires.

Wilmington, Del.; Paramount Rubber Consolidated, Inc.: $6,000,000; to manufacture automobile shoes.

Chicago, Ill.; Gillette Storage Battery Co.: $11,000; Samuel Hyman, Simon Sleps, J. Louis Sleps.

Brockton, Mass.; Manning Auto Supply Co.: $10,000; Frank A. Manning, John E. Manning, B. C. Leavitt.

Boston, Mass.; H. & P. Auto Supply Co.; $10,000; Hyman Plager, Max Hurwitz, David Goldsmith.

Buffalo, N. Y.; General Petroleum Products Corporation: $10,000; R. Terreau, C. M. Sill, B. D. Talbot.

Clifton, N. Y.; New Method Tire Corporation; $500,000; to manufacture tires.

New York, N. Y.; Cellokay Manufacturing Corporation; $500,000; to manufacture "Cellokay" machine for motors; W. H. Peck, Jos. Rucker, 614 West 136th street; A. E. Atherton.

New York, N. Y.; The General Tire Co.; $10,000; E. F. Hogerty, T. A. McCole, J. F. Fearn, 170 Broadway.

New York, N. Y.; Keystone Tire and Rubber Co.; $5000; J. Jacobs, S. Bernhein, W. Lowenthal, 1877 Broadway.

New York, N. Y.; King Leather Tire Co.; $2,000,000; M. L. Rogers, L. A. Irwin, W. G. Singer.

New York, N. Y.; Robert-Ewin Manufacturing Co., Inc.; $30,000; to manufacture tires and auto pumps; I. Berkwotz, A. Berkowitz, M. Rapaport.

Akron, O.; Doyletown Tire & Rubber Co.; $300,000; D. A. Doyle, Jr., F. H. Kelsey, A. W. Doyle, E. H. Van Sickle.

Massillon, O.; Strong Auto Supply Co.; $10,000; L. E. Strong, J. A. Carnes, M. P. L. Krichhofer.

Zanesville, O.; Zanesville Rotary Tire Service Co.; $10,000; H. W. Bash, B. Griffith, E. O. Sterns, C. W. Bryson.

Superior, Wis.; Superior Auto Supply Co., Inc.; $25,000; C. P. Webb, G. A. Lindsay, L. R. McPherson.

DEALERS IN AUTOMOBILES, MOTOR TRUCKS AND TRACTORS.

Birmingham, Ala.; Dixie Auto Sales Co.; $25,000; F. R. Simpson, Dr. J. M. Hankins, Roy A. Smith.

Little Rock, Ark.; Yale Automobile Co.; $40,000; L. Y. Cohen, president and treasurer: M. B. Cohen, vice president; O. A. Cook, secretary.

Montgomery, Ala.; Automobile Co-Operative Association; $5000; to engage in general automobile business; H. H. Garner, S. E. Elmore, Terry T. Griel, M. P. Wilcox, Charles E. Mitchell.

Little Rock, Ark.; The Bailey & Co.; $40,000; to engage in the sale of automobiles and accessories; Earl R. Harwick, C. G. Hammond, A. A. Smith.

Bridgeport, Conn.; The Hammond Totten Motor Sales Co.; $10,000; A. P. Totten, president; G. H. Bosley, vice president; R. D. Fenton, Jr., secretary and treasurer.

Dover, Del.; Fox Motor Car Co.; $5,000,000; F. R. Hansell, E. M. MacFarland, J. Vernon Pimm of Philadelphia, Pa.

Dover, Del.; Muncie Products Corporation; $5,000,000; to deal in automobiles and parts; C. R. Mudge, W. S. Gregg, C. M. Spange.

Wilmington, Del.; International Brunswick Motor Co.; $1,000,000; T. L. Croteau, H. E. Knox, P. B. Drew.

Wilmington, Del.; Winther Motor Sales Co.; $250,000; C. R. Mudge, W. S. Gregg, A. M. Gernan.

Chicago, Ill.; Bright Star Auto Cleaners & Manufacturing Co.; $1000; Samuel Lidsky, Abraham Lidsky, Louis Lidsky.

Chicago, Ill.; Hydraulic Automobile Braker Corporation; $14,000; Lee Carlton, John E. Nelson, Selma Walberg.

Larrange, Ill.; West Suburban Motor Co.; $75,000; A. R. Ames, R. W. Plummer, B. S. Thompson.

Piqua, Ill.; Piqua Motor Sales Co.; $10,000 to $60,000.

Goshen, Ind.; Automobile Exchange, Inc.; $10,000: George P. Powell, Howard E. Barrick, Guy W. Dausman.

Boston, Mass.; Edwin Adams, Inc.; $35,000; to deal in motor vehicles; N. Clark, Otis W. Bramhall.

Boston, Mass.; American Motor Appliance Co.; $50,000; Joseph C. Hannon, Howard F. Fanning, John J. Coker.

Boston, Mass.; Harris Motor Co.; $1,000,000; Herbert A. Harris, J. Edward Maloney, Morris Madfis.

Boston, Mass.; Mutual Motor Sales Co.; $100,000; to deal in motor vehicles; Charles Wear, Edward L. Evans, J. Albert Brackett.

Boston, Mass.; Pope Motor Sales Co.; $25,000; Donald T. Pope, Harry Bergson, Florence A. Cleary.

Boston, Mass.; Bryant G. Smith & Sons; to deal in motor vehicles; $95,000; Oliver A. Wyman, Helen G. O'Connor, John L. Appel.

Brockton, Mass.; Public Service Auto Bus Co.; $21,000; Nicholas Pappas, Samuel Grossman, Cistas Pappas, Christos Pallekas, Eftathios Caraminias.

Camden, N. J.; Matthis Motor Co.; $125,000; T. Matthis, M. L. Berry, R. C. Spackman.

Hoboken, N. J.; Lackawanna Auto Trucking Co., 54 Garden street; to conduct a general trucking and forwarding business; Louis Fricke, Louis Fricke, Jr., Anna Fricke, Jeannette Fricke.

Jersey City, N. J.; Massoline Motor Co., Inc.; Montgomery street; $100,000; to deal in automobiles; Peter D. Massoline, 158 Van Nostrand avenue; Augustus A. Musanti, Victoria Massoline.

Newark, N. J.; The McGregor Co.; $100,000; to deal in automobiles; Donald McGregor, Emily McGregor, George W. C. McCarter.

Newark, N. J.; M. & M. Supply Co.; $25,000; to conduct a general automobile business.

Paterson, N. J.; Manhattan Transportation Co.; $120,000; to do trucking and transportation business.

Newark, N. J.; Special Auto Service, Inc.; $100,000; Benjamin Cohen, Benjamin Grifenhagen, Louis Kamm.

Orange, N. J.; Monroe Auto Sales Co.; $25,000; G. G. Beall, J. J. Cusick, G. H. McDonald.

Perth Amboy, N. J.; Middlesex Motors, Inc.; $20,000; L. B. Wolfe, Edward Miller, Frank Stas.

Trenton, N. J.; New Brunswick Auto Service Co.; $50,000; Thomas P. Burke, E. Wolcott Hopkins, James J. Sheehan.

Albany, N. Y.; Clement-Mead Motors Corporation; $15,000; W. M. Mead, M. N. Clement, W. S. MacMurray.

Brooklyn, N. Y.; All-Make Auto Service and Repair, Inc.; $10,000; W. Brazier, H. H. Altman, L. A. Kinkel, 548 81st street.

Brooklyn, N. Y.; Hayes-Woodside Co.; $12,000; sales agents for motor trucks, automobiles and airplanes; M. E. Woodside, 116 McDonough street; Edward Hayes.

Brooklyn, N. Y.; Reliable Motor Sales Corporation; $10,000; D. G., F. C. and E. L. Koletty, Palmetto street.

Brooklyn, N. Y.; Vernon Automobile and Welding Works, Inc.; $10,000; A. Adams, B. Komarow, D. Price, 372 East 10th street.

Buffalo, N. Y.; Brown, Robertson & Gilray, Inc.; $105,000; to conduct a motor vehicle business; L. D. Robertson, O. E. Brown, J. A. Vilray.

Buffalo, N. Y.; Erie County Traction Corporation; $450000; R. B. Austin, E. L. Frost, J. L. Cummings.

Glen Cove, N. Y.; Hall-Ashmead Auto Sales and Repair Corporation; $20,000; L. C. Hall, C. H. Ashmead, J. C. Sheldon, 170 Broadway.

Middletown, N. Y.; Middletown Motor Car Exchange, Inc.; $10,000; P. J. Gilmore, A. and J. L. Wolff, 36 East 28th street.

New York, N. Y.; Amalgamated Automotive Factories, Inc.; $20,000; H. Bobker, N. and M. Simons, 309 West 99th street.

New York, N. Y.; Crouse Motor Sales Co.; $10,000; P. J. Shells, F. L. Allen, C. E. Crouse.

New York, N. Y.; Haynes & Co.; $22,500; P. Haynes, H. Haynes, J. H. Laughlin, 196 Broadhurst avenue.

New York, N. Y.; Independent Motor Co., Inc., 107 West 54th street; to conduct an automobile business; P. S. McMahon, M. S. Sexton, Edward A. Adams. They will handle the Master and Fulton trucks, the Dixie Flier and other passenger cars.

New York, N. Y.; Nichols Motor Transportation Co.; $25,000: F. J. Nichols, B. F. Kahn, M. C. Moon, 2 Recktor street.

New York, N. Y.; The Original Columbus Market Trucking Corporation; $10,000; J. F. Buchsbaum, J. Buchsbaum, L. Buchsbaum, 230 West 99th street.

Rochester, N. Y.; Auto Marketing Co.; $5000: R. J. Fahrer, W. C. A. Fahrer, H. H. Daks.

Utica, N. Y.; Seneca Motor Sales Co.; $5000: J. J. Robischon, E. Robischon, M. Robischon.

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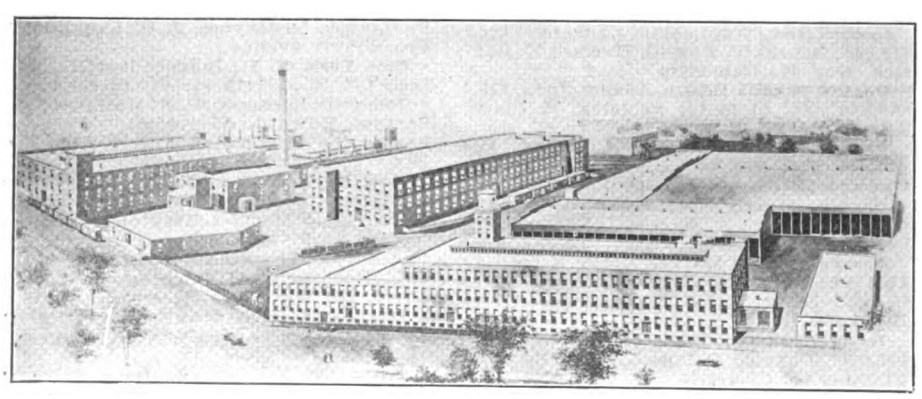
Buffalo Tire Company Is Prosperous

The Madison Tire & Rubber Co., Inc., with factory at Buffalo, N. Y., executive office at 30 East 42nd street and general sales and advertising office at 254 West 57th street, New York City, is one of the newer concerns to engage in the tire industry, having been incorporated in May, 1919, and having commenced the actual production of tires the following August. Its plant at Buffalo is so located as to have the facilities of two railroads with sidings in its own yards. Power is supplied by the hydro-electric service from Niagara Falls, which is not dependent on or interrupted by coal shortage. The plant is stated to be valued at over $1,300,000. The company has issued $2,000,000 in preferred stock and there are, outstanding, 86,600 shares of common stock. Officials of the company state the total present assets to be about $4,000,000. The product consists of the Madison brand of automobile tires and inner tubes, manufactured by the handmade process. The line includes both cord and fabric tires with ribbed and non-skid tread, clincher and straight-side pneumatics, and red and gray inner tubes. The manufacturing facilities are sufficient to jump the production on demand to 1200 tires and 2000 inner tubes a day. All the product is fully guaranteed. The president and founder of the Madison Co. is Rudolph A. Low, who has been in the rubber business since 1880. He is a member of the Merchants' Association of New York, the Russian-American Chamber of Commerce, the United States Chamber of Commerce, the National Association of Manufacturers, the Associated Manufacturers and Merchants, the Automobile Club of America, and many of the better known social organizations. Mr. Low has associated with him the following capable officers and executive heads, all of wide experience in the industry: Max Lowenthal as treasurer; Theodore W. Bassett, vice president; Clarence H. Low, secretary; A. E. Tallmer, assistant treasurer; Dr. Louis J. Plumb, A. M., B. S. (Princeton 1904), chief chemist; Frank H. Brewster, vice president and general superintendent; Williams Myers, superintendent of production; Jean Nehmelman, head of sales department; H. Tyler Kay, in charge of advertising and sales promotion, the publicity being handled, under Mr. Kay's direction, by the Sacks Co., of which C. O. Sacks is president. The general sales policy for the present is to give the exclusive sales rights to one retail tire dealer in each city or defined territory.

The Pennsylvania Rubber Co., Jeannette, Pa., has declared a quarterly dividend of 1¾ per cent. on preferred stock and 1½ per cent. on common, payable Dec. 30 to stockholders of record Dec. 15. This company, which makes the well known Vacuum Cup tires, has been one of the first of the larger manufacturing concerns of the country to take up and advance the "Homes for Workmen" movement. To the south of Jeannette, where the company's big factories are located, it purchased approximately 200 acres of land and called in a corps of expert town planners and architects to develop a model town wherein its workmen might, on easy payments, acquire their own homes. The original plan called for 12 houses, but these were taken with such eagerness that a contract was immediately let for 50 more, with an ultimate goal of 1600 homes. These are up-to-the-minute six and seven-roomed houses, finished in stucco, brick and frame, and containing every modern convenience. The town plan arrangement is being applied to the entire plot, and will include graded and improved streets, a public square, recreation park and community center.

The B. F. Goodrich Rubber Co., Akron, O., is to broaden the scope of its National Touring Bureau, to include the dissemination and distribution of all highway transport data, and has changed its name to the Goodrich Travel and Transport Bureau, and will adhere strictly to the policy of the promotion of highway transportation service and to cooperate with all forms of transportation by land, water and air, in obtaining a more extended and efficient use of their respective facilities. Through its country wide organization of branches, depots and dealers, the bureau has distributed more than 150,000,000 pieces of touring information to the motoring public, this including nearly 5,000,000 road maps, during 1919. Raymond Beck, who acted as field engineer of the United States transport committee during the war, has been chief of the bureau since its inception in 1911, and among the highway transportation experts on the advisory board are Robert C. Hargreaves, formerly secretary of the Highway Transport Committee, and S. V. Norton, Goodrich truck tire sales manager.



Extensive Plant of Madison Tire & Rubber Co. at Buffalo, N. Y.

Rudolph A. Low, President, Madison Tire & Rubber Co.

The Kelley Tire and Rubber Co. has completed plans for the expenditure of approximately $650,000 in West Haven, Conn. The company has bought five acres of land as a site for a new plant. Edward J. Kelley of New Haven is president of the company. He was formerly a railroad official. Charles H. Bortell, Jr., is vice president and treasurer. The company, which is being financed entirely in Connecticut, is capitalized at $1,000,000. It is planned to make 500 cord tires and 1000 tubes daily at the start.

The Stanwood Rubber Co. announces that it has acquired all the capital stock of the Hardman Rubber Corporation of New Brunswick. The Hardman plant, which is being continued under its trade name, was established more than 20 years ago, but is operated under the direction and supervision of the Stanwood company. Lorne A. Scott, former president of the Hardman Rubber Corporation, has been succeeded by William Mackay, president of the Mutual Tire & Rubber Co., who assumes the duties of heading both companies.

The Portage Rubber Co., Akron, O., is to pay on Jan. 1 a quarterly dividend of 1¾ per cent. on preferred stock outstanding and of record Dec. 20, 1919.

The Marion Tire & Rubber Co., Marion, O., has turned over its plant to a corporation which recently purchased it, headed by Ray C. Ellsworth of Akron, O. The capital will be increased from $300,000 to $750,000 and it is also planned to enlarge the plant.

A feature of the exhibit of the Lowe Motor Supply Co., Broadway and 55th street, New York City, in space D-174, at the Grand Central Palace, during the week of Jan. 3-10, will be a display of garage equipment, especially of portable electric tools, such as drills, valve grinders, etc. There will be a four cylinder engine block mounted at its booth, where a demonstration will be given of grinding in valves by using a Stenman electric valve grinder.

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FISK CORD TIRES

To the Dealer Who Is Investigating

Where investigation precedes buying, in nine cases out of ten, we gain a new Fisk Dealer. Comparisons alone will sell Fisk Tires—so will records of Fisk mileage. The tires are bigger, better looking, better made. There is one for **every** need—no gaps, no fill-ins—the line and the policy are strong and clean cut.

Our dealer-proposition is attractive—a square deal, prices right and a strong, well advertised line.

For years the **ideal** of the Fisk Rubber Company has been to be "the best concern in the world to work for and the squarest concern in existence to do business with."

Sold direct to dealers and manufacturers

There is a Fisk Branch within 24 hours of all dealers.

(When Writing to Advertisers, Please Mention the Accessory and Garage Journal.)

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American Methods Are Emulated

England is beginning to learn that American methods in the automotive industries deserve emulation as regards both production and service. Many car users have purchased American models not alone because they were more easily procurable, but quite as much because they could be better taken care of when repairs were needed. One illustration will suffice to show the owner's attitude: A British professional man purchased an English car before the war, broke an axle, took it to a service station within five miles of the factory and the car is there yet. He purchased another car, in 1917, of English make, broke a piston, took it to a service station within 45 miles of the factory and that is also there yet. Finally he purchased an American car. Some time later he broke an axle, as in the first car, and in five days his car was running again. These experiences, reported as being common, it is natural that the American car is gaining prestige.

There is another element in the situation, however, that gives the English manufacturer good reason to be anxious about competition by the American car, and that is that the latter today rivals in quality and finish the English product as it did not before the war; hence any hold in the British market secured by the American car is less apt to be lost when the British makers are back in production.

It is not the immediate market in the British Isles alone that is of most concern, but rather in the other dominions of the British empire the American car will have the advantage on account of price and no disadvantage in distance from the factory, even when business again approaches normal. Therefore, to compete abroad with American makers there is a sericus disposition on the part of British manufacturers to adopt mass production methods. This alone will avail little unless they also, as admonished by English writers, match the present vastly superior American methods of dealing with customers.

In the city of Harbin, which is in Manchuria, a ride in a taxicab costs anywhere from 300 to 500 roubles, the rouble being the equivalent of 51½ cents in United States money.

GENERAL MOTORS POLISH AGENT.

Henri Czapticki, representative of the General Motors Export Co. in Poland, who has been in this country for some time, has returned to Europe. Mr. Czapticki announced that he is to establish service stations for the use of the Polish army, now fighting the Bolsheviki, which has taken over 1500 motor cars and the same number of trucks, which were sold by the American government. Mr. Czapticki later intends to extend this service to civilians. He was accompanied by Kasimir Weijchert, purchasing agent of the Polish government.

MOTOR VEHICLES IN MEXICO.

The motor vehicles owned in Mexico City and suburbs which make up the federal district, are classified as follows:

Pleasure cars (private), 2337; pleasure cars (for public use), 1916; jitneys, 1104; motor trucks, 136; total number of cars in Mexico City, 5493; estimated total cars in Mexican republic, 18,000.

It is estimated by dealers in the city of Mexico that only two per cent. of the population of that city are able to purchase cars.

The roads are reported to be in a bad condition and it is said that little is being done to improve them.

FOREIGN TRADE OPPORTUNITIES

Reserved addresses may be obtained from the Bureau of Foreign and Domestic Commerce and its district and cooperative offices upon written request by the opportunity number.

31,402—A firm in South Africa desires to get in touch with manufacturers with a view to securing an agency for the sale of motor cars, electrical or petrol, of a medium and cheap price; also of elevators for passengers and freight.

31,428—An agency is desired by a sales agent in Syria for the sale of motor vehicles, cars and lorries, lumber for building and furniture; textiles, cotton and woolen clothing, knit goods, sole, upper and saddlery leather, imitation leather, steel products, nails, locks and hardware, agricultural machinery and implements, drugs and chemicals, pianos, piano players and phonographs. Quotations should be given c. i. f. Syrian port. Payment, cash against documents at port of delivery. References.

31,451—A broker in Italy desires to secure an agency for the sale of automobiles, tires and accessories and rubber goods. Correspondence may be in English. Reference.

31,488—The representative of a company in Australia is at the present time in the United States for the purpose of buying furniture materials, such as upholstering supplies, motor car trimmings, general and builders' hardware, cabinet makers' supplies, and desires to secure agencies from manufacturers for the sale of American goods in Australia. Reference.

31,498—A firm in Portugal desires to secure an agency for the sale of motorcycles. Correspondence should be in French or Spanish. Catalogues and price lists are desired.

31,503—An American exporting house which has established branches in all the principal cities of the Levant, and maintains show rooms, warehouses and service stations, desires to represent American firms for the sale of agricultural machinery, electrical apparatus, automobiles, etc., and all spare parts and accessories thereto. References.

31,507—A contractor in Greece desires to secure the agency for a new model for a cheap automobile. He will guarantee to sell a certain number per annum. Quotations should be given f. o. b. New York. Correspondence may be in English, French preferred. References.

31,531—A firm in Morocco desires to secure an agency from manufacturers for the sale of passenger and commercial automobiles. Catalogues, descriptions, price lists, time of deliveries and terms of payment are desired. Correspondence may be in English. References.

31,520—A purchasing agent in the United States for a British importing house desires to secure an agency and purchase for sale in Czechoslovakia, automobiles, tires for automobiles and bicycles, canned milk, canned fish, typewriters, glass making chemicals, calicoes, prints and shirtings, dyes and cotton; for sale in Holland, Spain and Italy, automobiles, tires and accessories, and for sale in New Zealand he desires to purchase electrical automobiles, toys, fiber and other cheap rugs and furniture coverings. Quotations should be given f. o. b. New York. References.

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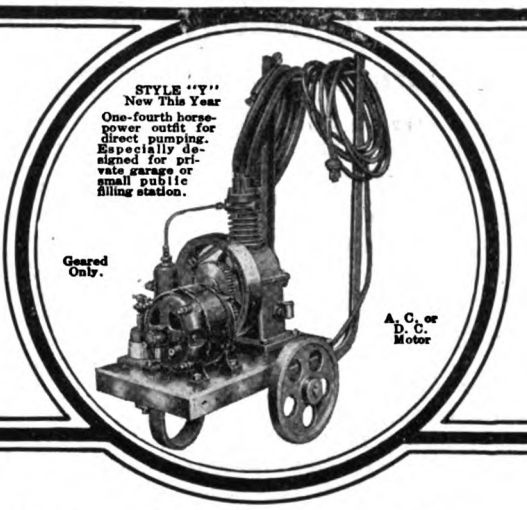
FREE
CURTIS AIR
FREE FROM OIL

The Curtis Sign is 10x14 inches —baked enamel on steel. Furnished FREE with every Curtis Garage Air Compressor—can not be had in any other way.

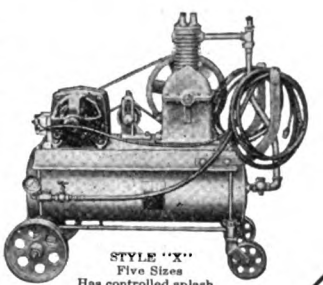


Curtis Free Air Service Brings You New Patrons and Increased Profits

It is generally recognized that compressed air to fill tires frequently carries oil and that this oil has a deteriorating effect on inner tubes. For this reason motorists are discriminating in their use of "free air service"—and are on the lookout for the Curtis sign because they know that Curtis Air is free from oil. It may be that the installation of the CURTIS outfit will be the beginning of a new era of profit-making for you.

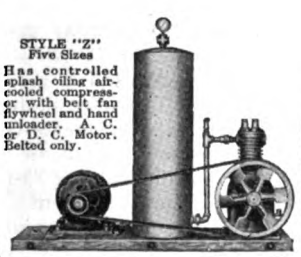
Curtis Air—Free From Oil

Curtis Air Compressors, through a patented construction, prevent oil from getting into the air line—therefore the air delivered is clean, pure and free from oil. The many other exclusive points of superiority, together with the simplicity, sturdiness and dependability of Curtis Compressors make them the popular choice everywhere. With the two new outfits illustrated—Style "Y" and Style "Z"—the Curtis line is now complete, offering a suitable compressor to meet every requirement. Ask your jobber or write us for illustrated literature describing the different sizes and types of outfits.

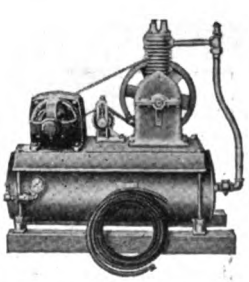


STYLE "X"
Five Sizes
Has controlled splash oiling air-cooled compressor, with belt fan flywheel or with cut flywheel gear. A. C. or D. C. motor. Belted or geared.

CURTIS PNEUMATIC MACHINERY CO.
1621 Kienlen Avenue St. Louis, Missouri
Branch Office: 531-A Hudson Terminal, New York City



STYLE "Z"
Five Sizes
Has controlled splash oiling air-cooled compressor with belt fan flywheel and hand unloader. A. C. or D. C. Motor. Belted only.



STYLE "Y"
New This Year
Five Sizes
Has controlled splash oiling air-cooled compressor, with belt fan flywheel or with cut flywheel gear. A. C. or D. C. motor. Belted or geared.

Curtis Pneumatic Machinery Co.
1621 Kienlen Ave.
St. Louis, Mo.

Gentlemen:
Please send me full details on Curtis Air Compressors — your proposition and prices.

Name_____
Address_____
Jobber's Name_____
Address_____

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Automotive Activities in Canada

The Dominion Forge & Stamping Co., Ltd., Walkerville, Ont., will concentrate production on drop forgings, as its frame and stamping plants have been sold to the Ford Motor Co., Ltd., Ford, Ont. The Stamping company is installing new machinery and equipment, which will enable it to double its production of drop forgings.

Automobile statistics for the year 1919 covering the western part of Canada will show a marked increase in the registration of cars over 1918, and it is estimated that one person in 14 already owns a motor car in the province of Manitoba alone. At the end of 1918, 121,708 motor cars were in use in western Canada. Saskatchewan had 46,880; Manitoba, about 30,000; Alberta, 29,500; British Columbia, 15,820.

The Nash Motors Co., Kenosha, Wis., intends to establish a branch plant in Canada for the manufacture of motor parts and assembling of cars for the Canadian and British markets. Whitby, Ont., is being considered as the prospective site, where a tract of some 60 acres of land is available.

The Olds Motor Works, Ltd., of Canada, a new General Motors unit established at Oshawa, near Toronto, expects to have its new plant in operation early in the year. All models of Oldsmobile cars and trucks will be produced and the output will be restricted to the Canadian field. The factory building, 80 by 100 feet, consists of three stories and a basement, and has 100,000 feet of floor space. The sum of $450,000 has been appropriated for the construction and equipment of this new unit and the first year's production schedule calls for 5000 cars of all models.

The Montreal automobile and motor truck show will be held the week of Jan. 17-24, in the Grand Palais, Sherbrooke and St. Denis streets. The opening day is one week after the close of the New York show and the closing day coincides with the opening of the Chicago display. The exhibition is to be held under the supervision of the Montreal Automobile Trade Association.

The growth of motoring in Toronto may be estimated from the fact that in a single month permits were taken out in that city for the building of 270 garages, valued at $125,000. One concern, Joseph Price & Sons, has just completed 20 small garages on Main street, and has been granted a permit for the erection of 72 more in another section.

The dominion and provincial governments are all keenly interested in the movement for the construction of a great transcontinental highway from Halifax to Vancouver, on the plan of the Lincoln highway in the States, and an association is to be organized along the lines of the Lincoln Highway Association, pledged to carry out the construction of the Canadian project.

An increase in the capitalization of the Goodyear Tire & Rubber Co. of Canada from $3,000,000 to $30,000,000, has been decided on by the directors. The new stock, if the plan be approved by stockholders, will be divided into half common and half seven per cent. cumulative preferred.

FIAT WINS HILL CLIMB.

The Consuma hill climb, held over the Appenines, in the neighborhood of Florence, Italy, brought out 25 contestants, which made the test in four different classes, and resulted in a victory for a 1914 Grand Prix Fiat. The hill is 9.3 miles in length and is of a difficult, winding nature. The winning car covered the distance in 13 minutes, 38 4/5 seconds, or at the rate of 41 miles an hour. The other winners in their classes were: 5000 c. c. class, Nazzaro, 15 minutes, 43 4/5 seconds; 3000 c. c. class, Bugatti, 16 minutes 54 4/5 seconds; 1500 c. c. class, Verpa, 22 minutes 14 2/5 seconds.

With the exception of a Bugatti and a Benz all the cars were of Italian construction.

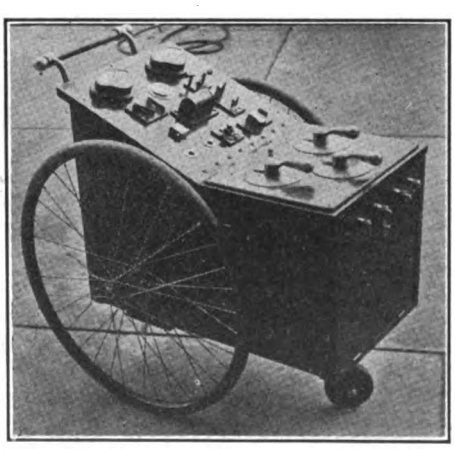
THE NIEHOFF TEST-KART.

One of the latest achievements in the way of a complete testing outfit for locating all electrical trouble in the ignition, starter, generator, battery, wiring relays, meters, etc., is embodied in the Niehoff Test-Kart, which has just been placed on the market by Paul G. Niehoff & Co., Inc., Chicago.

As will be noted, the Test-Kart is portable, the wagon on which the device is mounted being equipped with leads, ready for attaching to any part of the electrical system of the automobile for convenience in locating shorts and grounds. It is not only a time and money saver to garages and electrical service stations, but is also a convenience to the public, as it will enable the repair man to determine the trouble with the car while the motorist waits, consequently the latter can be intelligently informed as to what repair or adjustments will be necessary, and an estimate of the probable cost given.

The storage battery of the device fits into the wagon and all the meters are of Weston make. The list price is $350.

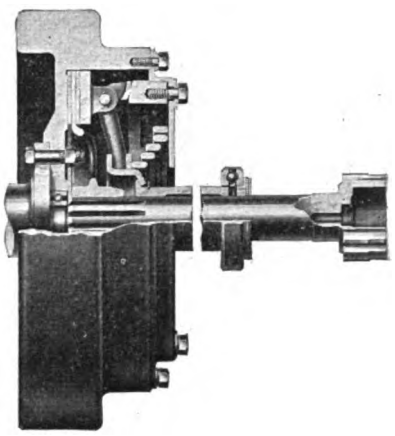
Brooklyn, N. Y.—The Morris Auto Co., Ford dealer, has filed plans for extensive additions to its quarters at 2003 Bedford avenue. The manager is George May.



The Niehoff Test-Kart.

NEW DRY DISC CLUTCH.

The Hoosier Auto Parts Co., Muncie, Ind., has just brought out a new single-plate, dry disc clutch, the Hoosier, which it is making in two general types, unit



Hoosier Dry Disc Clutch.

power and amidship, each in three sizes, including eight, 10 and 12 inch.

The Hoosier clutch embodies a number of special features, including easy and simple adjustment of the friction discs for wear; quick and positive disengagement, eliminating dragging in releasing, and small number of parts used. The design is intended to give great leverage through three clamping levers and makes possible the employment of a lighter spring than is usual in this type of clutch, it is claimed, resulting in easier operation of the foot pedal, and at the same time transmitting the full torque of the motor.

A rather novel feature is presented in the design of the disengaging sleeve, together with its spherical seat within the clamping lever collar, providing, it is said, equal pressure on all three levers at all times, and at the same time automatically taking care of any small misalignment between the transmission and the motor, without permitting any possible binding on the disengaging sleeve, thus giving what is claimed to be a truly "full-floating" sleeve.

The angular seat for the levers is stated to positively center the pressure plate to which the levers are attached, thus preventing chattering when the clutch is being engaged. Slippage after engagement is claimed to be eliminated by the graduated pressure obtained by the peculiar design of the levers.

The Hoosier Auto Parts Co. was established in 1915 to engage in the making of various motor car parts, but it has, for some little time, been devoting its entire efforts to clutch refinement. The officers are: President, George A. Ball; vice president, Karl A. Oesterle; secretary and general manager, Fred J. Lesh; chief engineer and general superintendent, C. G. Wood.

The Gearless Motor Corporation, Pittsburgh, Pa., has acquired land in that city for the erection of a modern assembly building to manufacture steam cars under the MacDonald patents. The plant is expected to begin production early in February.

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CRONK SIMPLEX SLIDING GEAR TRANSMISSION for FORDS

A Three-Speed Forward, One Reverse Selective Type Sliding Gear Transmission

This is a new development—a radical refinement of a most practical character—and so it is well worth investigating.

Here we do away with the planetary, with its bands that wear out—that "drag back" on engine power and retard coasting freedom.

We relieve the Ford owner from the mean necessity of using either the low or high gear when conditions call for a better combination of power and speed.

The Cronk Transmission for Fords is a real transmission. It will stand up. Hills and rough roads that heat and wear a planetary transmission on "low" or strain the engine on high, are taken much more easily and efficiently on "second"—and at from 10 to 20 miles per hour at that.

You show a Ford owner this wonderful three-speed transmission. Let him handle the simple "cane shift" in low, intermediate, high and reverse. Show him why he won't have to longer hold down the clutch pedal with his foot for weary miles. Tell him that he doesn't have to court accident by taking bad hills at a high speed. Show him more speed at less expense of fuel.

The Cronk Simplex Transmission for Fords gives the engine its fullest expression of power, flexibility, speed and economy. It gives the driver the same control used on higher powered cars in general.

Design allows for installation of electric starter on old cars in same manner at 1920 cars.

This transmission is a rugged job—oversized nickel steel gears. Can be installed and forgotten so far as future trouble is concerned.

Saves rear axles by eliminating jerks they receive in dropping from low to high. Installation easy—no cutting or machining—just an assembly job.

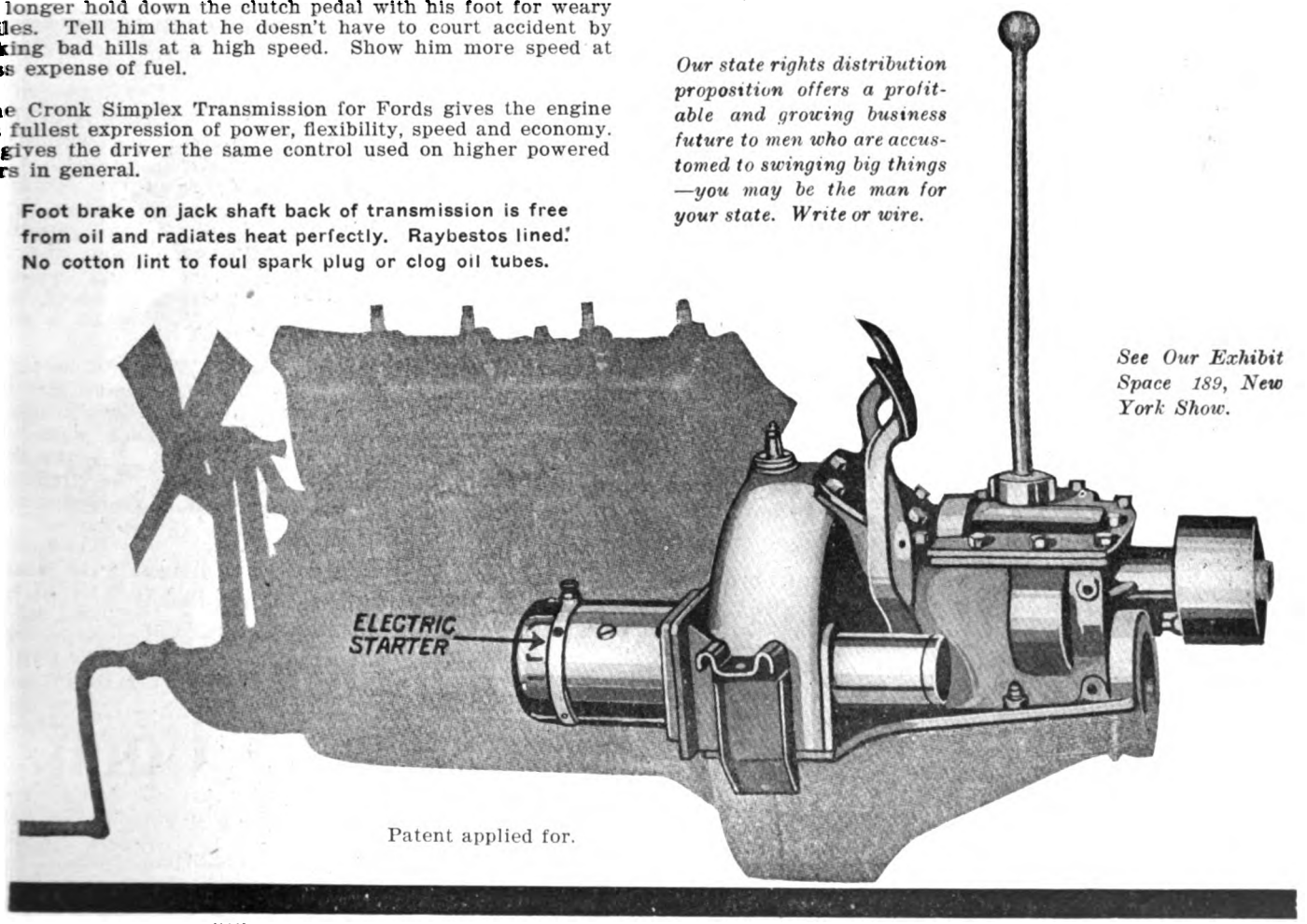
DEALERS—When you get the full story on this transmission the selling possibilities in your territory will become large. Our arrangements with you are made direct and your additional profit on original Ford parts removed is also a big item. Write or wire.

Write for our exclusive State rights distribution proposition. We are looking for men of vision and action.

E. D. & A. F. CRONK, Inc.
Utica, New York

Our state rights distribution proposition offers a profitable and growing business future to men who are accustomed to swinging big things—you may be the man for your state. Write or wire.

See Our Exhibit Space 189, New York Show.



Foot brake on jack shaft back of transmission is free from oil and radiates heat perfectly. Raybestos lined. No cotton lint to foul spark plug or clog oil tubes.

Patent applied for.

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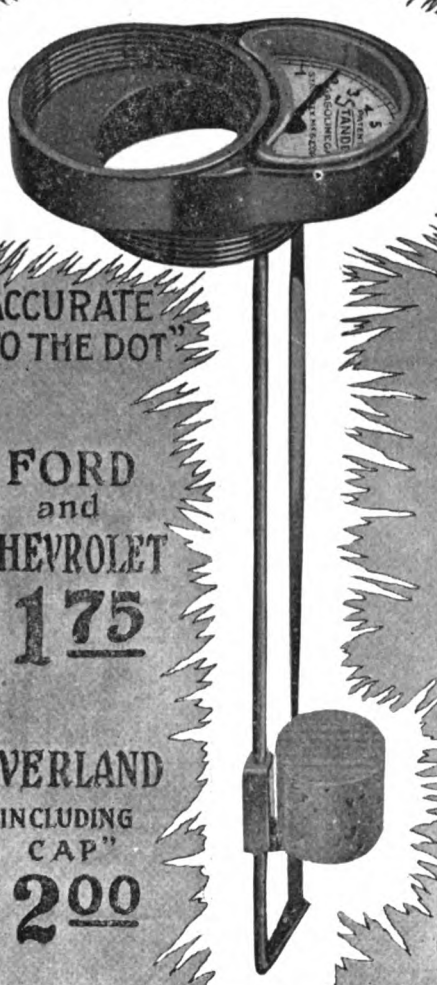
STANDEX



Gasoline Gauge for Ford Cars Chevrolet "490" New Overland "Four"

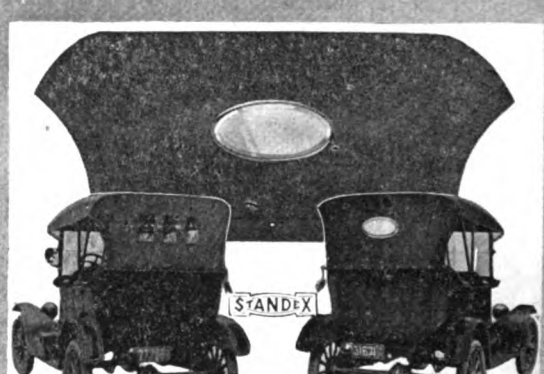
"ACCURATE TO THE DOT"

Measures fuel unerringly. Saves gasoline overcharge. Shows exact gasoline mileage. Tells at a glance how much gas you have to run on. To install, screw in filling hole. Never in the way; never need be removed from gasoline tank. Made for either square or cylindrical tanks. In ordering, specify which style is wanted.

FORD and CHEVROLET 1.75

OVERLAND "INCLUDING CAP" 2.00

9.00



STANDEX REAR CURTAIN

DODGE "TYPE" MOHAIR, $15.00

Elegant, distinctive, better than standard (mohair or rubber). Polished plate glass window light (a window you can see through). Installed it lends the added touch that gives you pride in the appearance of your car.

Standex Products Handled by All Leading Jobbers and Dealers

Standex Manufacturing Co'n.

343-345 EAST OHIO STREET

CHICAGO, U.S.A.

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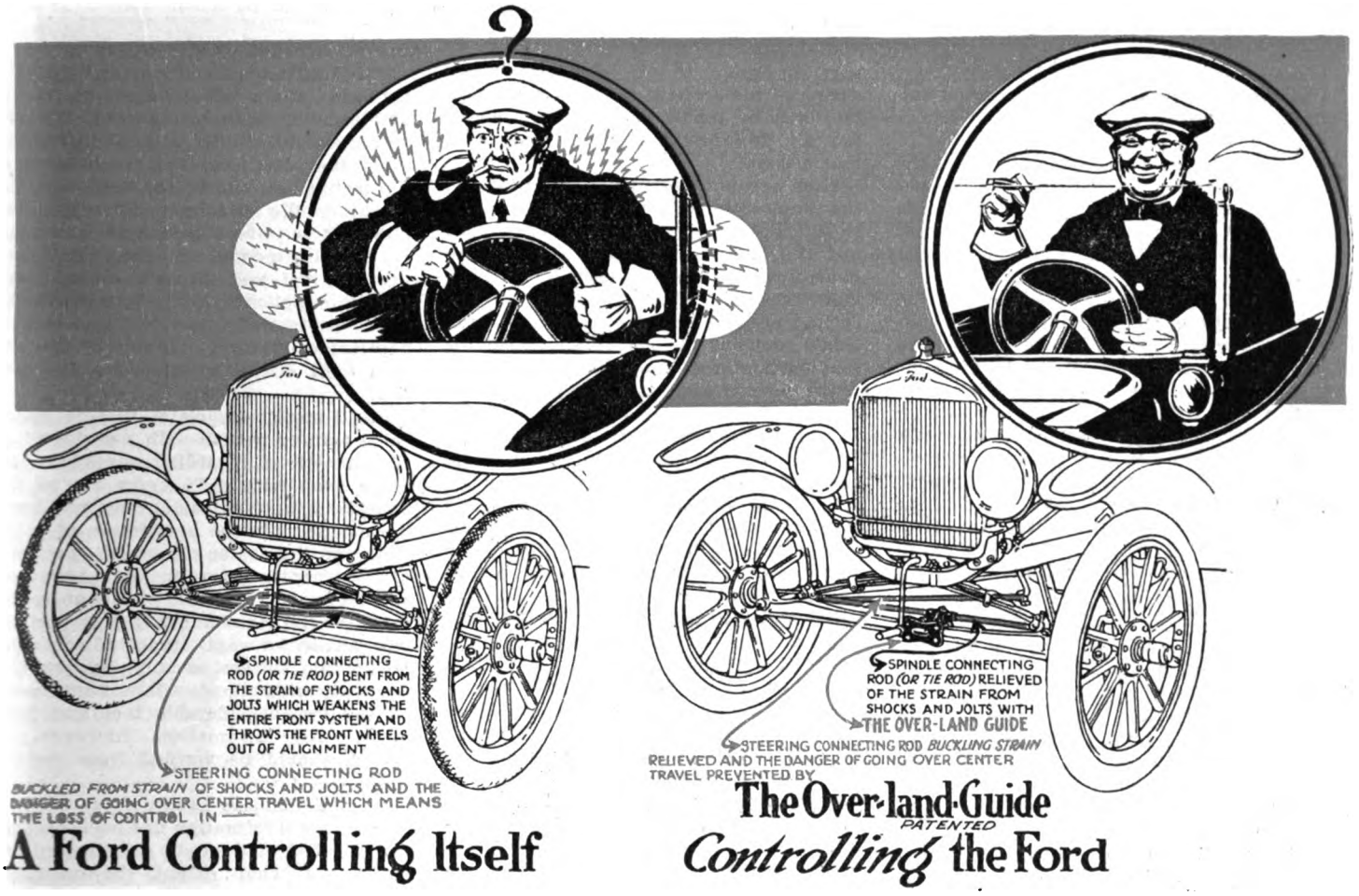

YOU CAN JUDGE—HERE ARE THE FACTS

The Over-Land Guide will absolutely hold any Ford car or truck in its place on the road. It will eliminate all wobble, scooting and creeping. It will keep the wheels in alignment. Save the tires from undue wear and protect the entire front system and steering mechanism from shocks, stresses and breakage. It will save parts and repairs and add to the service life of any Ford car or truck—above all else it will eliminate accidents, serious damages and oftimes destruction of the car or truck and the lives of the occupants through breakage or loss of control of the steering mechanism.

It is life, car and truck insurance of the highest order. That is why every Ford car and truck should be equipped with the Over-Land Guide.

The Over-Land Guide will save many times its cost in one year in repairs alone and last longer than the Ford car or truck.

The OVER-LAND GUIDE bolts to the center of the front axle and the center of the spindle connecting rod (or tie rod), securely relieving the vibration and strain in the spindle connecting rod (or tie rod) and the entire front system, and the steering mechanism up to the steering wheel. Can be attached in five minutes by anyone.

The Over-Land Guide removes all strain from the steering mechanism, as well as from the arms and shoulders of the driver.

With the Over-Land Guide the driver can control the steering of the car with the tips of his fingers. When going over the roughest roads, through sand, mud holes, ruts and over car tracks.

With the Over-Land Guide, even should the steering mechanism become broken or fail to work, the car or truck will continue on its straight course until stopped.

The Over-Land Guide affords full protection from blow outs, a common danger when one of the front tires become flat and acts as a pivot, which throws the car to one side, frequently the cause of ditching, collision, destruction of the entire car and the people in it.

With the Over-Land Guide Ford cars or trucks can be driven faster with safety due to the fact that the front wheels will not wobble and scoot, as they are held in alignment, which permits the rear wheels to follow properly.

The Over-Land Guide protects, saves and serves. It is high grade, scientifically designed and made car equipment, that guarantees safety and Ford car or truck service.

The OVER-LAND GUIDE protects these parts against breakage, undue wear and repair.

Spindle connecting rod (or tie rod.) Spindle body arms and bushings. Spindle body and bushings. Ball and roller bearings and hub. Steering connecting rod and ball joints. Steering gear ball arm. Steering post bracket, bushing and bolts. Steering post. Steering gear pinion. Steering gear drive pinions. Steering gear internal gear case and bushings.

Also helps to keep axle from breaking or bending—and may save the entire car from destruction.

THIS BROAD GUARANTEE IS PART OF EVERY SALE.

The Over-Land Guide properly installed is guaranteed to do all we say. Your customers can use it for twenty days, and if at the end of that time they are not satisfied, money will be refunded upon its return.

JOBBERS AND DEALERS:—The Over-Land Guide is a wonder seller. The sales are limited only to the number of Ford cars and trucks in use. Sold under an iron clad guarantee. It is priced right and the discounts are liberal. Write today for proposition and discounts.

THE MEIXELL COMPANY

216 Board of Trade Building INDIANAPOLIS, IND.

(Automobile Sundries Co., 18 Broadway, New York, N. Y. Sole Foreign Agents.)

(When Writing to Advertisers, Please Mention the Accessory and Garage Journal.)

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(Continued from Page 43.)

to within an inch of the top, leaving sufficient space to enter the name of the customer and the account number.

At the close of the month when the statements are mailed the bookkeeper will enter on this controlling sheet the date and the amount of the account, as:

"March 1st. February account as per statement, $23.75."

Should the customer respond to the statement and come in and settle the account the bookkeeper will then enter on this controlling sheet the credit as:

"March 3rd. Received on February account, $23.75."

This amount is entered in the credit column in red ink. Should the customer, however, only pay a part of the account then there will be entered:

"March 3rd. Credit on account, $15."

The balance of $8.75 will be entered in the balance column. (Note illustrations.)

Copies of Accounts on File.

The copy of all accounts should be also filed for reference, and for this purpose a vertical file should be provided, having as many drawers as may be necessary. Each drawer should be equipped with "A to Z" guides, also "guide high folders" for filing each customer's accounts separately.

These guide high folders have tabs which extend above the body of the folder and upon these tabs are entered the names of the customers whose duplicate ledger sheets are to be filed within the folders. These folders are filed behind the correct guide cards.

This method saves considerable time in referring to old accounts, as all duplicates of any one person's account are filed in one folder. For instance, if there is a customer by the name of Samuel Ramsey his name will be entered on one of the folders and it will be filed behind the guide card "R." When necessary to refer to the duplicate ledger sheets of his account back of guide card "R" will be found the folder in which are all the duplicate ledger sheets of that account.

Each account should be numbered and the number entered upon the controlling sheet following the name of the customer and the controlling sheets arranged alphabetically through the use of index guide sheets. When referring to any certain account turn to the index of the ledger and find the controlling sheet for that particular account, find the number of the account and turn to the account in the ledger.

Information of Credit Customers.

Of course the dealer will have some knowledge of the person to whom he sells goods on credit, especially if his regular customers. However, the dealer should arrange to obtain information regarding any applicant for credit so that he can intelligently decide the application, and obviate losses through bad credits.

For this purpose he should have "Information Cards" upon which he can note such facts as will aid him in determining the advisability of allowing credit to a customer. This card should be four by six inches and ruled so as to provide for entering the information secured, such as the name and address of the applicant, the occupation and business address, whether property owner or not, approximate income, number in family if married, with whom he has had business dealings and references. (Note illustration.)

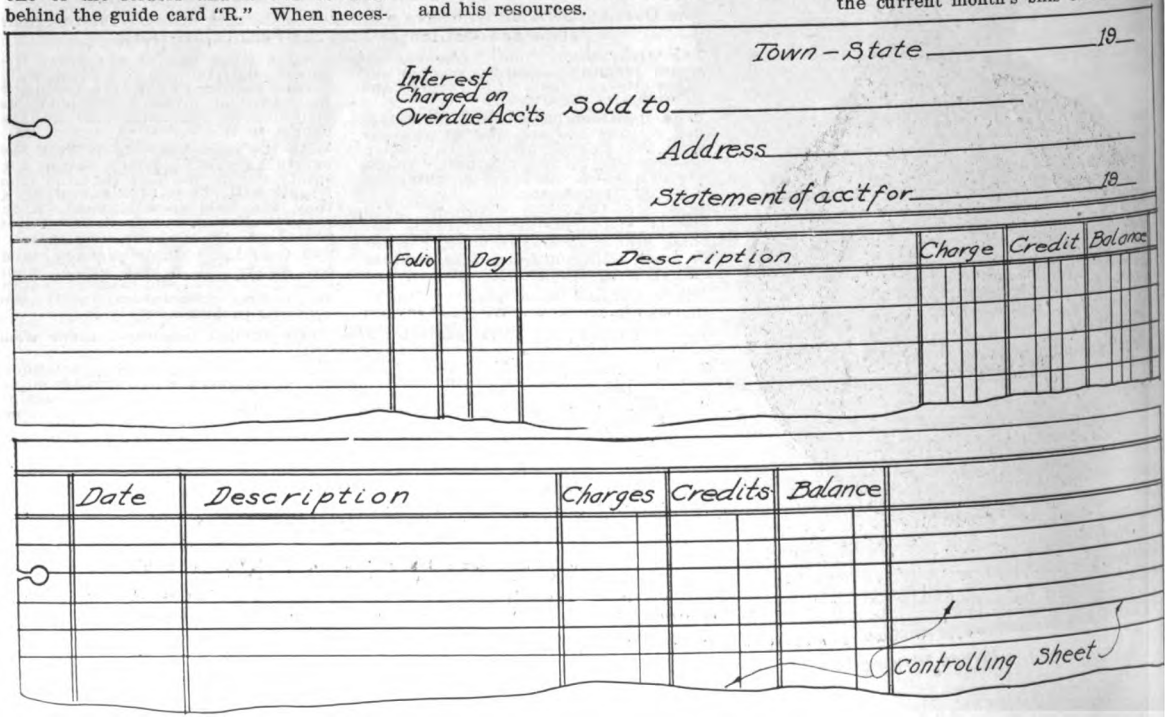
When a customer makes application for credit this information should be required. In the first place the merchant should ask for a personal interview, and during this interview he must endeavor to establish the integrity of the customer and his resources.

The first essential, the integrity of the applicant, the merchant must be able to determine through his powers of observation and his ability to read human nature, and also from the consistency of the facts given him by the applicant. His resources the merchant must find out either from direct questions as to his position, his income and property, etc., or through tact and diplomacy, and draw from the applicant all the information he wants so tactfully that the applicant is unaware of giving it. Which is the best plan each dealer must decide for himself.

Some merchants claim that to examine a man or woman with a series of direct questions regarding resources, income, etc., with a "I know you're dishonest anyway" attitude, does not leave the customer in the best frame of mind. However, the dealer can use the methods of securing information that are most satisfactory. When an applicant seems sensitive the merchant may draw out the information he wants in an indirect way. To do this without seeming to pry into the applicant's private affairs unnecessarily requires considerable tact and judgment. All information, however obtained, should be verified from outside sources.

Emphasize Credit Rules.

After the information has been secured and verified and credit is allowed, no matter to what extent, the merchant should impress upon the customer his credit rules. Every dealer should have his own particular rules, which he should demand that all customers live up to. It may be that all bills are due the 10th of each succeeding month and if not paid by the 10th shall bear interest at the rate of seven per cent., or it may be that the dealer requires his customers to arrange for a further extension of credit in case the current month's bills cannot be set-



tled when due. No matter what the rules, see that they are lived up to in every case.

A card index file should be provided for the information cards after they have been filled and credit given. The merchant should set a credit limit and enter this figure upon his information cards and file for reference. Space at the bottom of each card should be provided for remarks. For instance, a man may purchase an automobile of you on time, the cost amounting to $1350, and he lives up to your terms to the very letter then you will enter this information on your credit card so that should the occasion arise for further credit you can refer to your previous dealings with this man.

In all cases where the amount of the credit is large, as when selling an automobile, or a lot of tires to a sub-dealer, the merchant should always demand a note, a bankable note, with or without interest as the merchant may see fit, until after maturity. If sold upon the plan that the purchase price is to be paid by three equal installments, then he should make out three separate notes, each maturing at a given time. If bankable notes are not secured, in the case of the sale of a machine, then he should require a note together with a mortgage on the machine until the purchase price has been paid.

For the convenient filing of contracts and mortgages the dealer will do well to provide "Document File Cabinets" equipped with "A to Z" guides and the contracts and mortgages may be filed alphabetically therein.

Collections Must Be Systematic.

But the matter of extending credit and promptly collecting the accounts when due are two different things. The real work of the credit dealer is not so much in opening accounts, although that is very important, as they have a direct bearing upon the collections, as keeping in close touch with the accounts and making prompt collections. In collecting the credit dealer must again have tact and discretion and good knowledge of his customers and their affairs to avoid offending them.

If the merchant will lay down certain credit rules and see to it that every customer understands them, and that every customer lives up to them, half his troubles collecting his accounts will be obviated. Every customer should have a copy of the merchant's credit rules, and for this purpose the dealer should have these rules printed and a copy enclosed with each statement mailed. Statements for all accounts should be mailed the evening of the last day of the month and all accounts should be due and payable by the 10th of the following month. All accounts not paid by that date should bear interest at the rate of 7 per cent.

The merchant should always bear in mind that prompt collections has a tendency to increase sales and he should give his accounts uniform attention. A customer whose account is overdue, especially if it is large, may transfer his patronage to another place because he is in fear of being refused further credit

"Information Card"

Name:	Address:
Occupation:	Business-Address.
Approximate Income:	Own Property
Kind of Property.	
Married.	No. of Children Age:
With whom dealing	Standing:
References: Name:	Address
1st.	
2nd.	
3rd.	
Remarks:	
Credit Limit	

and he does not wish to increase his liability.

It is true that the longer an account remains uncollected the harder it is to collect. Repeated efforts to collect an account without success often irritates a customer and makes him more determined to put off the settlement of it. For this reason the merchant must be insistent in his demand for settlement when the account is due, and, after an honest effort to collect it, should lose no time in placing it for collection through legal methods.

Often a customer can be induced to give the merchant bankable paper in settlement for an overdue account where he is financially unable to raise the money, and in such cases acceptance of this is advisable.

Care in Invoking the Law.

When an account reaches the stage where it is apparent that the customer is attempting to avoid the payment of it, and it becomes a question of getting payment in the quickest and surest way, legal steps should be taken. However, the merchant must first make up his mind that this customer is lost to him ever after that, for once legal action is taken it is a bad policy for a merchant to open another account with such a customer, not only because he has proven himself untrustworthy and unprofitable, but also because a customer once sued by a house is usually itching to put that house in the hole at the first opportunity. Therefore, the merchant should first make up his mind that it is to his interest to close the account in this manner before taking such steps.

Customers can be trained to become prompt in settling their obligations as well as they can be trained to become dilatory, and once the merchant has impressed upon his customers that prompt settlement is necessary for further credit he will have little trouble with charge accounts.

The average customer is honest and when he opens an account with the merchant his intention is to pay, but circumstances may come that make it a little inconvenient for him to settle and if the merchant is a little lax in his demands for settlement the customer may allow the obligation to drag along until finally it is beyond his ability to pay and then he endeavors to avoid its payment.

If merchants would be more strict in their collecting methods very little trouble would result through a proper system. In other words, the merchants themselves create the dead beat through loose methods.

BOSTON DEALERS OPTIMISTIC.

Boston automobile dealers are filled with optimism and enthusiasm and they believe that this year will prove a record breaker in the number of sales. The mild weather has resulted in buyers taking their cars immediately instead of ordering them for future delivery. With a splendid start already the dealers are confident that they will make more money this year than they ever did before.

Smiles greeted the interviewer when he questioned some of the dealers as to the outlook.

"It will be the best year ever," they all agreed.

The wage earner is beginning to show up as a big buyer. Having made money during the war and continuing to demand high wages, he can afford to own a car. And usually he wants a good one; no "flivver" for him.

When a man in working clothes enters a salesroom the salesman takes it for granted that he has come to look over the cars, and gives him just as much consideration as he does the well dressed visitors.

Every dealer in New England is expected to share liberally in the wonderful prosperity that is sure to come to the automobile dealers this year.

BUY GARAGE.

The Universal Garage, 310 Ninth street, S., Minneapolis, Minn., has been sold by C. O. Bergh to D. G. Sheldon and A. J. Barry.

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THERE ARE 4400 MORE SQUARE INCHES OF COOLING SURFACE IN THE

PEERLESS GUARANTEED HONEYCOMB RADIATOR

Than in The Ordinary Tubular Type

This means complete radiation for Ford engines. The Peerless Guaranteed Radiator is of pleasing design and scientific construction. Equipped with the indestructible PEERLESS HONEYCOMB CORE.

Practically Freeze and Boil-Proof

All parts coming in contact with water are of brass. Radiator shell finished with two heavy coats of black Japan; also nickel-finish. Brass core in gray. Fits 1917 and later model Ford cars. Also Ford One-Ton Truck.

Increased manufacturing facilities have enabled us to add an exact duplicate of the Ford fender to our present line. This fender is in demand and will be a big seller. Shipments February 1st.

Write for complete catalogue of PEERLESS PRODUCTS FOR FORD CARS; radiators, hoods, radiator and hood combinations, fenders, tool boxes. Address Dept. 5.

THE CORCORAN MFG. CO.

CINCINNATI

(When Writing to Advertisers, Please Mention the Accessory and Garage Journal.)

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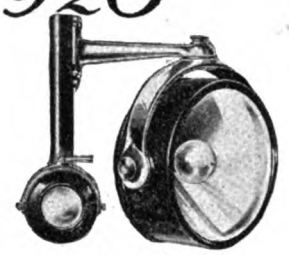
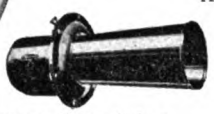
Presenting Stewart Custombilt Necessities for 1920

Stewart Searchlight
Model 155-A - - $4.75



Stewart Searchlight
Model 156-A - $15.00

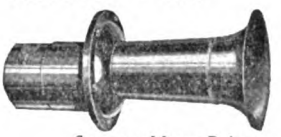


Stewart Motor-Driven
Warning Signal
Model 154-A - - $6.50

Warner Autometer
Deluxe Model 72-A - $75.00
Standard Model 71-A - $40.00

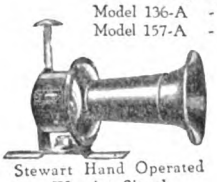
Stewart Searchlight
Model 139-C - - $6.50

Stewart Speedometer
Model 131-A - $25.00

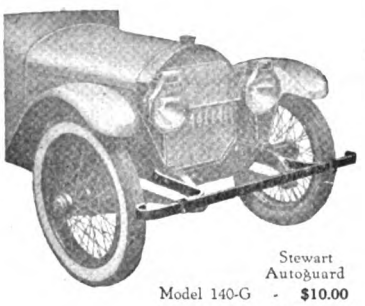


Stewart Motor-Driven
Warning Signal
Model 136-A - $10.00
Model 157-A - $15.00

Stewart Hand Operated
Warning Signal
Model 151-B - - $3.75

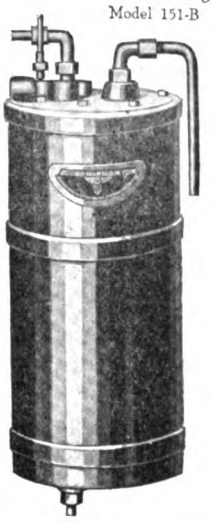


Stewart Hand Operated
Warning Signal
Model 114 - - - $4.75



Stewart
Autoguard
Model 140-G - $10.00
Special Ford and Chevrolet
Models - - $10.00

Stewart Speedometers
For Ford Cars
Model 160-A - $12.50



Stewart
Vacuum System
$13.50

THE year 1920 ushers in what is certain to be the biggest year in the automotive industry. More and better cars will be made and sold. In keeping with the industry's progress, the Stewart-Warner line for 1920 is the most complete ever offered motordom.

During the past year the Stewart Engineering Department and Research Laboratory have labored ceaselessly perfecting and preparing for production the new products that now take their place in the Stewart family.

Better accessories were never manufactured. Each one is truly "custombilt" the Stewart Quality Way. Each one is true to its name—a real "necessity."

The cars produced during 1920 will thus be more universally Stewart-equipped than ever before—and that means something.

Stewart-Warner Speedometer Corporation, Chicago, U. S. A.

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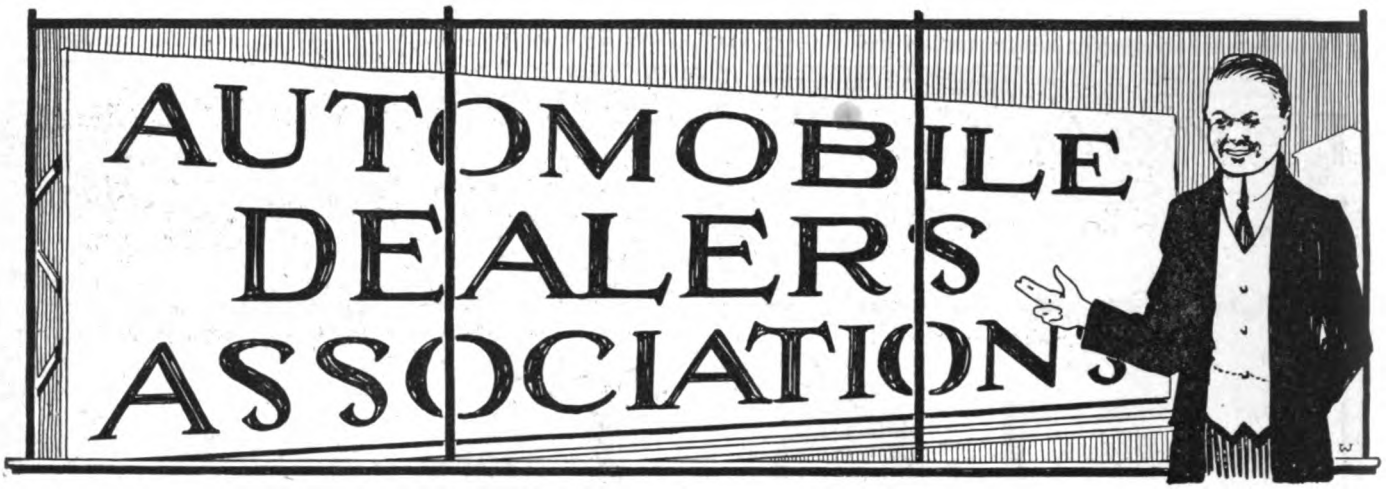

PORTLAND REPAIRMEN'S OFFICERS.

The following officers were elected by the Portland Garage & Repairmen's association at its annual meeting at Portland, Ore.: President, Will J. Lester, for three years head of the Portland Y. M. C. A. automobile school; vice president, Virgil Cooper; secretary, H. Nisbet; treasurer, George G. Gerber; two-year members of executive board, A. E. Foss, Fred Dundee; one-year members of executive board, V. C. Undine, A. N. Stanton; vice president for battery and electrical shop department, J. W. Van Matre; for garages, R. D. O'Brien; machine and repair shops, Will Gill; tire repairing shops, J. B. Bailey; paint and trimming shops, Paul Staiger; auto sheet metal and wheel shops, W. R. Raymond.

ACCOMPLISHMENTS OF N. A. D. A. IN 1919.

- Passage of National Motor Vehicle Theft Act, Which Will Effect an Adjustment of Insurance Rates.
- Solution of War Excise Tax Problems and Revision of Truck Chassis Classification.
- Amendments Protecting Dealers Where Violations of Prohibitory Law Are Made by Purchasers Without Dealer's Knowledge.
- Stabilization of Motor Truck Market by Advocating Distribution of Government Vehicles to State Highway Departments.
- Important Service in Connection with Legislative Activities in Various States.
- Participation in Creation of Conference Clearing Committee Composed of Attorneys and Managers of Important National Automotive Bodies.
- Organization and Strengthening of State and Local Automobile Trade Associations.

OBSERVE SUNDAY LAWS.

To test the Sunday blue laws the Automobile Dealers' association of Baltimore, Md., recently decided to sell no gasoline or oil on the Sabbath.

AUTOMOBILE SHOWS CONDUCTED BY DEALERS.

The following automobile shows are to be held under the auspices of various dealers' associations:

Worcester, Mass., Jan. 19-24, in State armory, Worcester Automobile Dealers' association, J. C. Harvey, president and chairman of committee of arrangements; Waterbury, Conn., Feb. 23-28, Auditorium, Automobile Dealers' Association of Waterbury, Ray E. Munger, manager; Brooklyn, N. Y., Feb. 14-21, 23rd Regiment armory, Brooklyn Motor Vehicle Dealers' association, C. M. Bishop, president; Philadelphia, Jan. 10-17, Commercial Museum building, Automobile Trade association, Louis C. Block, president; Little Rock, Ark., March 1-6, Liberty hall, Little Rock Automobile Dealers' association; Wilmington, Del., Feb. 3-6, Hotel du Pont, Wilmington Automobile Trade association, W. A. MacDonald, president; Hartford, Conn., Jan. 17-24, Broad Street armory, Hartford Automobile Dealers' association, Arthur Fifoot, manager; Grand Rapids, Mich., Feb. 23-28, passenger car show, and March 1-6, commercial exhibition, including airplanes, Automobile Business association, W. K. Philp, president; Minneapolis, Minn., Jan. 31-Feb. 7, Minneapolis Trade association; Charlotte, N. C., Feb. 9-13, Show of the Carolinas, Charlotte Automotive Trade association, Lee Folger, chairman; Oakland, Cal., Jan. 19-25, Civic auditorium, Motor Car Dealers' Division, Alameda County Automobile Trade association, Robert W. Martland, manager; Wilkes-Barre, Pa., March 15-20, passenger cars, March 22-27, commercial cars, Armory, Automobile Dealers' association of Wilkes-Barre, Inc., R. A. Rosenkrans, secretary; Scranton, Pa., March 1-6, 13th Regiment armory, Scranton Motor Trades association, Hugh B. Andrews, manager.

BEHLE HEADS CINCINNATI DEALERS.

John Behle has been selected manager of the Cincinnati, O., Automotive Trades association, and will devote his entire time to the work. It is planned to make every automobile and accessory dealer in the city a member of the association.

The association has plans for an active 1920 season.

MOTOR TRUCK EXCHANGE.

A new motor truck organization, representing the truck sales interests in New York City, has been formed known as the Metropolitan Dealers' Motor Truck Exchange, its prime object being to act as a general clearing house for the disposal of used trucks, taken in trade by the members.

The officers and directors are as follows: President, W. H. Moore; vice president, A. C. Harrington; secretary and treasurer, T. D. Pratt, Motor Truck Association of America; directors, W. H. Moore, H. A. Smith, E. N. Stone, C. G. Bond, A. C. Harrington, H. H. Skerrett, W. R. Couch, E. P. Herrman, W. P. Held.

ACTIVITIES OF N. A. D. A. FOR 1920.

- Codification of Automobile Laws of Various States for Purpose of Drafting Uniform Regulations.
- State Motor Vehicle Theft Bill to Operate in Connection with National Motor Vehicle Theft Act.
- Enactment of Pittman Bill Providing for a National Registration Law.
- Establishment of Service Manager's Bureau for Instruction and Classification of Service Managers.
- Inspection and Classification of Automobile Trade Schools.
- Creation of a Traffic Bureau for Auditing Freight Bills, Adjusting Overcharges, Prosecuting Claims for Damages, Etc.

LEHIGH ASSOCIATION TO BUILD.

The Lehigh Automobile Trade association has approved a contract for the building of a headquarters at Rittersville, Pa., and it is expected it will be ready for occupancy by early summer. It has been voted to raise the entrance membership fee from $100 to $200, this including the possession of stock in the association. Fred L. Way of Easton, Pa., was chosen publicity agent.

The contract for the construction of the new building has been let to the Bethlehem Fabricator Co. at $42,000.

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en Springs Break
put on

s the VULCAN service sign

The Sign of Profit

This sign stands for America's highest quality replacement-spring.

This Sign brings thousands of motorists, every year, to the doors of over 7000 dealers who display it.

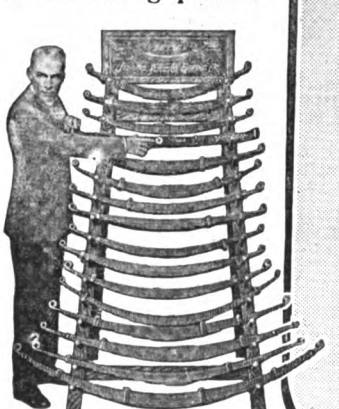
This sign puts large and ever-increasing profits into the cash-drawer of every one of these dealers.

Why Not Hang It Up Today?

Write for our special proposition.

Jenkins VULCAN Spring Co.
Factory
RICHMOND, INDIANA
Branches

Atlanta, Ga.
Boston, Mass.
Dallas, Tex.
Kansas City, Mo.
Minneapolis, Minn.
Reading, Pa.
St. Louis, Mo.



This Spring Rack FREE with first order for 12 or more VULCAN springs.

(o Advertisers, Please Mention the Accessory and Garage Journal.)

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CUT DOWN YOUR GASOLINE BILL 30%

Beware of Imitations. Money Back Guarantee. Positively Non-Injurious. Helps Remove Carbon. Gives Your Car More Power. Makes Car Start Easier in Cold Weather.

"GASTINE" is GUARANTEED to give you 30% more mileage, preventing formation of carbon and assuring easier hill climbing ability, faster ignition and greater power.

A Gas Saver—Carbon Destroyer—Power Producer

Keeps spark plugs clean. Absolutely harmless. Sold in concentrated form—easily dissolved in gasoline. 100 tablets in a box. Used successfully throughout the civilized world.

"GASTINE" is endorsed by the National Ford Owners Club, Inc., N. Y., U. S. A.; Certificate No. 8779. Tested and endorsed by Kenneth Weeks, P. D., and Leading Institutions Universally.

SOLD WITH A MONEY BACK GUARANTEE

GASTINE

MORE "PEP" IN YOUR MOTOR

"Jobbers, Dealers and Consumers are all cordially invited to visit our booth at the New York Auto Show, Space D 211, also our exhibits at Philadelphia and Boston Shows."

TRADE MARK REG. U.S. PAT. OFF.

THE GASTINE COMPANY, BRIDGETON N.J.U.S.A.

Canadian Distributor
ROBERTSON & MURPHY, 423 Coristine Bldg., Montreal, Can.
MONROE TIRE & SUPPLY CO., 240 E. 54th St., New York City.
THE GASTINE SALES AGENCY, 253 Central Ave., Albany, N. Y.
ARTHUR G. NASON SALES CO., 416 Montgomery St., San Francisco, Cal.
WARE BROS., Spokane, Wash.

Export Dept., 17 Battery Place, New York City, N. Y.

Southern New Jersey Distributors.
TAYLOR BROS., Camden, N. J.
S. F. HOLDEN, 959 Madison Ave., Paterson, N. J.
AMERICAN MOTOR CLUB, (Six Stores) Philadelphia, Pa.
KEIM SUPPLY CO., 1227 Market St., Philadelphia, Pa.
L. D. HODGES, 33 James St., Bristol, Va.

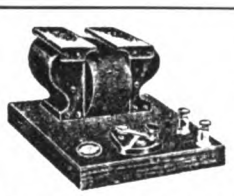
New England Distributor
NEW ENGLAND GASTINE SALES CO., 210 Harvard Ave., Allston, Mass.
COWARD AUTO SUPPLY CO., 222 Eliot St., Boston, Mass.
BRYANT & WARE, 246 Norwell St., Dorchester, Mass. Field Manager.
THE STANTON SALES CO., 185 Middle Road, Portsmouth, N. H.
HOHORST & HAFF, Brooklyn, N. Y.
KING HARDWARE CO., Atlanta, Ga.

Dealers write for prices. Some territory still open. If consumers or dealers cannot be supplied from their jobber or dealer, they can order direct from this office. Always give name of their jobber or dealer.

GENEROMETER

The new and practical generator testing instrument. It will locate shorts and grounds in generator armatures where most of the trouble is of a Lighting System. You will need this instrument if you want to be 100% efficient in your electrical repair work. Further particulars upon request.

PAUL G. NIEHOFF & CO., INC.
232 E. Ohio Street, Chicago, Ill.



Niehoff Laminated Magnetizer

This is the most scientific and practical Magnetizer ever constructed. It will magnetize any size magnet from a Ford to all the various other magnets used on the different cars today. Due to the fact that it generates an enormous amount of magnetism, with a pulling power of about 75 pounds, you can more quickly remagnetize a magnet, and, therefore save much current. All magnetizers are subject to considerable wear. The faces will wear down according to their use. The top pieces of our Magnetizer are especially hardened and also detachable so that when worn down they may be replaced at a very small expense. We have two types; one for 6 volt storage battery and another for 110 volt D. C. current. Write for further information.

PAUL G. NIEHOFF & CO., INC.
232 E. Ohio Street, Chicago, Ill.

The Automobile Journal

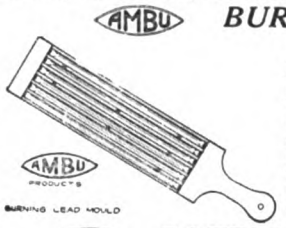
Is the Oldest Automobile Magazine published in America devoted wholly to owners of passenger cars.

Pawtucket, Rhode Island.

Prices Reduced

The great demand for these three battery shop labor savers has resulted in greatly increased production. Because of this condition we have been able to reduce our manufacturing costs materially—and we are passing this saving to our customers in lowered prices—a novelty in this day of rising costs.

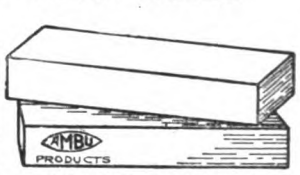
AMBU *BURNING LEAD MOLD*



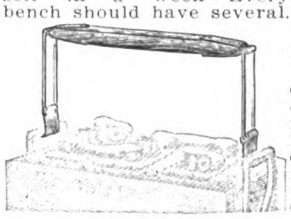
A simple handy mold to put all scrap lead and shavings into usable form. Makes burning lead easy to handle. Pays for itself in saved metal in a few weeks. Used in pairs—one cools while the other is filled. Large shops can use several. Single $1.50. Pair $2.50.

AMBU *BATTERY TURN TABLE*

A roller bearing turn table of hard wood that makes it easy to get at every side of a battery. Not only speeds up work, but saves lifting and turning the heavy battery when burning in plates, sealing or repairing battery.
Only $2.50 and pays for itself in a week—Every bench should have several.



BATTERY TURN TABLE



AMBU *BATTERY CARRIER*

Carry a battery like a suitcase. One man easily carries two batteries. Ideal for lifting batteries from car or replacing.
Price only $1.50 each; per pair $2.50.
Order from your jobber or direct.

American Bureau of Engineering
109 E 16th St. *APPLIANCE DIVISION* Chicago
Makers of the Famous AMBU Trouble Shooter

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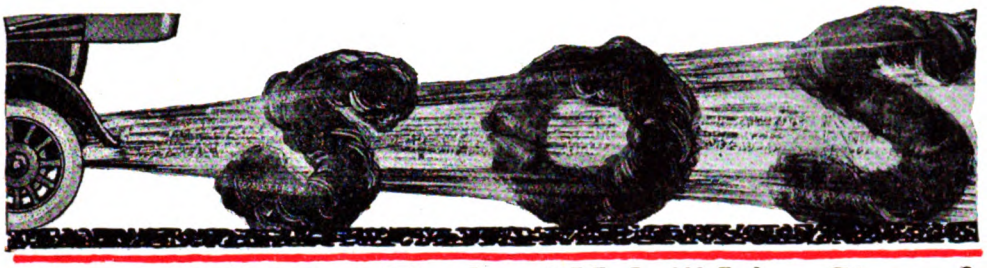


When the Engine Flashes "Help!" It's a Sign of Leaky Piston Rings

Install ZELNICKER *Ever-Tyte*
The Piston Ring for All Engines

S. O. S.!! That's a distress signal being flashed to many motorists. It's an earnest call from the power plant warning trouble ahead. A danger signal not often visible from the driver's seat but very plain to you, Mr. Dealer. Why not tell the owner? He needs new piston rings — ZELNICKER *Ever-Tyte Piston Rings.*

Or look at the matter from a selfish business standpoint. *Handle Rings that PAY.* Successful garage men never hesitate stocking Ever-Tytes exclusively. Why? Because they get the long end of the profit. The big margin — the extra percentage. They can *afford* to do a good job. And when you can *afford* to do a thing you do it right and you get *money* and *trade,* both.

ZELNICKER *Ever-Tyte Piston Rings*

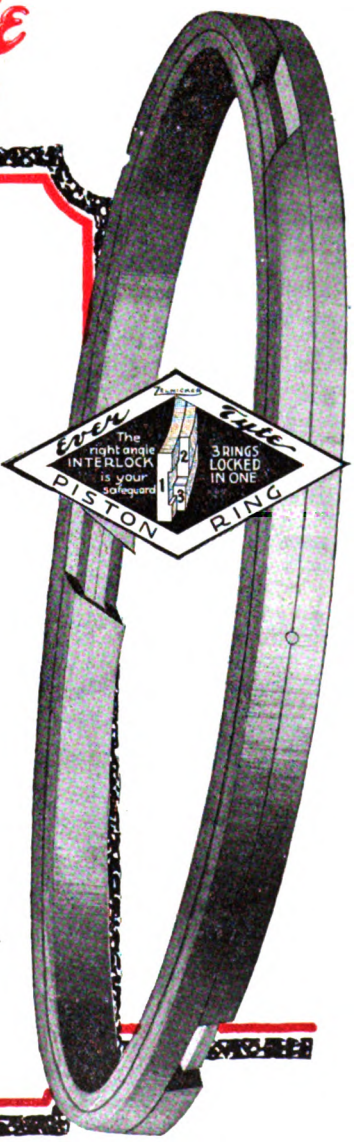
net you a bigger profit than some rings list for. You can't beat that. Think it over, seriously. Besides, no better rings can be had. They are Power Guardians that give three for one. Three-piece efficiency with one-piece simplicity.

Guaranteed? Yes — by a Guarantee Bond, more sweeping than you ever heard of before. Iron-clad and lived up to without a word of quibble.

Best of all—they're nationally advertised. Millions have seen them — many motorists are specifying them. Don't wait for the first calls. Resolve to become a money-making Ever-Tyte dealer and — *Do so NOW!*

Install them—on all engines.

THE EVER TIGHT PISTON RING CO.
Saint Louis, Mo.



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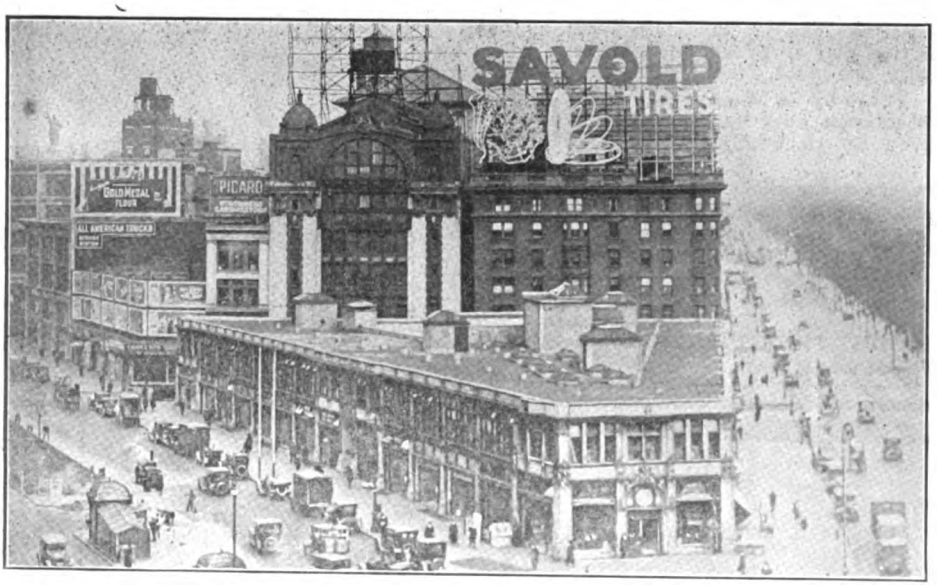
TIRE INDUSTRY AND TRADE

ELECTRICAL DISPLAY OF SAVOLD TIRES.

Standing above the noise and rush of Columbus circle, New York City, is the spectacular electrical display of Savold tires, the story of which is flashed by invisible mechanism through the medium of 4800 electric lights.

Columbus circle is the world's busiest traffic point. More motor cars pass there than any other spot known, the average being 3921 cars an hour. Automobile row, known all over the United States, cuts through the heart of Columbus circle and the eastern tire business radiates from there. Every rubber company and every automobile concern of consequence is represented here, and the exporting influence is carried away to every corner of the globe.

The structure on which the Savold display is supported is 48 feet high and 95 feet long, which is equal to building four stories high. Ten workmen were employed constantly for two months in the construction of the steel frame. It faces head on and can be seen all the way down Broadway and down Eighth avenue. It was designed and executed by the O. J. Gude Co., the originators of the Great White Way, and the Savold tire display is a fitting component to this vast electrical show of the Metropolis. It is estimated that this advertisement is noted daily by more than 325,000 visitors who pass through Columbus circle.



Electrical Display of Savold Tires in Columbus Circle, New York City.

The Firestone Tire & Rubber Co., Akron, O., has broken ground for a mechanical building on a site south of plant No. 2. This will be three stories high and is designed to accommodate the electrical, machine, pipe, carpenter, pattern and tin shops, and will coordinate under one roof all the labor of this nature which has heretofore been done in the various buildings of the factory. It will have a frontage of 325 feet on Main street and a depth of 315 feet. Approximately 80 per cent. of the walls will be glass. The floor will be of wooden blocks laid on reinforced concrete. The cost of construction will exceed $400,000.

The B. F. Goodrich Rubber Co., Akron, O., on Dec. 1, paid to nearly 5000 salaried employees a bonus of 25 per cent. of their annual salary. The total amount paid extra this year was about $2,500,000.

The Interstate Auto and Repair Co., Norfolk, Va., has secured the agency for Racine tires, made by the Racine Rubber Co., Racine, Wis.

The Perfection Tire & Rubber Co. has made arrangements to increase the output of its plant at Fort Madison, Ia., to reach a daily production of 5000 tires.

ORGANIZES MALAY RUBBER CO.

Owen Moynihan, for the past two years general sales manager of the Amazon Rubber Co., Akron, O., has resigned to assume the active management of the

Owen Moynihan, General Sales Manager, Malay Rubber Co.

newly formed Malay Rubber Co. This concern has been organized by distributors and dealers in all parts of the country for the purpose of manufacturing and merchandising high grade tires.

Mr. Moynihan, before his connection with the Amazon Co., was eastern district representative of two of the Akron rubber companies, and before that time he was in the offices of distributors. His wide experience in this field eminently fits him for his new position as general manager of the Malay Rubber Co., in which he will have associated with him tire experts to have the oversight of every phase of manufacture, sales and advertising.

The Malay Rubber Co. will build a complete new plant in Cleveland, O., where a diversified labor market and ideal transportation and living conditions will assist in keeping down production costs. Executive offices have been opened at 1035 Guardian building, Cleveland.

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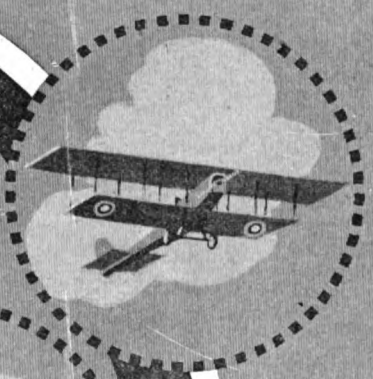
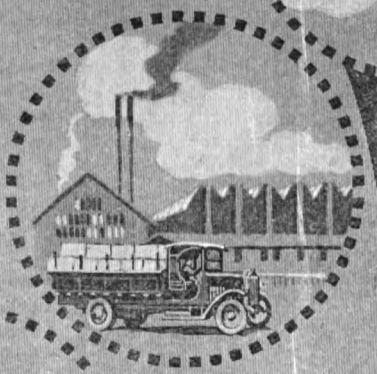
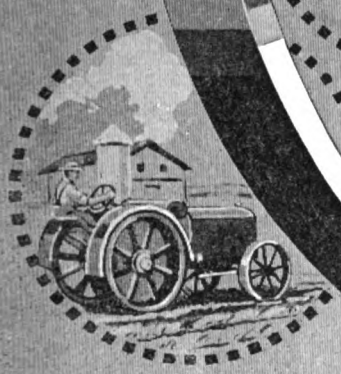
QUALITY SNAP RINGS Play a Prominent Part in America's Gas Engine Construction

"MORE THAN A MILLION A MONTH"







Send for "TWELVE REASONS" *Booklet*

THE Piston RING COMPANY

SPECIALISTS IN PISTON RINGS

106 SANFORD ST. MUSKEGON, MICH.

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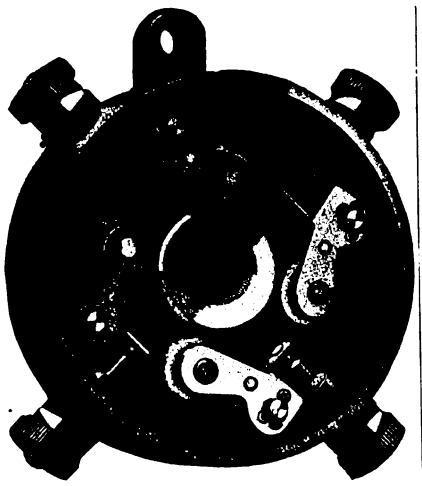
For
Cold Weather Starting

FOR FORD CARS



FOR FORDSON TRACTORS

DUNTLEY
MAGNETO BREAK
TIMER

The positive make and break contact of the Duntley magneto break timer embodies an individual magneto break to each cylinder that causes a clean, strong, hot, fat spark, which makes starting easy, and adds pep and power to the motor.

With the new Duntley magneto break timer you are assured perfect ignition 100% of the time, because

It is self-cleaning.

It requires no lubrication.

It has no whirling contacts to jump over a metal segment and wear out or become insulated with oil.

It is equipped with genuine tungsten points that will not corrode, pit or burn out.

EVERLASTINGLY GUARANTEED TO ALWAYS MAKE GOOD

Dealer write for our proposition today, it is mighty interesting

J. W. DUNTLEY
1003 Michigan Ave., Chicago, U. S. A.

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KHK OIL SIGNAL

DEALERS!

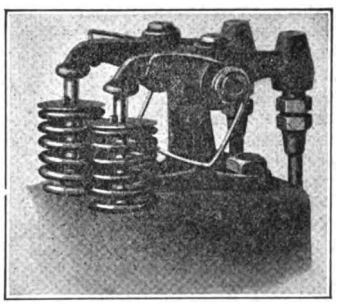
Here's Another Fast Selling KHK Accessory

"When Your Oil is Low Your Horn Will Blow"

Automatically starts horn blowing when oil supply is low. Insurance against burned out bearings, scored pistons and cylinders. Fits all cars. A novel, practical accessory that sells on sight. Popular price. It's the only practical automatic oil signal on the market. Easily attached and no complicated parts to wear or get out of order. Be the first dealer in your town to show this new accessory. It will pay you.

STOP THAT NOISE WITH

KHK Valve in Head MOTOR SILENCERS



Guaranteed to eliminate from 75% to 90% of that clacking noise caused by the action of push rods and rocker arms in Buick, Chevrolet, Oakland, Oldsmobile, Scripps-Booth motors. Adds pep to motor. Eliminates continual tappet adjustment. Dealers say it is the fastest selling accessory they ever saw.

Ask your jobber about KHK Accessories or write direct to

KAY H KAY Co.

967 Woodward Ave., Detroit, Mich

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Hall Motor Co.

AUTHORIZED Ford AGENT
THE UNIVERSAL CAR

SERVICE AND PARTS

512-516 W. UTICA ST., Cor. BRAYTON
BUFFALO, N. Y. Bell, Tupper 4656

August 11, 1919.

The Stenman Electric Valve Grinder Co., Inc.,
42 Southbridge St.,
Worcester, Mass.

Gentlemen:-

Replying to your letter of August 9th, would say it affords us much pleasure to send you our check to cover the cost of the Electric Valve Grinder sent to us for trial a short time ago.

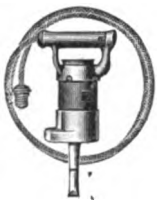
We have no hesitation in stating that we have tried three or four other different makes of grinders, and consider yours much superior to any of them. Its smooth, velvety action enables us to make a much nicer job than any other valve grinder we have tried.

HHH/FM Yours very truly,

HALL MOTOR COMPANY,

By Harry H. Hall

The moral from the above letter, is that you insist on getting a "Stenman" and accept no other. "As good or better" has not yet been made. Your jobber can supply you—if not—write to —us. Circulars on request.



Made under U. S. Patents 876,449 1,313,490. Others pending.

"Will Pay 300%"

The Stenman Electric Valve Grinder will pay 300% yearly on the original cost where it is used to grind but one set of valves a week. If used more the returns will be proportionately greater.

"They Serve Best Who Are Best Equipped To Give Service"

The Stenman Electric Valve Grinder is the greatest time and labor saving tool that ever went into a repair shop. It is eight times quicker than hand work and does a better job. Thousands are already in use and you can depend on this wide use as a guarantee of its worth. Order one today from your jobber. It will have practically paid for itself before the bill is due.

"They profit most who serve best"

Stenman Electric Valve Grinder Co.

Makers of the Original Electric Valve Grinder

Worcester, Mass.

Copyright 1919 by Stenman Electric Valve Grinder Co.

THIS Year, Sell Reflex Spark Plugs because of what they HAVE done.

—because of the business and profit they meant for Reflex dealers throughout 1919.

BUSINESS, due to such service as the above illustrated plugs delivered in a rough-road-going truck. And "without attention," writes the user—a mid-west trucking establishment.

PROFITS, because prices, discounts and guarantees to you are right.

Simply drop a card for complete information, such as prices, the Reflex advertising campaign, dealer helps, etc.

The Reflex Ignition Co.
1352 West 106th St.,
Cleveland, U. S. A.

REFLEX SPARK PLUGS

KEEP THE CAR ON THE GO!

1894 Est'd. 26 years 1920

REPEAT TIRE SALES are made by real performance. A strong oversize tire is a real saving to the distributor, as well as the user, who seldom calls for an adjustment. Delivery at once.

EXCLUSIVE JOBBERS are cashing in with Miller's improved Tires by **"DIRECT FROM FACTORY"** method, which eliminates high overhead costs. Write today for our exclusive distributors' prices, which makes tire selling more profitable.

Miller's of Anderson Tires. Built up to a mileage leadership and not down to a price. All straight sides, ½ inch oversize. All Ford sizes, ¼ inch oversize.

CHAS. E. MILLER.
Anderson Rubber Works,
1402 Meridian St.,
Anderson, Ind., U. S. A.

The Automobile Journal

Is the oldest Automobile magazine published in America devoted wholly to owners of passenger cars.

A quality magazine, with prestige and circulation that brings results to advertisers.

TIMES BUILDING
PAWTUCKET, R. I.

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UNIVERSAL

It's to your interest to investigate a battery that means

greater endurance — greater strength

greater capacity — longer life

That's why we invite you to become acquainted with

UNIVERSAL BATTERIES

"The Heart of your Starting and Lighting Equipment."

We have a splendid opportunity for dealers. Increase your profits—investigate our proposition.

UNIVERSAL BATTERY COMPANY.
3420 So. La Salle Street,
Chicago, Ill.

A battery for every car.
A part for every battery.

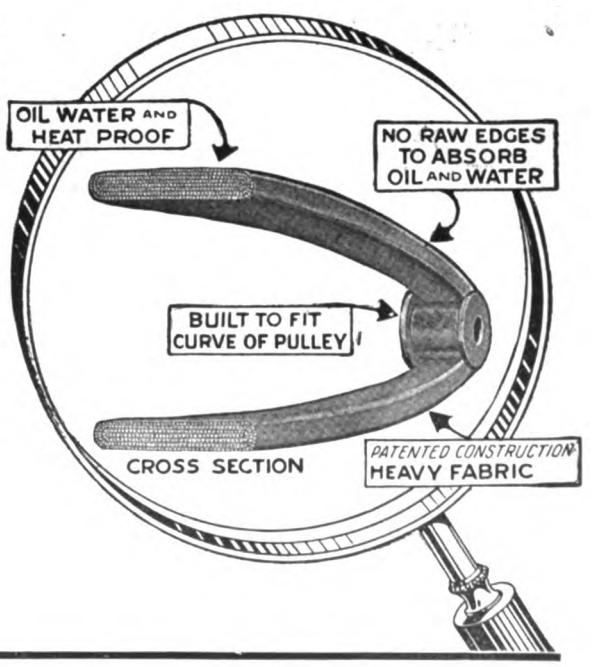
BATTERIES

Guaranteed 10,000 Miles

At last—a fan belt of known and guaranteed performance. DEALERS—This is the safe belt to stock.

FLEX-O-TYTE
FAN BELT

Combines Flexibility With Tightness.



Made for all cars. Built of special Rubber Coated Fabric, vulcanized into a one-piece belt—wrapped cure process.

Dealers—Order Sample

The name of your supply house and 10c to cover postage and packing brings sample belt promptly. Our 32 page catalog FREE on request.

A. J. STEPHENS RUBBER CO.
1409 Chestnut St. Kansas City, Mo.

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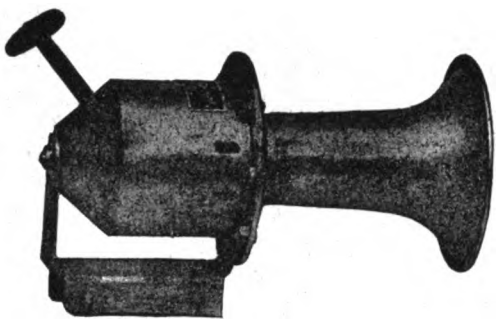
THE HORN WITH 6 EXCLUSIVE FEATURES

Special Sound Projecting Bell



The bell of the STANDARD Auto Horn is made of one piece of steel, solidly pressed and without seams.

There is nothing to retard the sound waves of the STANDARD. Its warning notes penetrate clearly and instantly to a far greater distance than those of other hand horns with ordinary constructed bell.

This exclusive feature alone has brought an unusually large demand for this horn to STANDARD dealers.

The STANDARD has a handsome baked black enamel finish with nickel trimmings. It is guaranteed to outwear any car to which it may be attached.

Horns for Fords are furnished with special clamp bracket without extra charge.

Five Other Exclusive Features

1. Adjustable to any desired tone.
2. Can be operated with one finger.
3. All wear is taken up by adjusting screw.
4. Adjustable to six different positions on car.
5. Guaranteed to outlive the car.

LIST PRICE $4

THE STANDARD AUTO HORN CO.
INCORPORATED
212 Broadway Everett, Mass.

DEALERS Increased production enables us to add a few more dealers to our list. If you are interested in selling a quality horn, moderate in price, but with liberal profit to the dealer, write us.

STANDARD

AUTO HORN

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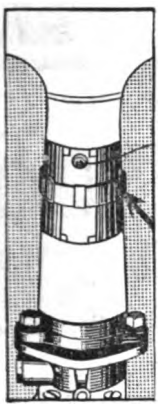
Starts Any Cold Motor In a Jiffy



Attaches to the Intake Manifold or Carburetor Current from battery to a resistance coil in the heater warms the air inside the intake, causing the gasoline to **vaporize** and **ignite** with the **first turn-over** of the motor. Same heating principle as used in the electric flat iron. Gives same result as pouring hot water on the manifold.

This Electric Intake Heater

assures easy and quick starting on the coldest winter day, **and saves drain on battery.** No priming. No delays. Operates from dash switch. Easy to attach. **No drilling or tapping or alterations.** Entirely out of the way. Always ready and perfect in performance. Sold with the distinct understanding that it will give satisfaction when the simple instructions for applying are followed.

If your car or truck has storage battery, write for descriptive matter today. **$3.50**

Dealers and Garages Get Our Proposition.

Electric Intake Heater Co. 130 Cortland St. Jackson, Mich.

DURACORD EXTENSION LAMP

The lamp for rough, hard service. Wired up with 20 feet of genuine Duracord, ready for use. Strong guard and handle, brass keyless socket, handy grip hook and separate plug. Cord cannot pull out of the handle.

Write for descriptive folder.

TUBULAR WOVEN FABRIC COMPANY
PAWTUCKET, R. I.

TRIPLEXD

THE FABRIC TAKES ALL STRAINS

All strain is taken by the tough fabric cover of Triplexd.

The flexible metal lining cannot be damaged.

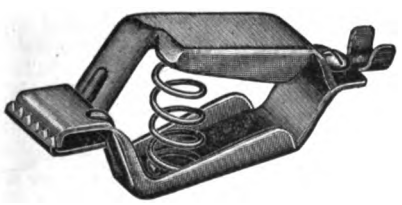
The fabric, woven tightly over a rubber intermediate layer, binds the hose into a leak-proof unit.

Triplexd Pump Hose is guaranteed for one year's service.

METAL HOSE & TUBING CO. INCORPORATED 227 Tillary St. Brooklyn, N. Y.

The metal protects the rubber from gasoline or oil.

UNIVERSAL BATTERY CLIPS

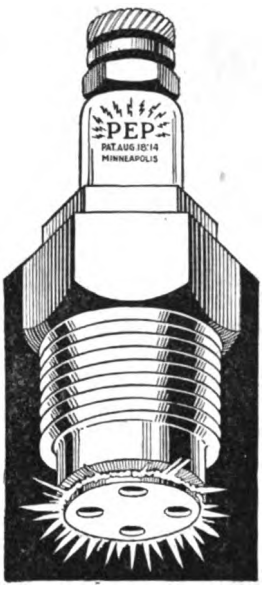


Offer a quick and ready means of connecting storage batteries for charging. Simply fit your connecting cords with these clips and snap them over the battery terminals.

No. 21-A—lead plated—1½" spread of jaws.
Sample mailed postpaid for 15c in stamps.

Single Lots, Each 20c. Lots of 10, Each 15c. Lots of 100, Each 12½c.

R. S. MUELLER & CO., 431 High Ave., Cleveland, O.



REPEAT ORDERS
PILE UP PROFITS

20 repeat orders from one dealer in 90 days.

The Pep Spark Plug will not short circuit from carbon or oil—it is self-cleaning. Greater sparking surface, larger, hotter sparks. Fires in stubborn motors—lame cylinders. Motor starts easier.

Retails for One Dollar

HARD TESTS MAKE PEP BOOSTERS.

Pep Plugs mean satisfied customers, repeat business, more profits—for you. Get them started—write for dealer information today.

"Your Money Back if You'll Take It"

PEP SPARK PLUG COMPANY,
227 South 6th Street, Minneapolis, Minnesota.

BUNTING BEARING BRONZE B.B.B. CO. No. 1

Same quality as our finished bronze bushings and bearings used by manufacturers the country over.
Your repair stock is not complete without it.

All leading jobbers Ask for catalog N

The Bunting Brass & Bronze Co.

727 SPENCER STREET
TOLEDO, OHIO.

CORED BARS

STOCK SIZES

PIECE NO.	Outside Diameter	Inside Diameter	Length	Approx Weight
A	1	½	12	2
B	1¼	½	12	3½
C	1½	¾	12	5
D	1¾	¾	12	7
E	2	1	12	8½
F	2¼	1¼	12	10
G	2½	1½	12	11½
H	2¾	1¾	12	12¾
I	3	2	12	13¾
J	3¼	2¼	12	15½
K	3½	2½	12	17
L	4	3	12	21
M	4¼	3¼	12	20

WELDERS!

There's economy in using the best fluxes you can find for particular welding jobs. Insure better and stronger welds, more easily and more rapidly made, by using

ANTI-BORAX COMPOUNDS

For Acetylene, Gas and Electric Welding

Anti-Borax WELDING FLUX

Best on the market for all grades of iron and steel. Weld at lower heat. Leave no scale. They cleanse the molten metal, assist fusion and improve the quality and appearance of your work. Guaranteed to give perfect satisfaction or your money refunded.

Write for sample and price list.

ANTI-BORAX COMPOUND CO.
FORT WAYNE, INDIANA

(When Writing to Advertisers, Please Mention the Accessory and Garage Journal.)

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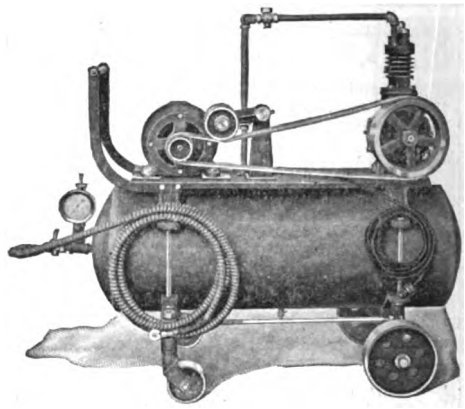
GARDNER AIR PUMPS

Result of 50 years manufacturing experience.

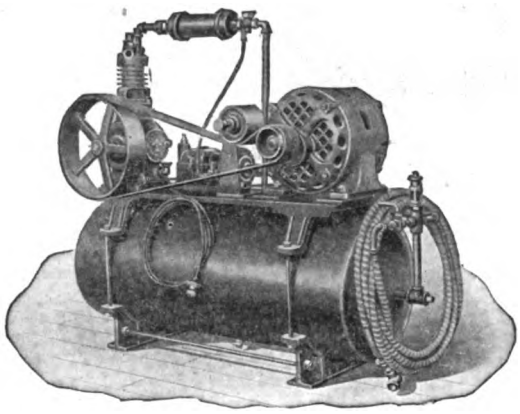
An inefficient air pump makes your air service expensive.
It hurts the quality of your service.
Makes a customer dissatisfied and hurts your business generally.

Install a GARDNER

It will pay for itself in a short time.
It is simple, rugged and efficient.
The fact that many filler stations supplying hundreds of car owners daily use the Gardner air pump is proof that experience had demonstrated it is economical.



GARDNER AIR WAGON



GARDNER AUTOMATIC UNIT

Made in Single and Two Stage Types

Variety of sizes *Prompt shipment*

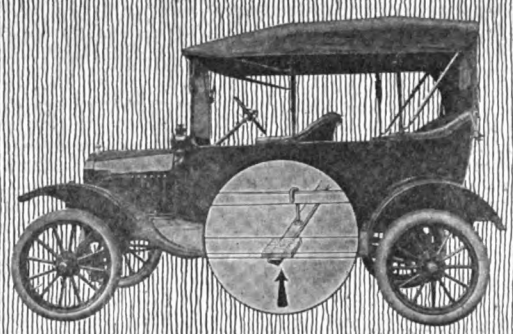
There is a Gardner Air Pump to meet the demands of every garage no matter how large or small.

Ask your jobber for prices.

THE GARDNER GOVERNOR COMPANY

138 Williamson Street, Quincy, Ill.

Garage Department



Dow Auto Body Brace

For Ford Cars

A real seller with the jobber and dealer. Worth its weight in gold to the Ford owner.
Quantity sales with large profits.
Write for quotations and our Agency.

Dow Wire and Iron Works, Incorporated

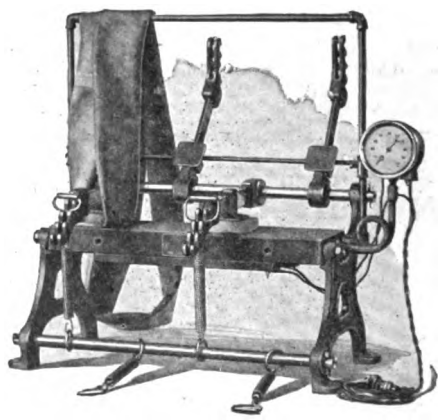
Louisville Kentucky

DOW LOUISVILLE

Heintz Automatic Electric-Steam Vulcanizer

Generates steam by electricity, eliminating all fire and flame. When the desired amount of steam is generated the current is automatically turned off, then on again when the pressure falls a pound or two, in this way maintaining a perfect uniform working temperature.

ALWAYS SURE OF A PERFECT CURE.



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Write us for descriptive data.

JAMES C. HEINTZ and COMPANY

2069 East 9th St., Cleveland, Ohio.

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TANKS

The tightest, safest, strongest tank it is possible to construct by any known method. Process originated by us over twenty-five years ago.

We also make a special portable emergency tank for filling tires. Throw it in your emergency car and take it with you.

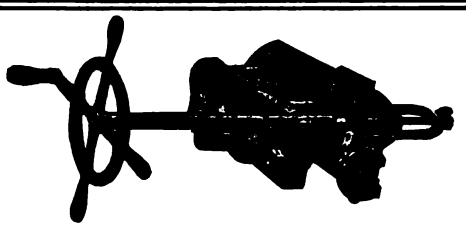
Gasoline and Oil Storage Tanks and Pumps

AIR-TIGHT STEEL TANK CO.

Main Office and Works

PITTSBURGH, PA.

Repairmen, Listen!



Patented May 19, 1914; Dec. 15, 1914; June 20, 1916; June 26,

The Heiser Improved Cylinder Reboring Tool for FORD MOTORS is the only reboring Tool in the world that is self-sharpening. It is the only tool that rebores between centers—this insures a finished cylinder, square with the crankshaft, round, straight, true and free from taper. It is adjustable and the only tool that will rebore different sizes without losing the adjustment. **The best mechanic in the world can't build reputation without proper TOOLS and EQUIPMENT. THE HEISER IMPROVED CYLINDER REBORING TOOL makes good shops out of poor ones and better shops out of good ones. Write today for full particulars.**

HEISER SPECIAL TOOL CO., 216 Rogers Bldg., Kingston, Mo.

"OHIO CARBON PRODUCTS"

"OHIO"

BRUSHES

GARAGEMEN TAKE NOTICE

Write for Our No. 6 Car List for Information on New Cars

FOR AUTOMOBILE

STARTING MOTORS AND LIGHTING GENERATORS

THE OHIO CARBON COMPANY

1900 FULTON PLACE, CLEVELAND, O.

Pat. 3-19-'18.

It Finds Ignition Troubles

Attached to Any Plug

Stops All Spark Plug Trouble

Universal and Marvel Spark Plug Intensifiers

The spark is **always visible.** It will make a plug fouled with grease or carbon or with broken porcelain fire perfectly.

When the magneto is not working, a wire short circuited or broken, or the battery out of order, the Intensifier will prove it at a glance. It can be adjusted to overcome almost any ignition weakness. It increases the voltage and spark and makes starting easy. Saves in oil and gas. Adds to power, eliminates carbon and preserves plugs.

Instantly attached to any screw terminal plug and will last as long as the car.

JOBBERS AND DEALERS—This is a wonder worker and sells at a glance. Sold on a money back guarantee. Liberal discounts and prompt deliveries. *Send for full information.*

UNIVERSAL MFG. and SALES COMPANY

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NAME	POSITION	SALARY
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	REPAIR MAN	$50 A WEEK
	CHAUFFEUR	$30 A WEEK

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Men like you are wanted for big-pay positions in the fascinating field of automobile engineering. We have made it easy for you to fit yourself for one of these positions. You don't have to go to school. You don't have to serve an apprenticeship. Fifteen automobile engineers and specialists have compiled a spare time reading course that will equip you to be an automobile expert without taking any time from your present work.

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6 Volumes Shipped Free

Now ready for you—an up-to-the-minute six-volume library on Automobile Engineering, covering the construction, care and repair of pleasure cars, motor trucks and motorcycles. Brimming over with advanced information on Lighting Systems, Garage Design and Equipment, Welding and other repair methods. Contains everything that a mechanic or an engineer or a motorcyclist or the owner or prospective owner of a motor car ought to know. Written in simple language that anybody can understand. Tastefully bound in American Morocco, flexible covers, gold stamped, 2,650 pages and 2,100 illustrations, tables and explanatory diagrams. A library that cost thousands of dollars to compile but that comes to you free for 7 days' examination.

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Please send me the 6-volume set, Automobile Engineering, for 7 days' examination, shipping charges collect. If I decide to buy I will send $2 within 7 days and the balance at $2 a month until the $19.80 has been paid. Then you send me a receipt showing that the $30.00 set of books and the $12 Consulting Membership are mine and fully paid for. If I think I can get along without the books after the seven days' trial I will return them at your expense.

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Address.....

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Don't Buy Junk Parts. Try Puritan Way—It Pays. We Do Not Wreck Cars.

NEW PARTS FOR ALL CARS.

Gears, Axle Shafts, Rear Axles, Transmission, Motor and Clutch Parts, Universal Joints, Piston Rings, Bearings, Fenders, Wheels, Rims, etc.

FOR DODGE CARS.

Piston Pins.....$0.50
Steering Knuckle Bolts..... .30
Steering Knuckle Bolt Bushings.. .30

ELECTRICAL REPAIRING.

To Any Make
of Starter, Generator, Ignition System, Coil, etc. **48 Hour Service.**

STARTING BATTERIES, New and Guaranteed.

6-volt, 80 ampere.....$25.00
12-volt, for Dodge and Maxwell.. 36.00

KHAKI TOPS.

Suitable for
MAXWELL, DODGE, CHEVROLET 490, BRISCOE. All New and Complete with Curtains and Dust Boots—While they last $25.00

LIGHTING GENERATORS.

6-volt Wagner.....$20.00
6-volt Menominee for Fords and other light cars..... 15.00

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6-volt Wagner for Saxons.....$20.00
6-volt Bijur with Bendix Drive.. 15.00
6-volt Detroit with Bendix Drive 15.00

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6-volt Detroit with Bendix.....$20.00
Delco 25.00

COILS.

Bosch Dual type "A".....$10.00
Connecticut 6-volt..... 8.00
Atwater Kent type C. C. 6-volt.. 5.50

REPLACEMENT COILS FOR ALL CARS. Write for Prices.

DISTRIBUTORS.

Connecticut 4-cyl.....$10.50
Atwater Kent type C. A., 4-cyl.. 10.50

FOR FORDS.

High Grade Electric Starting and Lighting System Complete Ready to Install $90.00
Speedster Bodies.....$60.00
Speedster Fenders—set of 4..... 10.00
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Honeycomb Radiators..... 20.50
Electric Lighting System, complete with Battery, Generator, Electric Side and Tail Lamps, etc. 17.50

RIMS AND WHEELS.

We have an enormous stock of all makes and sizes of demountable rims and wheels—have them right in stock and can make immediate shipment.

Write for Prices.

RADIATORS.

Brand new Honeycomb Radiators for all makes of cars; guaranteed to be right. No matter what car you may need a Radiator for, write for prices.

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New Springs for all cars. Write for prices.

ALL PARTS FOR ALL CARS.
DEALERS—Write for Special Prices.

Puritan Machine Co.
1209 Puritan Blvd. Detroit, Mich.
Eastern Branch
245 W. 55th Street, New York, N. Y.

Every Ford Owner Should Read "TRANSFORMING THE FORD." Tells how to cure smooth, positive brake action that no one can excel. A little "transforming" and your car will glide to a quiet, quick stop without the annoying, irritating clatter that you now experience. It will go into low or reverse without jumping or jerking and you can pick up speed with all the smoothness and ease of a high-priced car. All accomplished without additional expense and the result is a clear saving of 75 per cent. in one direction alone. "TRANSFORMING THE FORD" tells how it's done. And for your copy this very minute. IT IS FREE. **Cormack & Co., 500 Fifth Ave., New York City.**

SALESMEN to sell first class Air Pump to garages in New York and adjoining cities. Address Piston, Accessory & Garage Journal.

Send it to Detroit

MAGNETOS.

Bosch DU4 Variable spark.....$30.00
Bosch DU-4 set spark..... 25.00
Bosch D4 and Dr4..... 25.00
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Splitdorf 4 cyl. Dixie, high tension 25.00
Splitdorf 4 cyl., Models A, T, X and D..... 10.00
National 4 cyl. low tension..... 8.00
Briggs 4 cyl. low tension..... 8.00
Remy 4 cyl., type R L..... 15.00
Simms SU4 high tension..... 22.00

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Deaco 6 volt.....$12.00
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Splitdorf T S type.....$10.00
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Remy type LC and LE..... 8.00
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DETROIT MAGNETO REPAIRS ARE BETTER.

WE REPAIR any make magneto, coil, lighting generator or starter and give 24 hours service. Member Detroit Automobile Trade Association.

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192 Grand River Ave. Detroit, Mich.

CHEMIST AMAZING DISCOVERY

"MOTOROL"

20 to 40% more miles per gallon gas.
15 to 35% more power, faster ignition.
Positively non-injurious.
No carbon deposits, higher test of gas.
Sold with a money back guarantee.
Write today for our exclusive proposition.

AUTO PRODUCTS CO.

468 West 145th St., N. Y. Dept. K.

AUTO PARTS SAVE 50-90% FOR 400 CARS

POPE, PACKARDS, PIERCE, BUICK, STEVENS-DURYEA, KNOX, OVERLAND, ETC.

Motors,	$25.00 up	Presto Tanks,	$4.50 up
Magnetos,	4.00 up	New Spotlights,	2.00 up
Carburetors,	8.00 up	Generators,	10.00 up
Rear Axles,	15.00 up	Gears,	1.00 up
Front Axles,	5.00 up	Bearings,	1.00 up
Cylinders,	5.00 up	Radiators,	10.00 up

$12 Diamond Bumpers.....$5.50
Jobbers in Bankrupt Auto Supplies.

BRIGHTMAN AUTO EXCHANGE
321 Windsor Ave., Hartford, Conn.

—CLASSIFIED ADVERTISING PAYS—

Advertise the bargains that you have to offer.

8000 Buyers Read MOTOR TRUCK.

Does your Motor Lack Compression? Pump Oil? Develop a Piston Slap? Consume too much oil? Carbon frequently?

The cure is:—

Regrinding the cylinders and properly fitting new oversize pistons and piston rings.

When writing for prices state make and model of car. SPECIAL PRICE ON FORD CYLINDERS.

Sterling Engine Co.
337 So. Clinton St. Chicago, Ill.

Crankshaft GRINDING.
Try STERLING SERVICE.
Write us today.

BOUGHT AT AUCTION.

75 6-cylinder Motors, new, each	$100.00
50 4-cylinder type U Lycoming Motors, new.....	95.00
Ford Speedster Bodies, upholstered	40.00
51 Delivery Wagon Bodies, panel sides, each.....	40.00
Radiator Hose, all sizes, per foot	.20
Retreaded Tires, all sizes, assorted, each.....	8.50
Running Board Tire Pumps.....	1.75
All sizes Inner Tubes.....	1.60

AUTO AUCTION COMPANY.
726 W. Jackson Blvd., Chicago, Ill.

Scored Cylinder Repairing Outfits For Sale

Our process is a new Nickel and Silver soldering process; no heat is necessary; same Pistons and Rings can be used and experience is not necessary; information gladly given; complete outfit $15. A big money making proposition. Address **The Wizard Cylinder Repair Co., 53 People's Bank Bldg., Wilkes-Barre, Penn.**

AUTO PARTS.

50% to 90% Off List.
24 Hour Service. Unlimited Stock.
Pope-Hartford, Columbia, Reo, Overland and 200 other makes.

Motors,	$20.00 up	E. Presto Tanks,	$4.00
Magnetos,	$3.50 up	B. Presto Tanks,	$4.75
Cylinders,	$3.00 up	Bearings,	50c up
Springs,	$1.00 up	Rims,	$1.00 up

1000 Other PARTS Bargains.
If you want any part not listed here, **Write Us—We Have It.**

Conn. Auto Parts Co., Inc.
18-20 Morgan St., Hartford, Conn.

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TRADE OUTLET

TIRES AND TUBES

Demonstrating and Factory Repaired.

Economy, Quality, Price. All Standard Makes.

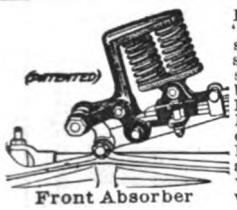
Size	Tires	Tubes
30x3	$5.00	$1.35
30x3½	6.00	1.45
32x3½	6.50	1.50
31x4	7.25	1.65
32x4	8.00	1.60
33x4	8.75	1.70
34x4	8.75	1.70

No Junk. Satisfaction Guaranteed.

Size	Tires	Tubes
36x4	$9.00	$1.75
34x4½	9.25	1.75
35x4½	9.50	1.80
36x4½	9.75	1.85
35x5	10.50	2.00
37x5	11.00	2.20

Write for Prices on Odd Sized Tires. TERMS: $1.00 deposit with each tire ordered, balance C. O. D. subject to inspection. Specify style of rim to avoid delay. Although used tires are not guaranteed for any definite number of miles, we **guarantee our tires** to give the best service in proportion to the prices paid, or reasonable adjustments are made.

LIBERTY TIRE CO., 2119 So. Michigan Ave., Dept. I, Chicago, Ill.



FOR FORD CARS. "Champion" Shock Absorbers. The perfect spring suspension. Absorbs all jar and rebound. Easy to attach. Fully guaranteed. Makes Fords ride as easy as any $5000 car. Ford dealers, agents and owners, this ad is worth $10 to you. Ask why. Write today.

Champion Shock Absorber Sales Co., Inc., Indianapolis, Ind., Mfs.

TIRES

JOB LOTS

Obsolete, Surplus Stocks and Factory Seconds

WRITE—CALL

BROADWAY TIRE JOBBERS

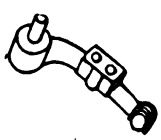
250 West 54th Street **New York**

Auto Mailing Lists

Send for our free complete Price List covering Auto Dealers, Owners, Ford Dealers, Truck Dealers and Owners, Garages, Auto Mfrs. and etc., any state.

A. F. WILLIAMS, Mgr. of List Dept. 168 W. Adams St., Chicago. Franklin 1182.

Superior Parts and Brushes



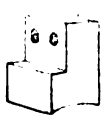
FOR ALL

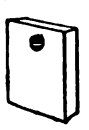
Ignition and Starting Lighting Systems

Used for Years by the Best Repair Shops Everywhere

"They Last Longer but Cost Less"

Write for Catalogue





Specialty Manufacturing Co.

637 Massachusetts Ave., Arlington, Mass.

JACKSON PARTS

ALL YEARS and MODELS

Prompt and Satisfactory Service Guaranteed.

Jackson Motor Service Co.

Brighton District, Boston, Mass.

Atwater-Kent Sales Co., of New England

883 BOYLSTON ST., BOSTON, MASS.

Official

SALES AND SERVICE

For New England.

Complete stock of parts always on hand.

Write for Price List.

—CLASSIFIED ADVERTISING PAYS—

Advertise the bargains that you have to offer.

3000 Buyers Read MOTOR TRUCK.

SALESMEN AND DEALERS—A million Ford owners are waiting for you to show them the only safety steering attachment; takes that jerk out of the Ford steering wheel and makes it steer like a Packard; pays for itself in tire saving; put it on your car and dozens want it; if you have small capital and can put canvassers out to sell the owners, selling yourself to the trade, you can make a small fortune. Write today. **Saxton Auto Accessory Co., Inc., 347 Fifth Ave., New York City.**

LOZIER OWNERS—Why buy counterfit repair parts. We have all **Original Parts.** Made from original Patterns. Order from headquarters.

LOZIER MOTOR CO.

Fort and 6th Sts., Detroit, Mich.

Service Stations—E. A. Cornely, Inc., 1445 Bush St., San Francisco, Cal. Lozier Motor Co. of New York, Inc., 47th St. and 11th Ave., New York City.

AUTO PARTS—At Your Own Prices. We can supply parts for nearly every make of car. 648 Packards, Interstate Fours, also Truck parts, GMC and other makes.

Write us for Parts. We have them.

STRANDWAY AUTO PARTS CO., 193-195 H. St., South Boston, Mass.

FOR SALE—A new Roof Type B, 16 Valve Cylinder Head with Miller Carburetor, at a bargain. The S. L. Crosby Co., Bangor, Me.

Classified Advertising

BRINGS BIG RETURNS

20 Cents a Line, Seven Words to Line.

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Security Auto Lock

Affords every protection to Ford car owners that a perfectly designed and extremely well made lock can give. While neat and attractive it is built very strong. In operation it is positive and the car can be left with a feeling of confidence that no one but the owner can use it.

It is the original loose wheel lock for Fords.

It is approved by underwriters.

It will reduce insurance premiums 15%.

When locked the car cannot be towed.

List Price, $6.00

It makes the Ford thief-proof

Anyone can easily install the Security in ten minutes. No drilling, filing, sawing or chiseling necessary. It is made of solid brass. Nickel plated finish.

TO DISTRIBUTORS

When this lock is shown no other will satisfy Ford car owners. It sells at sight. Our trade discounts are liberal and our proposition will interest any one that can sell high grade car protection at a moderate price. ***Write for details today.***

Security Auto Lock Co.

414 N. PAULINA ST., CHICAGO, ILL.

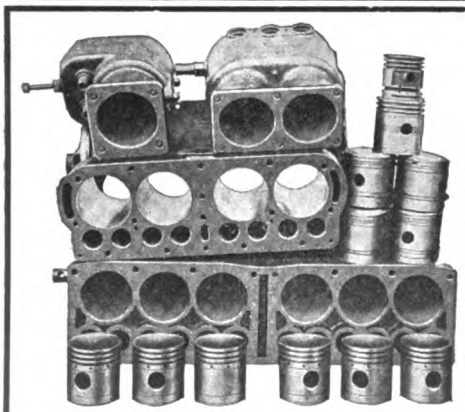
The MANLEY GARAGE AND SHOP EQUIPMENT

Every garageman and repairman should get our catalog. You'll find in it just the time and labor savers you need, and their prices will astonish you by their moderateness.

Send for your copy of this catalog today

MANLEY MFG. COMPANY

York, Pa.



Cylinder Grinding

Regrinding the cylinders, fitting new oversize pistons and rings on your Automobile, Truck, or Tractor, will restore the motor to its original efficiency. Write today for full particulars and standard price list.

Kemp Machine Works, 1213 So. Franklin St., Muncie, Ind.

For sale by accessory and hardware dealers or by MAIL POST-PAID 50c EACH

RAIN-SNO CLEAR VIEW WINDSHIELD CLOTH

PREVENTS ACCIDENTS

Just RUB IT OVER THE GLASS and RAIN or SNOW cannot collect to obstruct the vision.

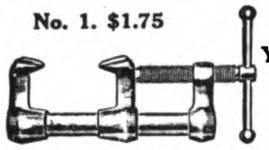
INSIST UPON THE "RED CLOTH"

Which is guaranteed to give continuous use for one year or money refunded. Made only by

SUFFOLK MANUFACTURING CO., INC., DEPT. D.
60 LONG WHARF BOSTON, MASS.

KEEP SPRINGS GREASED KNOWLSON SPRING SPREADERS

No. 1. $1.75



Both Guaranteed. Either or Both Delivered. Your Money Back if You Want It.

They Fit Any Spring. Easy to Operate. Both Drop Forged.

Nickel-plated and polished.

100% EASIER RIDING.

SQUEAKING STOPPED.

Spring Breakages Eliminated.

Use a Heavy Grease (not oil) for real results.

DON'T RUIN YOUR SPRINGS BY NEGLECTING THEM!

No. 3. $1.25

Gun metal yoke, screw and handle nickel.

At your Dealers, or Sent Direct.

SPRING LEAF LUBRICATOR CO., Dept. 4, Ann Arbor, Mich.

Your Prospective Customers

are listed in our Catalog of 99% guaranteed Mailing Lists. It also contains vital suggestions how to advertise and sell profitably by mail. Counts and prices given on 9000 different national Lists, covering all classes; for instance, Farmers, Noodle Mfrs., Hardware Dlrs., Zinc Mines, etc. *This valuable reference book free.* Write for it.

Send Them Sales Letters

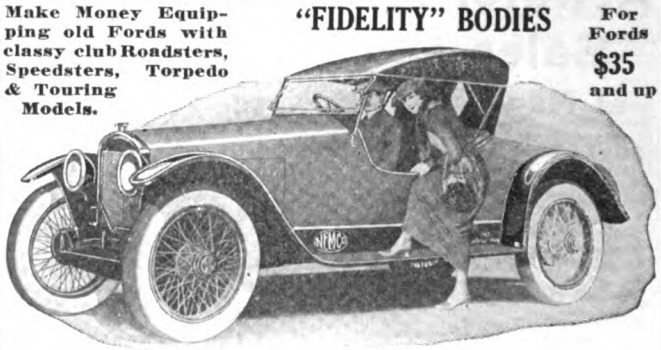
You can produce sales or inquiries with personal letters. Many concerns all over U. S. are profitably using Sales Letters we write. Send for *free* instructive booklet, *"Value of Sales Letters."*

ROSS-GOULD Mailing Lists St. Louis

Make Money Equipping old Fords with classy club Roadsters, Speedsters, Torpedo & Touring Models.

"FIDELITY" BODIES

For Fords $35 and up



Send For "The Little Salesman" Our Dealers' Wholesale Net Price List of AUTOMOBILE ACCESSORIES.

GLAND MILLS CO. 1027-1033 W. Van Buren St., Chicago.

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Don't You Want This Money?

If you can repair and adjust Electrical Equipment, you will get the cream of the garage business and make more money. With the increasing demand for service of this sort, you must equip to handle the business, or lose it to your more enterprising competitor.

Weston

Model 280

GARAGE TESTING INSTRUMENT

is your one great and urgent necessity to enable you to locate electrical troubles quickly and apply the proper treatment to remedy them. Its possession will place you a long way ahead of your competitor not so equipped.

This instrument is extremely accurate, durable and serviceable. It is the most practical electrical equipment you can install.

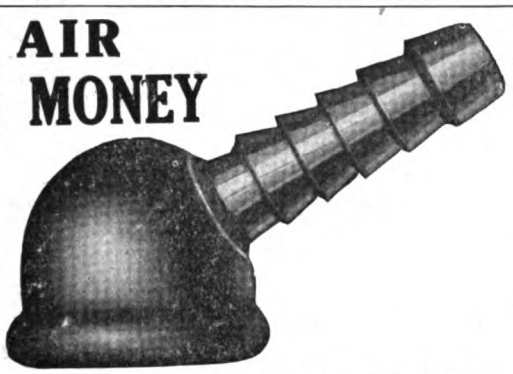
The Weston Company is pre-eminent throughout the world in the production of highest grade Electrical Precision Instruments.

Prompt Shipments from Stock—Order Now!

WESTON ELECTRICAL INSTRUMENT CO., 103 Weston Ave., Newark, N. J.

Call on us at the New York Show, Grand Central Palace, Space D-200

FREE AIR COSTS MONEY



when the customers for whose convenience you provide an air station forget to turn off the flow after they have filled their tires.

Guard against this waste by attaching a

Schrader Universal Inflating Valve

to your air hose.

Thanks to this appliance your bottled air locks itself into the tank the minute it is taken off the tire-valve. You turn on the air by pressing the nozzle of the inflating valve against the tire-valve and you turn it off by removing the device from the tire-valve.

Made to fit any diameter of hose from ¼ in. to ⅝ in.

PRICE $1.50 in U. S. A.

Manufactured by **A. SCHRADER'S SON, Inc.**

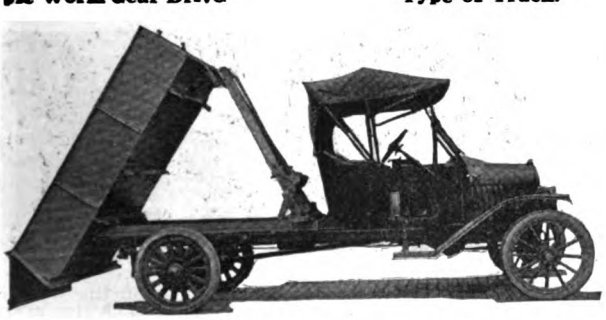
800 Atlantic Avenue, Brooklyn, N. Y.

Schrader products were awarded a Grand Prize and two Gold Medals at the Panama Pacific International Exposition. "There's a Reason."

THE PEERLESS HAND HOIST

Single Cable Quadruple Worm Gear Drive.

For Any Make or Type of Truck.



A wonder in efficiency and speed. It will fit any chassis and body. Weighs but 200 pounds. Simple, fool proof, wholly dependable and will last for years in the hardest service.

Any one that can drive a truck can hoist the heaviest load to 30 or 50 degrees in the longest body in less than two minutes. The smaller the body and load the quicker the action.

But two gears are used, quadruple worm and gear (both machine cut) and housed to protect from dirt and dust. The single cable makes an even pull. Compact and can be installed without drilling holes in chassis frame. The body hitch is also furnished.

We specialize in building all-steel bodies for any need.

Write for complete information.

THE AUGLAIZE MOTOR CAR CO.

NEW BREMEN **OHIO**

OLDFIELD TIRES

"The Most Trustworthy TIRES Built"

THE OLDFIELD TIRE COMPANY

BARNEY OLDFIELD, President

CLEVELAND, - - OHIO

Keeping Pace With The Automobile Industry

BROWN LINES EZ ON THE EYES

MAKE BOOKKEEPING A PLEASURE

ORIGINATED AND DESIGNED BY

Edw. A. Brown

1406 CITY HALL SQUARE BLDG. CHICAGO

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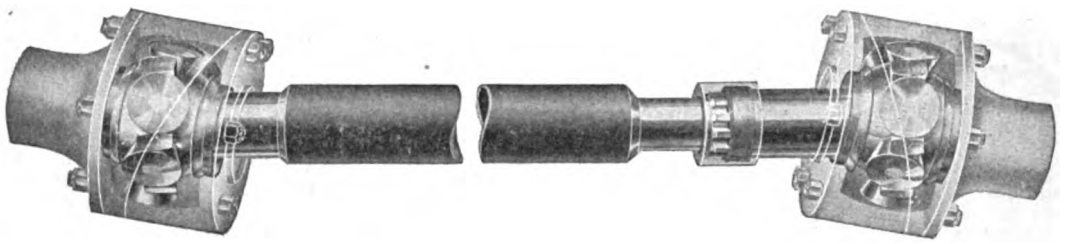
Service Stations Wanted!



R-S Manufacturing Company, makers of the *"REAM"* Universal Joints and Propeller Shafts desire to establish service stations and supply depots in every large city in the United States.

Any garage or repair shop that has or will install a small lathe and can furnish strictly first class references will be considered.

Must be able to finance at least one month's supplies. An excellent opportunity for the right parties. We have a wonderful proposition in the "REAM" universal joint. Our factory facilities are such that we can make prompt deliveries. We give our representatives every possible co-operation.

We make no charge for territory rights and absolutely protect established representatives. If you are interested in a live and high grade proposition write promptly.

The *"REAM"* Universal Joint has the Following Features:

Ball and socket and full roller bearing. No backlash. Does not develop velocity variation. No damage through the agency of end-thrust. Spline end extends through the ball, providing equal pressure on inner and outer end of ball. All traces of whip are entirely removed. No loss of power to deflect. Perfect relative alignment under all conditions. Positively does not waste lubrication. Extraordinary long life. Made entirely from forgings and bar stock. Unequaled and unqualified service.

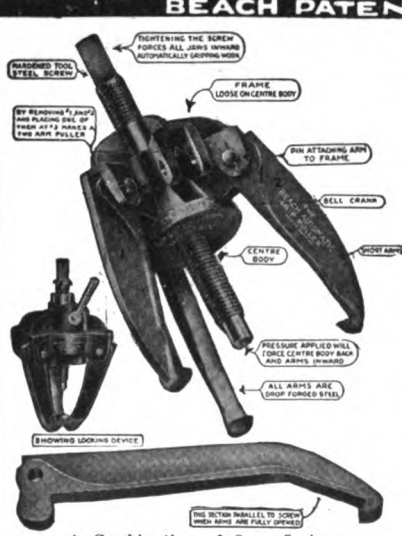
R-S Manufacturing Company

General Offices,
Kansas City, Mo.

Plant and Works,
Dayton, Ohio

GREB AUTOMATIC GRIP PULLER

BEACH PATENT



A Combination of 2 or 3 Arms.

Gear Pulling Made Easy

The GREB AUTOMATIC GRIP AND GEAR PULLER gets a job done quick and without danger or damage. This means larger profits and quicker work.

Scientifically designed, well made, quick acting, strong, simple and trouble-proof. Adjusts itself instantly to work—locks in any desired position.

We also make the GREB RIM TOOL and GREB AUTO LOCK.

TWO SETS OF ARMS
Senior Size—Capacity 1" to 10" and 1" to 18"
Junior Size— " 1" to 4" and 1" to 7"

10 DAYS TRIAL

If your jobber does not have them, we will send you one. Try it ten days. If not satisfactory return it to us and we will refund your money.

THE GREB CO.

202 State Street, Boston, Mass.

You will appreciate McCulloch Products

The name "McCulloch" on automobile ignition parts signifies products made by engineers in a machine and tool shop. Once used always used because they are dependable.

Replaces the old style roller. It slides instead of rolling, eliminating the extraordinary wear on the rotor pin.

List 60c.

Will grind the worn out timers back to usefulness. Driven by hand or power. A necessity in any private or public garage.

List $21.

And the McCulloch Timer

A well made, accurate and simple timing device made right and perfect in every detail. The arrow points to the real feature.

Territory is open for Contact and Grinder. Dealers and Jobbers write for prospectus.

McCULLOCH MANUFACTURING CO.,
Specialists in Ford Ignition.
216 High Street, Boston, Mass.

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Labor-Savers for Ford Service Stations

Machines and tools which will save time and increase profits wherever Fords are repaired:

Bearing Burning-in Machines
Engine and Axle Stands
Bearing Boring Machines and Re-Babbitting Jigs
Cylinder Reboring Machines for Fords and Fordsons
Power Grinders
Bench Motor Clamps
Rear Axle Pinion Gear Presses
Pinion Gear Pullers
Valve Port Renewing Tools
Speed and L Wrenches
Tow Bars
Combination Electric Drills and Valve Grinders
Visible Measuring Gasoline Pumps,
and many other special tools and machines
Engine Testers
Emergency Wheel Clamps
Rear Axle Sleeve Pullers
Transmission Reaming Machines

Write for Catalogue 8, just issued.

The FAIRBANKS Company

Administrative Offices—New York.
Branch Houses in Principal Cities.

The FAIRBANKS Company O.K.

"See our exhibit at the New York Show, Grand Central Palace, Jan. 3rd to 10th, and at the Chicago Automobile Show, Coliseum and First Regiment Armory—Jan. 24th to 31st."

JEFFERSON AUTOMOBILE IGNITION COILS

Small Stock For Fitting All Cars

Because of flexible caps, terminals and brackets these coils are adapted to all ignition systems. You are required to carry only a very small stock. Consequently, your investment is unusually small and at the same time you can fit all makes of cars.

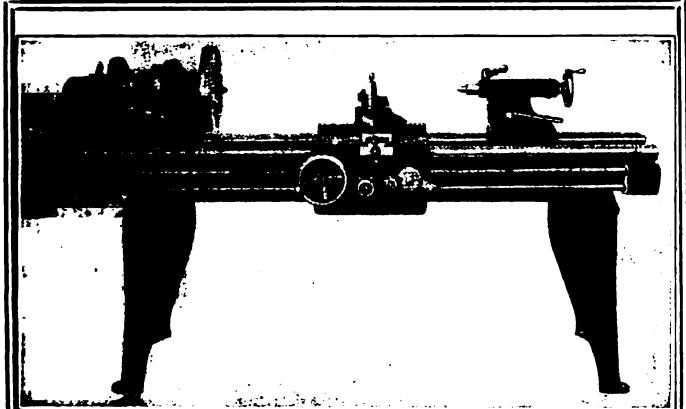
JEFFERSON

Coils are famous for their long life, dependability and uniformly high standard. Order your stock at once.

Send for Coil List

showing list of all cars that are Coil-Equipped and the types of Jefferson Coils and Brackets to be used as Replacements.

Jefferson Electric Mfg. Co.
429 S. Green Street
Chicago, Ill.



UNION LATHES

MANUFACTURED BY

UNION LATHE WORKS, York, Pa., U. S. A.

This lathe is especially designed for garage and machine shop work. It is well constructed and can be obtained at a moderate price.

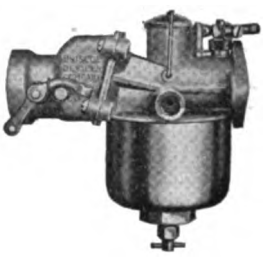
Obtainable in various sizes with equipment of large and small face plate, follow rest, tool post, center, double friction counter shaft (see cut) rod and screw feed and all necessary change gears, wrenches, etc.

Write for complete descriptive literature and prices.

THE UNION LATHE WORKS
York, Pa., U. S. A.

SCOE CARBURETOR

MAKES A FORD RUN LIKE A SIX



SAVES ITS COST IN 60 DAYS

Any dealer who puts a Scoe Carburetor on one Ford, opens for himself a neat and profitable line of business.

Simply because this carburetor enables the Ford engine to perform as nothing else can or will.

Write us to send you the Scoe on our 30 Day Trial Plan. Pay half the net—$4.25—on receipt of the carburetor. Put it on a customer's machine and check up its performance for 30 days.

Then pay the balance, or ask a refund, and we will make it without a question.

That surely is a fair offer, and hundreds of dealers have proved it so.

BRISCOE DEVICES CO.
PONTIAC, MICH.

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NEW YORK
AUTOMOBILE REPLACEMENT
IGNITION COILS

Will Be Shown At

NEW YORK AUTOMOBILE SHOW

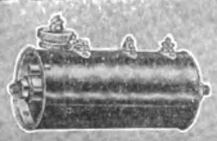
SPACE — C-63 — THIRD FLOOR

We are going to meet our many Jobbing and Dealer friends that have realized a handsome profit and built up a large business of satisfied repeating customers with this splendid line—BUT—we now operate two factories and want ***YOU*** to share in the business of least sales resistance, fewer complaints and larger returns.

Will be at the CHICAGO COLISEUM ANNEX—SPACE 105

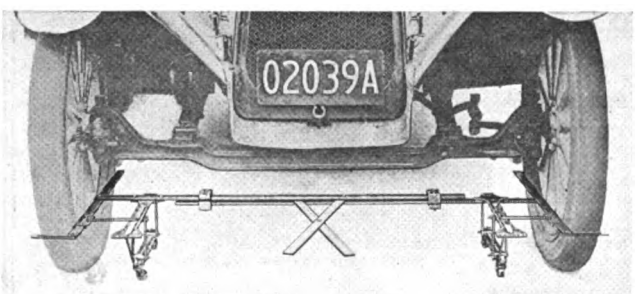
NEW YORK COIL COMPANY

338-340 Pearl Street **New York, N.Y.**



Duby's Wheel Gage

A positive instrument which tells instantly if wheels are out of line. Can be used on either front or rear wheels and adjusts itself instantly to any car regardless of the size of wheels or tires. The Pointers register on the dials in plain view of the operator.

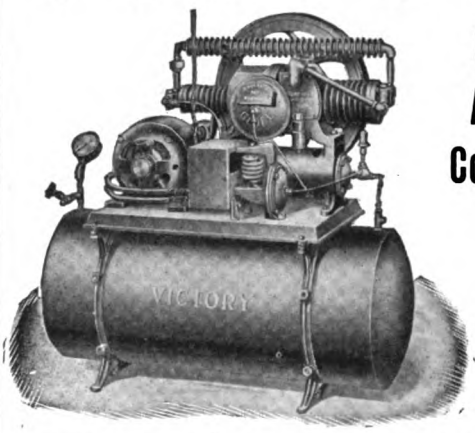


With this device ten cars can be tested by one man in less time than two men could test one car by the old method. Price to garages and service stations $15.00. Special discount to jobbers.

J. F. DUBY

11 River St., Mattapan, Mass.

V I C T O R Y



Complete Automatic Compressor Unit

A C E OF ACES

GLOBE TYPE B—Original Two-Stage Garage Compressor. Saves power, time and money.

WONDERFUL new system of AUTOMATIC LUBRICATION insures Oil-Free Air, provides abundant and continuous lubrication and wastes NOT AN OUNCE of lubricant.

Automatic Pressure Unloader protects belts, fuses and motors.

15 Sizes and Styles of LAST WORD Equipments from which to select.

Desk C.

Globe Manufacturing Co., Battle Creek, Mich., U.S.A.

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How about the Part of the Car that is out of Grease

Dixon's Lubricant clings to gear teeth when they are not in motion as well as when they are moving.

Ordinary grease slides off the gears when the car is standing, leaving the metal surfaces unprotected when the car starts.

DIXON'S GRAPHITE Transmission and Differential LUBRICANT

protects your gears all the time.

Put Dixon's Lubricant in your customers' transmissions and differentials. They will feel the difference when driving and gear shifting.

Write for Booklet No. 49-G and prices.

Made in Jersey City, N. J., by the

Joseph Dixon Crucible Company

D X N TRADE MARK Established 1827. D X N TRADE MARK

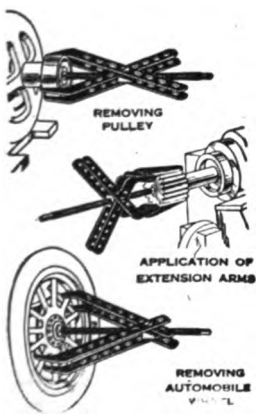
SHALER 5 MINUTE VULCANIZER

The Easy Way to Mend Tubes

The Shaler makes perfect tube repairs in 5 minutes. Works automatically—without fail. Burns non-flaming chemical fuel. Makes a permanent "feather-edge" repair, stronger than any "stuck on" patch. Cannot injure tubes. Fits tool box. Saves tubes—saves repair bills.

Complete Outfit $1.50—at All Dealers. Price slightly higher west of the Rockies and in Canada. The outfit includes—the vulcanizer, 12 patch and heat units, 6 round for punctures and 6 oblong for cuts. Extra patch and heat units—round or oblong, 75 cents a dozen.

C. A. SHALER COMPANY, 260 Fourth Street, Waupun, Wisconsin



"LITTLE GIANT" GEAR AND WHEEL PULLER

Pulls any gear, wheel or pulley anywhere in a jiffy. Built on the only correct principle. Produces maximum efficiency with minimum effort. Can't twist off or let go. THE HARDER THE PULL—THE TIGHTER THE GRIP. Reduces operating cost and increases the earning capacity of any Repair Shop. Made from best grade drop forge steel. Almost unbreakable. Adjustable up to 18 inches diameter. Satisfaction guaranteed or money refunded. Order or write for details today. Price complete with extension arms, $11.00.

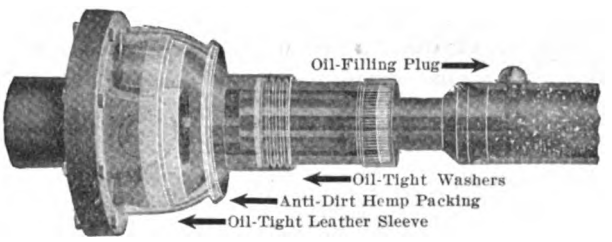
Liberal Discounts to Dealers.

Premier Electric Company

3811 Ravenswood Ave. Chicago, U. S. A.

New -- Practicable and Proven

A Positive Leakproof Oil Lubricated Universal Joint



"M&E" Universal Joint

(Pat. and Pat. Pend.)

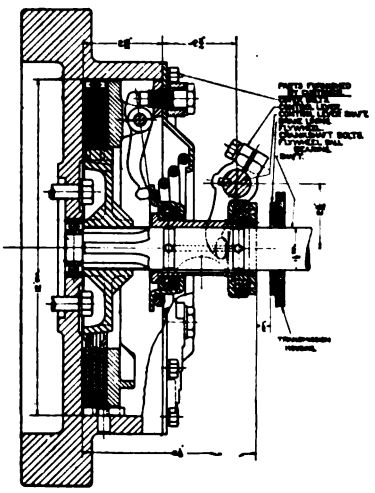
This Joint embodies the best points devised by Automotive Engineers for the War—U. S. and Allied program.

Severe variable speed tests in all temperatures, up to 15° ± were made without change or loss of oil, or injury to the leather sleeve.

We will continue to make our present grease lubricated Joint, but by inserting a special sleeve, the Joint can be made to retain oil.

"M&E" Dry Disc Clutch

(Pat. Pend.)



Model 12

These Models 10 and 12 are suitable for any open flywheel or Unit Power Plant construction and will fit all standard S. A. E. Bell Housings.

The friction surfaces are very large. The adjustment is simple and easily understood.

Will wear longer than others and the price is reasonable.

MERCHANT & EVANS Co

NEW YORK PHILADELPHIA WHEELING
BALTIMORE CHICAGO
ATLANTA ST. LOUIS
CLEVELAND KANSAS CITY

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Easy Starting For Fords

You don't have to wear your arm out cranking your Ford in cold weather if it is equipped with a GARDNER THERMOSTAT CARBURETOR.

Just a few turns and you are started. No coughing and spitting for a half hour as with some carburetors because the temperature of the motor regulates the THERMOSTAT and automatically gives at all temperatures the exact amount of gasoline for smoothest running.

Write in today for literature telling how you can get the best operation from your Ford this winter.

We have some excellent territory open for dealers.

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Fawsco Steel Socket Wrenches,

American Standard Ignition Cables,

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Eureka Valve Grinding Compound.

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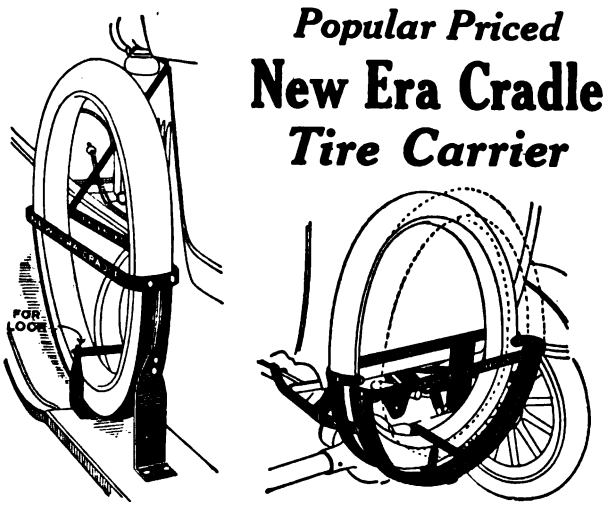

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THE FIBRE WELD.

Frame: Vulcanized fibre, non-conductor of heat and electricity, non-inflammable and infusible not affected by moisture, leather center, ventilated side pieces, adjustable elastic head band. We have demonstrated conclusively that with these lenses we vanquish the so-called "fatigue-weariness" and headaches caused by Ultra Violet and Infra Red rays. Circulars and prices at request. Price each, prepaid, $3 pr.

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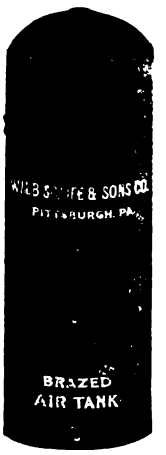

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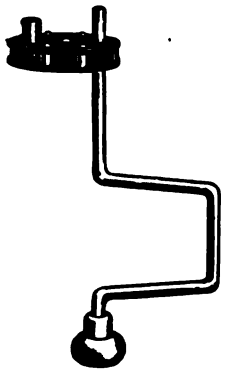

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It will add to mileage and greatly increase the power.

With a low throttle the engine will run strong and smoothly.

It will make a high grade efficient carburetor out of an old one.

In a few weeks it will save more in gas than what it costs.

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Ready for Immediate Installation
A Ground Piston Complete With Pins, Rings, and Bushings

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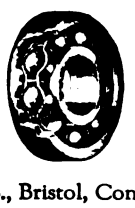

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Soldering Iron, Brazing Torch and Light

Saves time and trouble—costs less than three tools it replaces. Requires no generating.

Attach to Presto-Lite or Searchlight tank and have hot point in a minute or torch heat over 3650 degrees Fahrenheit. Equipped with three tips for all classes of soldering work and 6 foot hose. Hose union fits three popular size tanks.

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TEN Reasons Why The A1 Battery Charging Clip is Superior

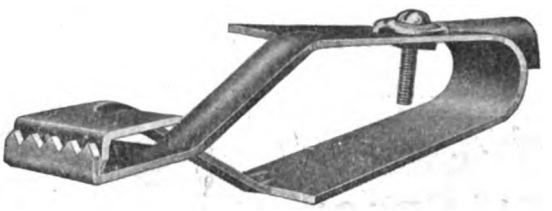
1—Made of the highest grade acid resisting BRONZE.

2—LEAD COATED, adding additional protection from the acid.

3—The only 1 piece clip—gives absolutely conductivity to both jaws.

4—No springs to break and allow clip to fall over and short circuit battery or open charging circuit.

5—The pointed teeth insure positive connection.



6—Jaws of clip open 1½ inches.

7—The long legs allow clip to be used on batteries where connections are close together without danger of shorting.

8—Has a perfect terminal for wire connection which also protects wire from corrosion.

9—The long screw for wire connection acts as a stop, thus limiting the amount of pressure on the hinge of the clip and insures lasting tension.

10—Will outlast other clips several times.

PRICES: Less than 10, 25c. 10 to 100, 23c. 100 or more, 21c.

Send for free sample and be convinced. Sold by all leading jobbers.

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Just Show Him The Famous "Lead Pencil" Test

Instantly, he will see that TWIN FIRES will banish his spark plug troubles. Merely take any lead pencil and convincingly demonstrate to him that TWIN FIRES have two independent sparks — vastly different and superior to any other plug.

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With the handy TWIN FIRE demonstration outfit, you can easily prove how this plug overcomes oil troubles—decreases carbon deposits, and increases power. When the troubled motorist sees the advantages of the TWIN FIRE, he wants you to sell him a set.

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Twin Fire Spark Plug Co.
722 Grand River Avenue,
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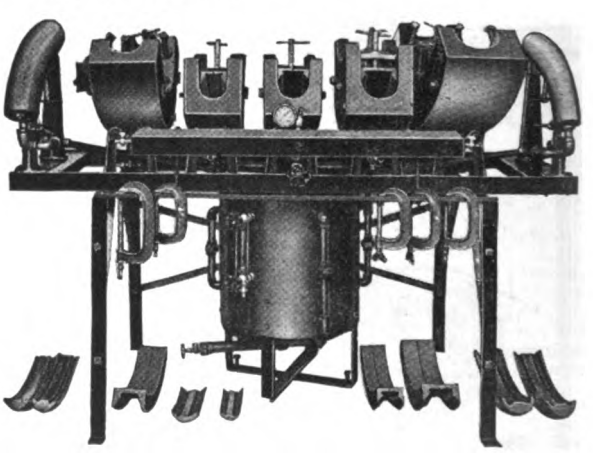
VANDERPOOL VULCANIZER (5 Cavity) has capacity of $100 worth of work a day. We are the pioneers in the manufacture of the Dry Cure Vulcanizer.

With the VANDERPOOL VULCANIZER no experience is necessary. We give you free instructions. Write today for FREE TIRE REPAIRING MANUAL and full particulars. If others can be successful, so can you be. Write today.



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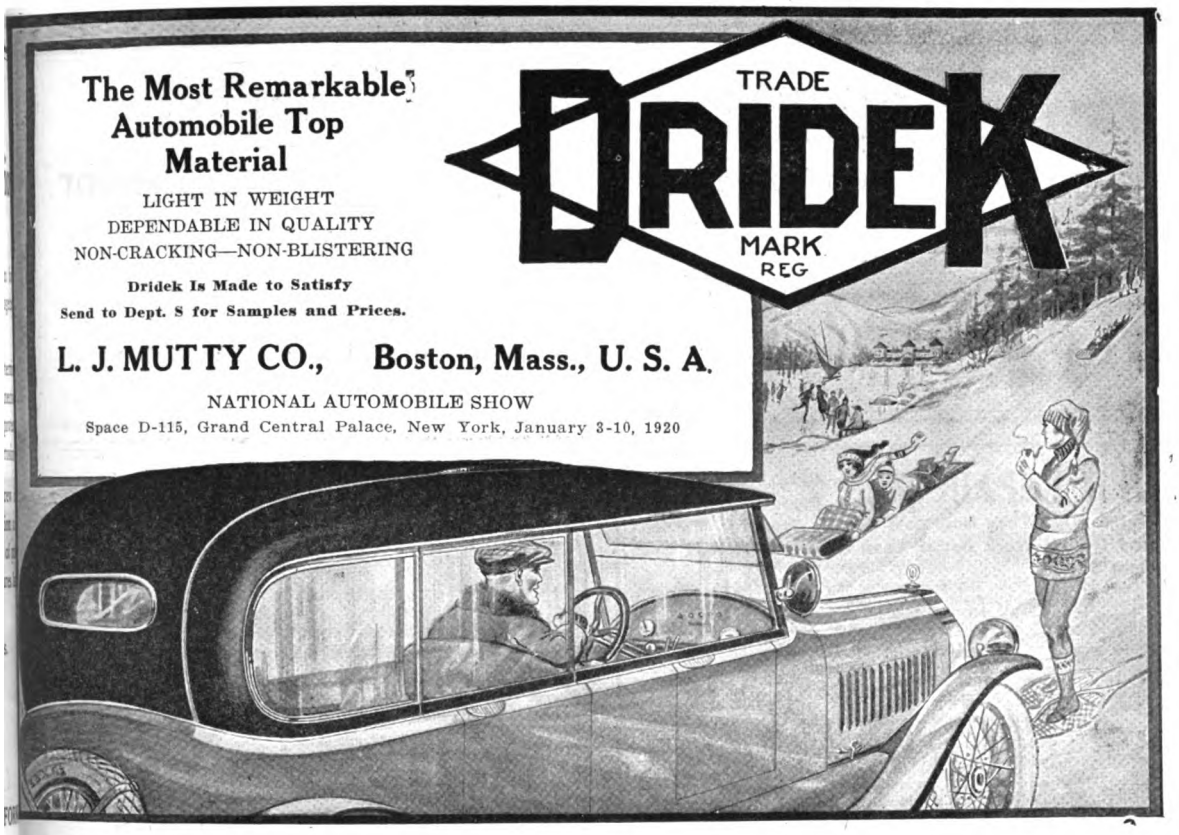

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NON-CRACKING—NON-BLISTERING

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NATIONAL AUTOMOBILE SHOW
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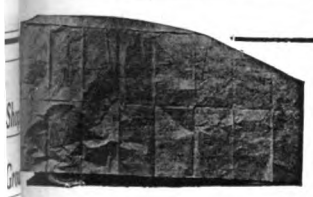

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"Wrap Up" Your Cars When Not in Use

When you store your car for a season, don't let its polish be dimmed by dust, and its metal tarnished before it gets out of the garage. Cover it at once with a KENNEDY AUTO STORAGE COVER, and it will remain as clean and bright as washing makes it, until the cover is removed, next day or next season.

Protects the limousine all summer, or touring cars through the entire winter season. No cost but first cost. Never wear out if care is taken in handling. Insist that your garageman use them.

Popular for Use and Sale in Every Garage

Garagemen—Charge extra for storing with KENNEDY AUTO STORAGE COVERS. Service your patrons are glad to pay for. Many will demand it.

Made of strong, heavy paper, reinforced to prevent tearing. Protects a car against dirt, dust and moisture. Prevents polished portions from tarnishing and keeps finish from checking in cold weather, and also prolongs the life of the tires by excluding the light. Furnished for 5 and 7 passenger gasoline cars, electrics and Ford cars. Good profits in retail sales and service use. KENNEDY COVERS can be sold at a season when trade on other accessories is usually light.

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Use With Spray if Desired

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ECONOMY AND SIMPLE SERVICE.

The Van Briggle Carburetors with the Airplane Principle are well and favorably known throughout the United States. They are saving gasoline and giving steady, efficient service for many enthusiastic motorists.
Special models, packed ready to install, for the Dodge, $18.00; for the Maxwell, $15.00, and Ford, $10.00. Cars or trucks.

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ROAD COMFORT—LOWER UPKEEP.

Van Briggle Shock Absorbers are in demand.
The Ford owner has found that Van Briggles really save his car frame and motor, as well as adding much pleasure and comfort to driving.
For Ford touring, roadster, sedan, coupe and light delivery, $18.00 a set. Installed in less than an hour. Do not crimp the leaves of the car spring.

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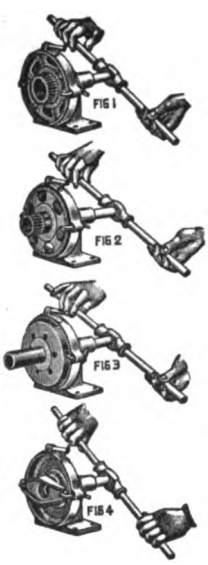
FORD REPAIR MEN
Cut Your Labor Costs to Just One-Third What They Now Cost You by Ordinary Methods and Do the Work Better Than the Best Job You Ever Sent Out.



This great saving of time means a big additional profit, but is now a loss. There is BIG MONEY in Ford repairing if you have efficient tools that save time and eliminate guesswork and experts. The two outfits listed here will save their cost on a very few jobs and enable you to render the quickest possible service to your trade.

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Main Bearing and Connecting Rod Aligning Reamer

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Price $28.

I Make the BEST HONEYCOMB RADIATOR at any price.

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OUR
EKERN'S PORTABLE WORK BENCH AND ENGINE STAND
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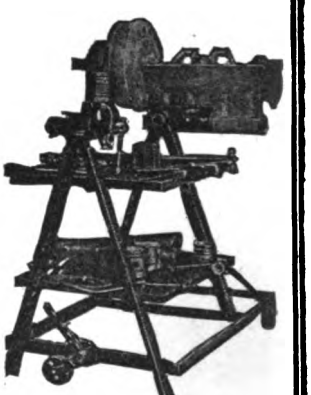
Are all specially designed for Ford Motors.

The Ford engine block is secured to either one of the above devices, by two cap screws that hold the water inlet connection. The engine can then be held in any desired position.

By using an Ekern Axle Attachment with either of the above devices, you can convert them into axle repairing stands for any make of automobile axle.

We have other devices. Send for catalog.



List Prices	Without Axle Attachment	With Axle Attachment
Shop Bench Motor Support	$10.00	$16.00
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The car of the Year **A New England Product**

Honest through and through

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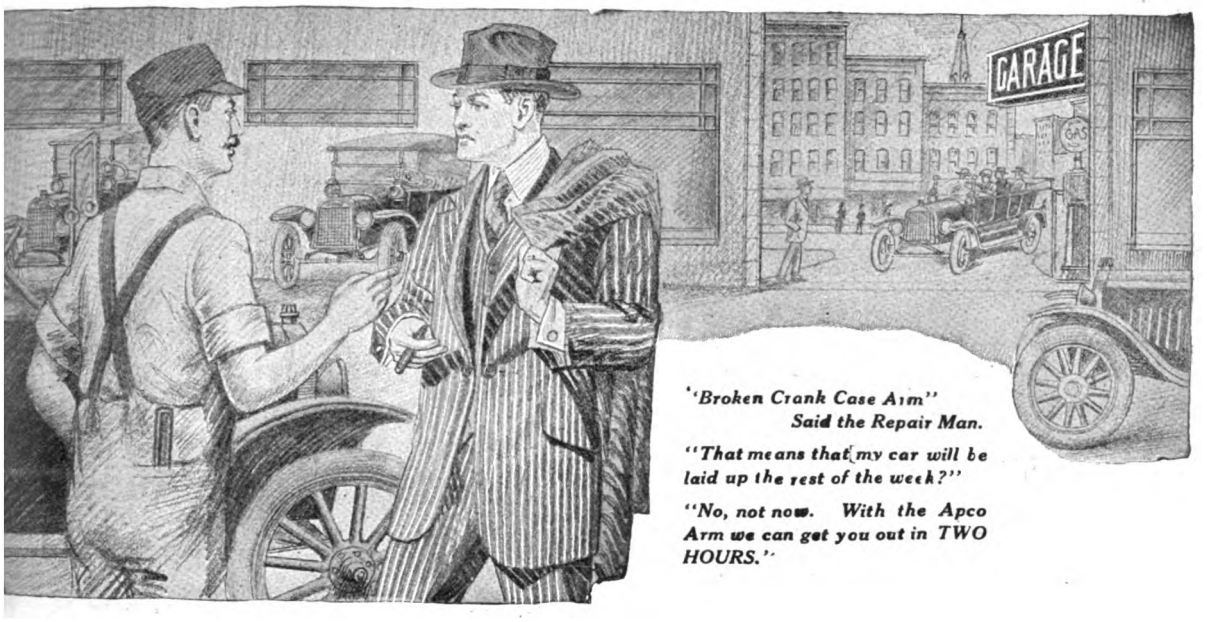


"Broken Crank Case Arm"
Said the Repair Man.

"That means that my car will be laid up the rest of the week?"

"No, not now. With the Apco Arm we can get you out in TWO HOURS."

Dealers—Double Your Money

by selling the fastest selling repair part for Ford cars on the market.

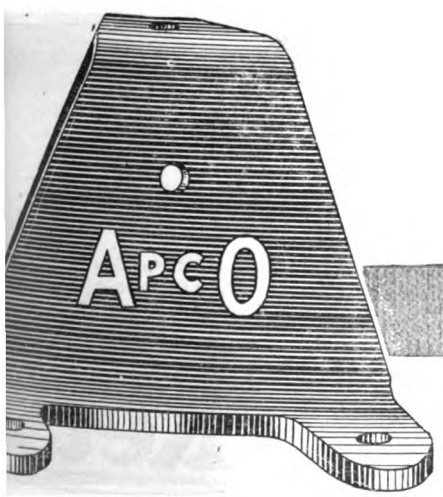
ALL-WAYS TRADE APCO MARK RIGHT

Apco Steel Crank Case Arm

gives your customers a twenty dollar, twenty hour repair job for a dollar and a half plus an hours labor.

Cast Iron Axles

are not used and for that same reason cast arms should be avoided. The Apco Arm is made from quarter inch Boiler Plate Steel, accurately drilled and finished in black enamel.



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Manufacturers Choice

The original copper-asbestos gaskets on most motors are McCord.

They are designed according to the manufacturers' blue prints and meet their rigid inspection standards.

Jobbers everywhere carry complete assortments for quick delivery. Furnished in boxes and on boards.

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McCord COPPER ASBESTOS Gaskets

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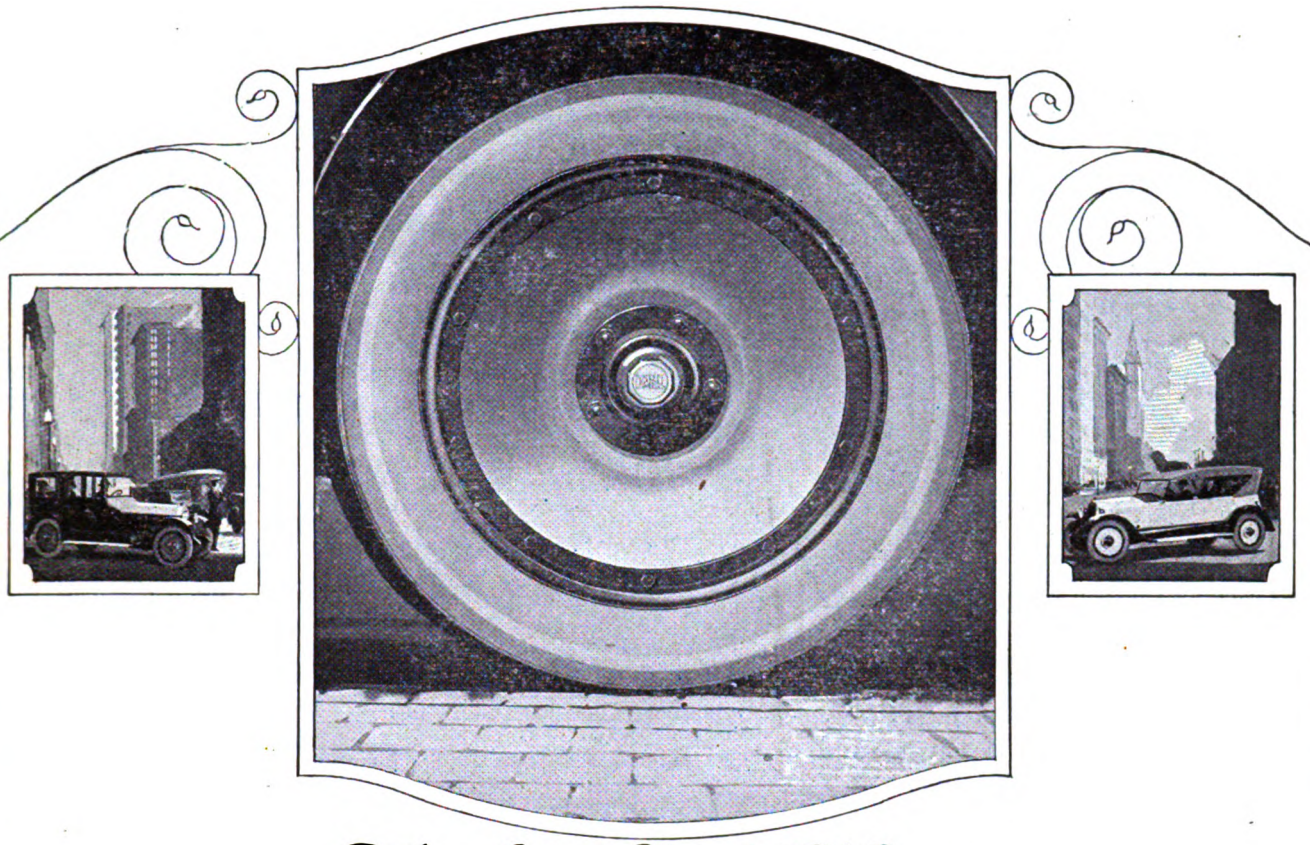

Facts You Should Know About the Wheels of Your Motor Car

In the pages of this publication there will appear a series of talks, fair, impartial discussions of this subject —what you should know and reasonably demand of the Wheels of Your Motor Car.

Much of the extraordinary popularity and success of Disteel Wheels we attribute to the motoring public's increasing interest in and knowledge of motor car wheels as contributing to the security, economy and luxury of motoring.

However, we find from our observations that many motor car owners are still inclined to take the wheels of their cars for granted. Frequently an owner who has almost an engineer's knowledge of the motor, the spring suspension, the electrical equipment, the body design of his car knows little or nothing of the vastly important part the wheel plays in the economy, ease and comfort of his motoring.

In this Series of Wheel Talks we purpose to tell motor car owners some plain, simple truths about wheels. We shall aim only to point out sound, scientific principles; to demonstrate what progress has been made in the design and engineering of wheel equipment and to give the intelligent motorist an understanding of what he can and should reasonably demand of the wheels of his motor car.

When this Series of Wheel Talks has been completed, we shall be entirely content to rely upon the judgment of the American motorist to decide for himself what wheel is the most scientifically designed, scientifically engineered and scientifically constructed.

The first of this Series of Wheel Talks will appear in this publication of February.

Detroit Pressed Steel Company, Detroit, U. S. A.

Disteel Wheel Plant, Cabot Avenue
New York: 1846 Broadway at 61st St.
Boston: 925 Boylston Street

Automobile Frame Plant, Mt. Elliott Avenue
Chicago: 732 Michigan Ave.
San Francisco: 326 Rialto Building

DISTEEL WHEELS

The Wheels That Complete The Car

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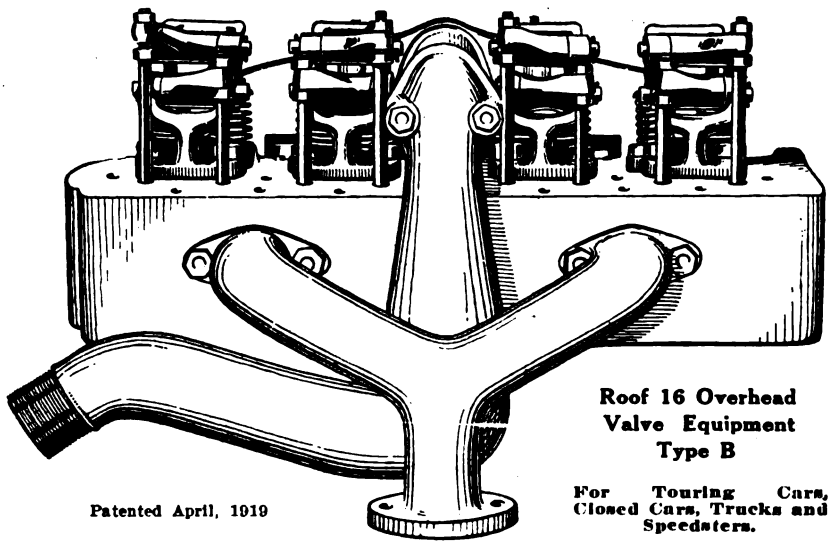
POWER and SPEED ROOF 16 OVERHEAD VALVE EQUIPMENT for FORD MOTORS



Patented April, 1919

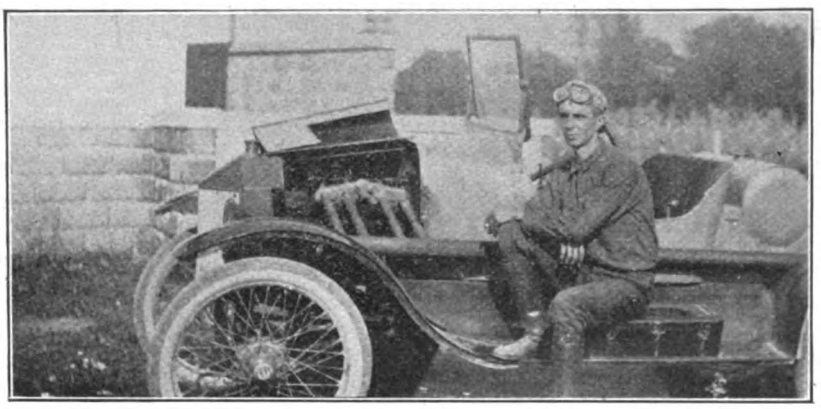
Roof 16 Overhead Valve Equipment Type B

For Touring Cars, Closed Cars, Trucks and Speedsters.

The Most Remarkable Power Device, Even in This Inventive Age

Hill climbing for touring cars—pulling power through sand and mud—doubles the hauling capacity of converted Ford truck-speed for mile and half-mile tracks to rival the fastest cars built. Ford racing cars with our Cylinder Head Equipment and special racing parts have attained speeds from 80 to 100 miles per hour. Hill climbing and pulling power for touring cars, closed cars and trucks. Price, compiete, $115.00 f. o. b. factory. Nothing extra to buy. Cylinder head equipment all ready for installation. It takes the place of the regular Ford Cylinder Head. Any mechanic can easily and quickly install it.

Comparison Brake Horse Power Tests at the United States Bureau of Standards gave Standard Ford motor with regulation carburetor 18.7 Horse Power. The same motor with 16 Valve Head and regulation carburetor 22.4 Horse Power. The same motor with 16 Valve Head and Special carburetor 29.7 Horse Power. Recent tests at Bureau of Standards with Type B gave 32 Horse Power. We are Manufacturers and Distributors of speed and other specialties for Ford cars; 3 to 1 gears, high speed camshafts, aluminite, light grey iron pistons, lynite pistons, aluminite connecting rods, racing spark plugs, racing carburetors, roller bearings, counterbalances, wire wheels, multiple speed transmission, high tension magnetos, special oiling system, special worm and gear, steering gear, racing tires, racing bodies, hood and radiator, parts for underslinging chassis. Tell us what you want. We can supply it. Racing quality. Lowest prices. Send for our Complete Literature on how to build fast cars and double the value of your converted Ford Truck and descriptive circular on Speed and other Specialties for Fords.



HOWARD JARVIS
ZIONSVILLE, IND.

and his record breaking Ford equipped with Roof 16 Valve Head. Winner of the 15-mile championship race at Indianapolis State Fair in September. Car has attained a speed of 76 miles per hour.

Ford Racing Car Speed Kings

From the hundreds of fast Ford car drivers we mention the names of a few of those who have won laurels through the use of our equipment and some with speed records approaching that of the highest priced racing cars in the world, ranging from 70 to 97 miles per hour, and who on mile and half-mile tracks have closely approached the world's record with their speed cars:

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Haines Bros.....Ft. Benton, Mont.
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W. L. Frazier....Washington, D. C.
Herbert Black....Webster City, Iowa
John Proctor.....Washington, D. C.
Rolly Blair.....Shelby, Neb.
Joseph C. Hayes..San Francisco, Cal.
Paul M. Boozer.....Windber, Penn.
Hugo Goedthe.....Milwaukee, Wis.
W. C. Phalgrafh....Cheyenne, Wyo.
Milner Motor Car Co....Monroe, La.
C. F. Goltry.....Roann, Ind.
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W. C. Norris Motor Car Co.....
.....Oklahoma City, Okla.
Alvin A. Pfeiffer.....Clatonia, Neb.
J. Ross Castendyck.....La Salle, Ill.
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W. J. Meagher.....Medford, Ore.
Gilbert Sartain.....Tahlequah, Okla.
Bert Wellington.....Casper, Wyo.
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THE LAUREL MOTORS CORPORATION

ANDERSON, IND.

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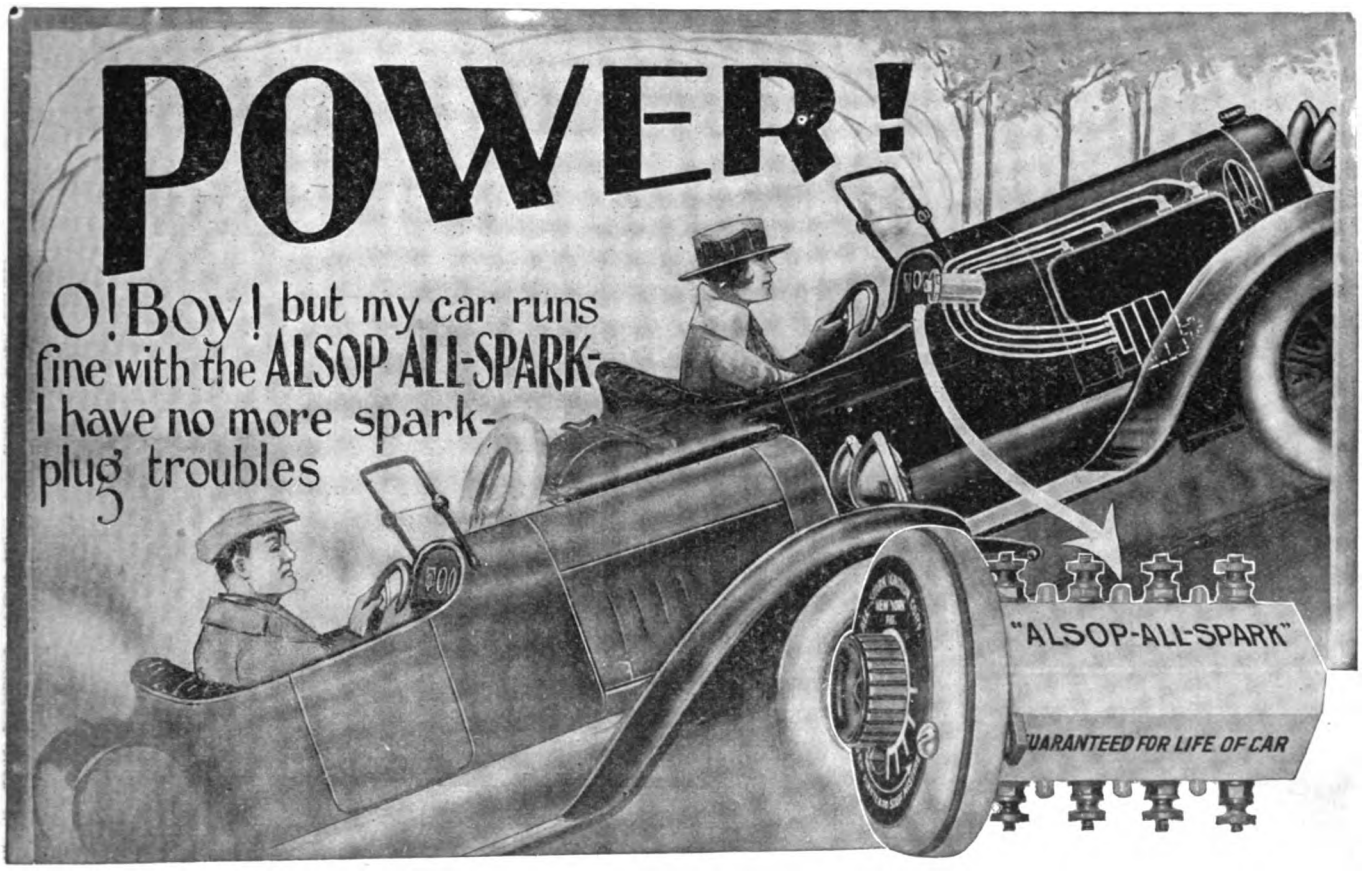

WAR DEPARTMENT.

WASHINGTON

DEPARTMENT OF MILITARY AERONAUTICS.

August 23, 1916.

From: Ralph Earle, 2nd Lieut., A.S.,S.C.

To: Material Branch, Supply Section, D. M. A.

Subject: Test of ignition devices.

1. Reference your memorandum of August 22nd, the six Alsop Ignition Devices per your order have been received and four of same have been installed.

2. The first device was installed August 20th on Ford car No. 28. The preliminary test consisted of using spark plugs with broken porcelains which had previously been discarded as worthless. By the use of the device the necessary spark was obtained through these heretofore useless plugs, enabling the engine to function perfectly with them.

3. The second test consisted of filling the crank case with twenty-four quarts of oil which filled same, the oil running out of the breathing pipe, and running the engine until all plugs were soaked to such an extent that all cylinders but one ceased to fire. The ignition device was then thrown in and within a distance of two city blocks all plugs began to fire and continued to do so throughout the test.

4. The other plugs were installed and are now in operation. No further special tests were made as the above was considered amply sufficient to demonstrate the efficiency of the devices.

Ralph Earle
2nd Lieut., A.S.,S.C.

This Wonder DEVICE

as one user says, "comes as near making the impossible happen as anything ever seen."

The "Alsop-All-Spark"

WILL PREVENT SPARK PLUG TROUBLES

WE KNOW

It will save fuel and spark plugs—
It will fire dead carbon-choked plugs—
It will cause perfect combustion—
It will guarantee increase of gasoline mileage—
It will do away with changing spark plugs—
It will prevent running engine with a misfire—
It will give a more powerful spark—
It will eliminate carbon and vibration—
It will increase speed and power—
It will fortify any ignition system.

BUT DON'T TAKE OUR WORD FOR IT—HERE IS A GOVERNMENT TEST.

Read it then send for our catalogue of Government Tests and Illustrated Information—or better still send for a device—with money back guarantee. You can install it on any four cylinder car. IT WILL MAKE YOUR CAR RUN AND WILL GIVE YOU A HOT FAT SPARK WHEN EVERYTHING ELSE FAILS. There are no dangerous exposed spark gaps which may set a car afire.

$7.50

WE WANT LIVE DEALERS--LIVE DEALERS WANT THE ALL-SPARK

ALL-SPARK IGNITION CO., Inc. 13-J WATER STREET NEW YORK CITY

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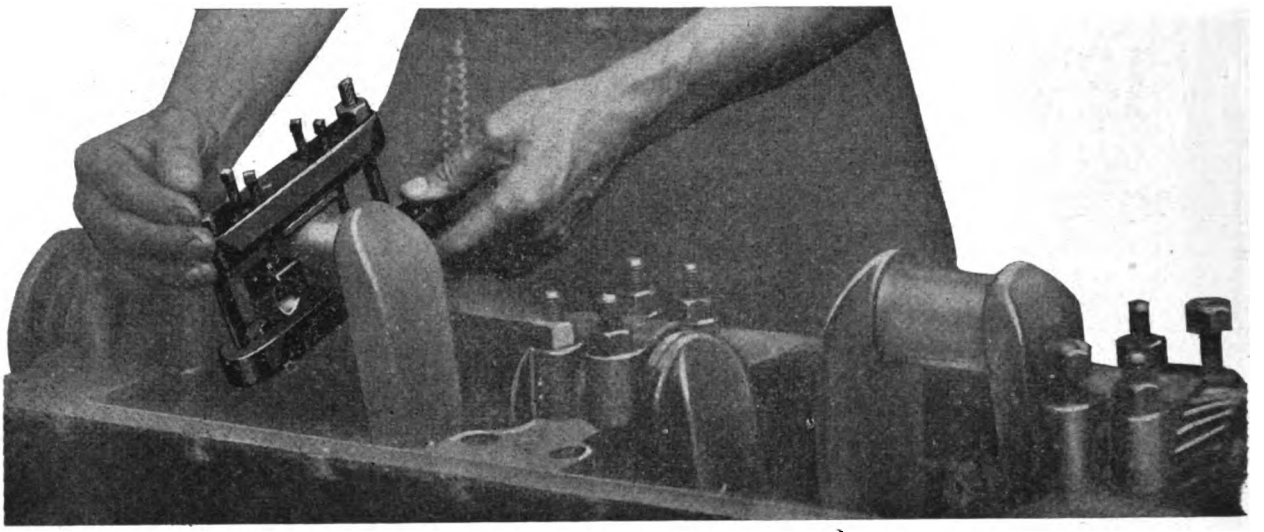
The Quick, Easy and Profitable Way to Grind a Crankshaft



Patented Nov. 11th, 1919

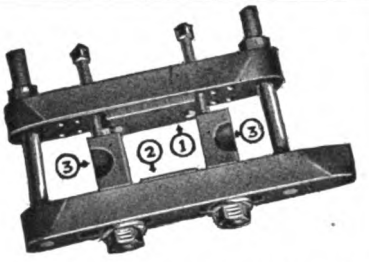
JUST one job pays the cost of Atlas Abrasive Tool **(Patented Nov. 11, 1919).**

No experience required. The Atlas simplifies crankshaft grinding.

No lathe or other equipment required. Use a vise if you like, but remember that the crankshaft need not be removed from the crankcase.

One hour completes the work on any crankshaft.

No machine shop guarantees greater than two-thousandths of an inch accuracy. With the Atlas you get one-thousandth. If you need an Atlas but once a year, it accommodates your customer, puts a good profit in your pocket and gives you a reputation for service.



1. *Hardened and tempered steel-cutter. Cuts in one direction only.*

2. *Bronze track bearings. Cannot cut ring in pin like hard steel nor freeze against pin from friction like soft steel.*

3. *Adjustable Abutment Blocks, which slip easily up against the face of the crank pin and hold the cutter and track in their proper working place.*

Price, complete, with cutter, $10, postpaid. Extra cutters (including bronze bearing tracks), good for from 10 to 20 pins or bearings, 30c each.

Another hand tool would cost from five to ten times the price of an Atlas—you would not get Atlas convenience—nor simplicity of its one cutter principle—nor the saving of time in making adjustments.

Adjustable to crank pins up to 2½ inches diameter for all passenger cars and trucks. Hundreds of garages and repair shops are enthusiastic users of the Atlas Abrasive Tool—it's selling like hot cakes.

A good mechanic would rather part with a $50 bill than with his Atlas, if he could not buy another.

Wire Your Order Today Or Use Coupon

USE THIS COUPON

Atlas Mfg. Co.
720 Canal St., Pittsburgh, Pa.

Please send me one Atlas Abrasive Tool and ..... extra cutters, also complete instructions for its use.

Name.....

Address.....

City.....State.....

ATLAS MANUFACTURING CO.

NORTH CANAL ST. PITTSBURGH, PA.

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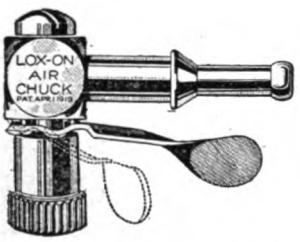
The Signal Success of 1919

LOX-ON TRADE MARK AIR CHUCK
"DOESN'T RUB THE RUBBER"



At last—an air chuck that doesn't leak—that doesn't have to have rubber washers replaced often—and that lasts indefinitely. Garage-men are certain to be enthusiastic over the wonderful improvements in this chuck. Write us for detailed description.

HEAD and shoulders above the new products of 1919 stands the record of the Whistler Pressure Regulator. Written up by the newspapers as a "wonderful boon to motorists" and featured in automobile show publicity, this product has been sold from Maine to California.

Such a marvelous record for a new accessory is a mighty guarantee for the future. It is proof positive that the Whistler has "made good" as one of the steadiest, most consistent sellers in the accessory dealer's store.

The Whistler pays for itself many times over in tire, time and trouble saving. Simply screw it on your regular tire valve. Start the air in. As soon as you have the correct amount, a cheery whistle announces "enough!" You can't put any more in.

What a tremendous improvement over the old bothersome tire gauge. And the Whistler outlasts a car and is always correct.

The Whistler has a strong, well-planned merchandising service back of it. It is a proved money-maker and a certain seller. We will be glad to explain our advertising and dealer propositions. Write us or ask your jobber.

Automatic Safety Tire Valve Corp.
1765 Broadway, New York City

No. 1. Newspaper Praise of Whistler.
No. 2. One of the Show Sensations.
No. 3. Sample of Newspaper Advertising.
No. 4. Letter Testimonials.
No. 5. Descriptive Booklet.

Whistler
TRADE MARK
"IT WHISTLES WHEN ITS HAD ENOUGH"

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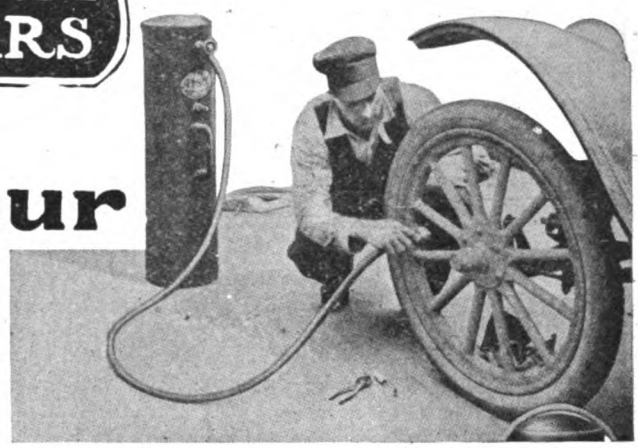
TANK MAKERS FOR NEARLY THIRTY YEARS



Don't Permit Your Repairman to Waste His Time and Labor on Roadside Repair Jobs —

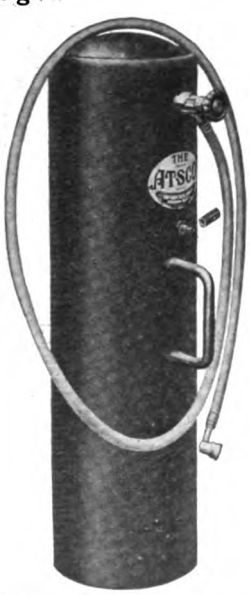
THE ATSCO PORTABLE AIR TANKS

Is A Big Shop Economizer

It increases your profits because it hastens service and better satisfies your customers. It relieves your men for other work. Its utility is as great in the shop as on the road.

The saving made with Atsco tanks quickly pays the cost and there's years of service in each unit. That's the one inducing factor. The saving is continuous.

Atsco tanks are 36 inches length and 10 inches diameter. They are built of steel with genuine copper brazed seams and joints, good for 500 pounds and intended for a working pressure of 250 pounds, and guaranteed air tight.



They are completely equipped with hose and tire valve and connection for filling.

Figure the Cost of Hand Pumping

And there can be no question of the value to you of one or more Atsco tanks. Some service stations have more than a dozen.

We specialize production of garage pressure tanks, and have in stock or build to specification tanks of any size or pressure requirements. Our tanks are used by most of the producers of compressor and air storage systems.

These tanks are genuine copper brazed construction and the seams and joints are far stronger than the stock metal. They will not crystallize or crack and are guaranteed air tight.

We make pumps and pressure tanks for all purposes.

List Price $24.50 f. o. b., Pittsburgh, Pa.

Produced only by the

AIR TIGHT STEEL TANK CO.

OFFICE AND WORKS

PITTSBURGH, PENNSYLVANIA

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DUFF GENUINE BARRETT JACKS

Released from the Nation's Service

During the recent world crisis, priority had to be granted by the Duff Manufacturing Co. to all orders that involved the war needs of our country and its allies.

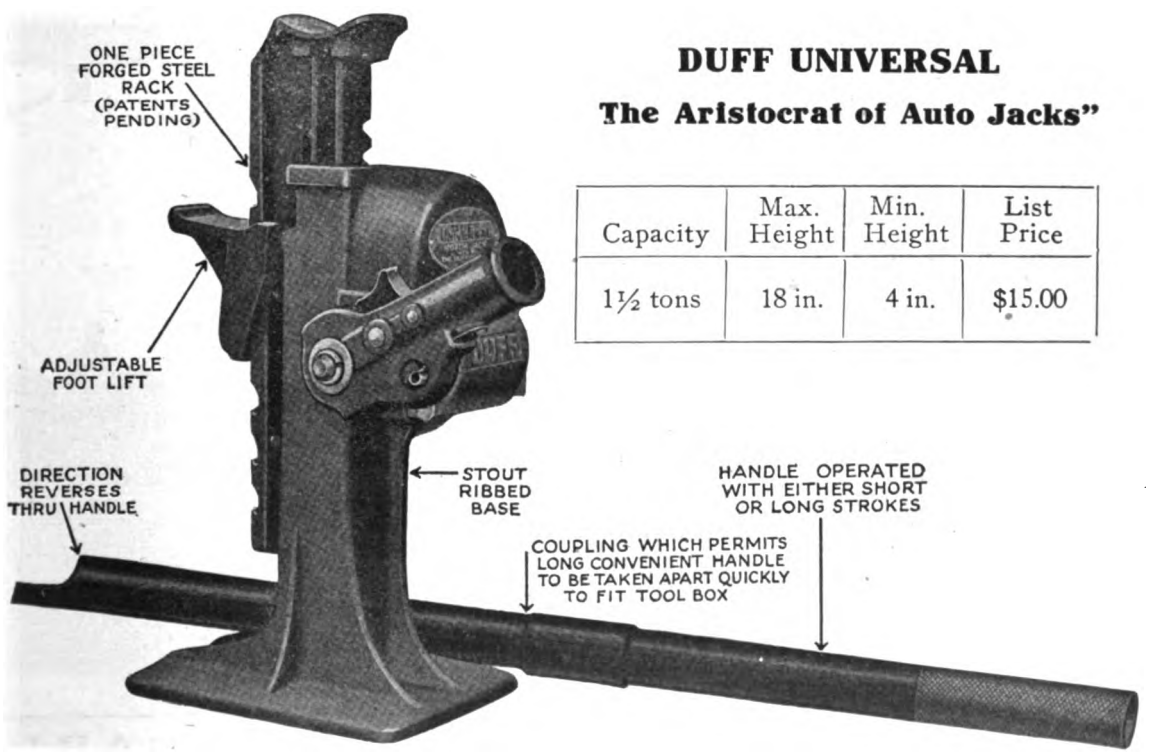
The pressure of production at our shops became terrific. It was impossible to fill many orders for passenger car and motor truck jacks.

Fortunately, this condition is now a thing of the past. Production facilities have been increased and the Duff Manufacturing Co. is again in a position to afford its dealers and jobbers the service to which it owed its supremacy as the largest manufacturer of jacks in the world.

Write for information regarding the Duff line of jacks for passenger cars, trucks and garages.

THE DUFF MANUFACTURING COMPANY
PITTSBURGH, PA.

New York **Chicago** **Atlanta** **San Francisco**



DUFF UNIVERSAL

The Aristocrat of Auto Jacks"

Capacity	Max. Height	Min. Height	List Price
1½ tons	18 in.	4 in.	$15.00

(When Writing to Advertisers, Please Mention the Accessory and Garage Journal.)

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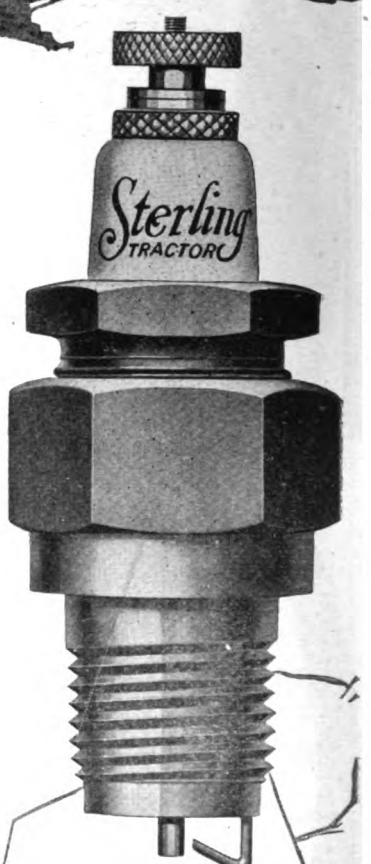
Sterling Spark Plugs



Here's a Sterling Plug For Motor Car, Truck or Tractor

There is a new snap, a new power you will notice as soon as you install Sterling Tractor Spark Plugs in your engine.

These new, strongly-built plugs deliver a spark as sharp and swift as a flash of lightning.

You will note the quick, ready response of your motor with these plugs feeding current to the cylinders. Sterling Tractor Plugs were developed to meet the extreme demands imposed by the high-heat producing internal combustion motors of farm tractors.

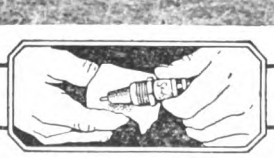
Naturally, since they meet the rigorous requirements of tractor engines, they cannot but be all the better for passenger car or motor truck.

Sterling Tractor Plugs are built for heavy duty—for gruelling, continuous work. The porcelain core is unusually heavy; the combustion chamber is extra deep, and the one-piece monel metal electrode will not warp.

Remember, Sterling plugs are separable and easily cleaned. Simply unscrew the gland nut, take out the porcelain core and wipe off the carbon. You can clean Sterling plugs clean.

Progressive garages and supply dealers everywhere sell and endorse Sterling plugs.

The Lockwood-Ash Motor Company
2050 Douglas St. Jackson, Michigan (66)

SEPARABLE  CLEANABLE

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GILL
The Perfect One Piece Piston Ring

"The car is going fine since you put these Gill Rings on the motor."

Isn't that the kind of commendation that brings joy to the heart of the garage man? It brings money to his pocket too, for a satisfied customer is a big asset to business.

It is the kind of talk the motorist gives when a set of Gill Piston Rings has been installed on his motor and, naturally, there's a reason for it. Look at the double step interlocking joint of the Gill Piston Ring and you will see the reason at once. An absolutely tight joint, with no loss of compression whether the cylinder is new or worn. The Gill Ring allows an expansion of from 1/8 in. to 3/16 in. before any loss of compression occurs.

Send for the new Gill Piston Ring Size Directory, complete, convenient and full of just the information you need. It is free to the trade.

Dealers—Ask your jobbers about them
Jobbers—Write to us for information

The Gill Manufacturing Company
8301 South Chicago Ave., Chicago, Illinois

Sole Foreign Agents
AUTOMOTIVE PRODUCTS CORPORATION
Woolworth Building, New York, N. Y.

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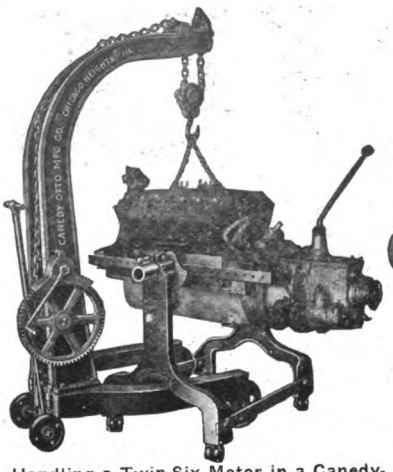
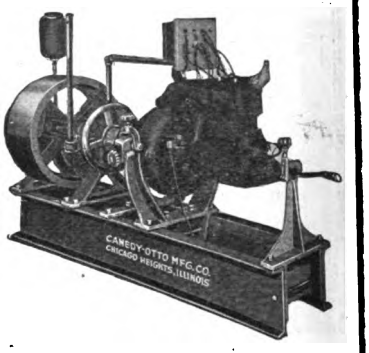
CANEDY-OTTO MFG. CO.



Handling a Twin-Six Motor in a Canedy-Otto Motor Stand with a Canedy-Otto Portable Floor Crane.

Canedy-Otto Screw Cutting Engine Lathe.



Bearing Burning-in Machines.

One of the best investments you can make. Write us today.

Maximum production efficiency demands absolutely dependable equipment.

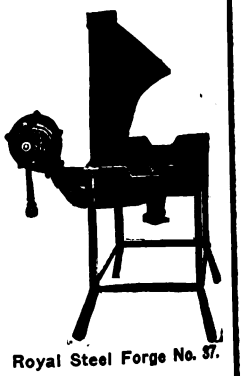
For the Garage Repair Shop and Service Station

The selection of right tools answers to a large extent the problem of increased production. It is not good judgment to experiment with unknown or untried lines—confidence should be placed where confidence belongs. CANEDY-OTTO equipment represents favorably known and thoroughly tested value for durability, lasting quality, beauty of finish, and accomplishment of purpose.

Manufacturers of

Radial Drills, Sensitive Drills, Engine Lathes, Punches, Shears, Shrinkers, Counted Shafts, Upright Drills, Post and Wall Drills, Grinders, Buffers, Forges, Blowers, Tuyere Irons, Blast Gates, Bearing Burning-in Machines, Straightening Presses, Connecting Rod Straightening Jigs, Motor Test Stands, Arbor Presses, Portable Floor Crane, Piston Clamps, Rear Axle Test Stands. Tractor Tools and Special Machinery for Ford and Fordson.

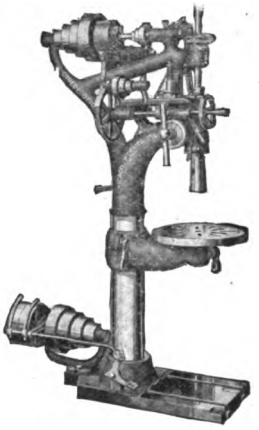
For Light and Rapid Drilling.



Royal Steel Forge No. 37.

Eventually, of course; but why not now? Let us know your needs. It may pay us both to get together. Won't you start it with a letter today?

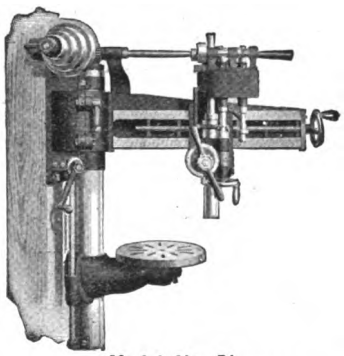
Just investigate—that's all.



No. 36 Canedy-Otto Power Drill.

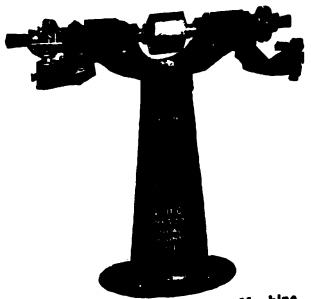
Your inquiry or trial order is solicited. You will make no mistake by ordering now.

FOR SALE BY ALL Wholesale Accessory Jobbers, Heavy Hardware and Machinery Dealers.



Model No. 51. No. 51 has Power Feed and Automatic Stop.

Our Attractive catalogue should occupy a prominent place in your files. Yours for the asking.



Grinding and Polishing Machine.

General Offices and Factory

Chicago Heights, Ill.

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Performance vs. ?

In selecting a Compressor, what interests you most? Prices? No! Promises? No! Technical details? No! In the end, it is the cost of giving air service. You must have confidence in the concern that sells the outfit, confidence in the manufacture, and confidence in the future performance of the outfit.

Brunner Air Compressors have come to the front in the minds of the progressive garage men of the country. Brunner equipment has won and is holding national leadership as the undisputed standard.

No sales argument, no frenzy of advertising, no freak fixtures could win and hold that dominance. Brunner equipment has construction care that spells Performance. And, Performance merits leadership.

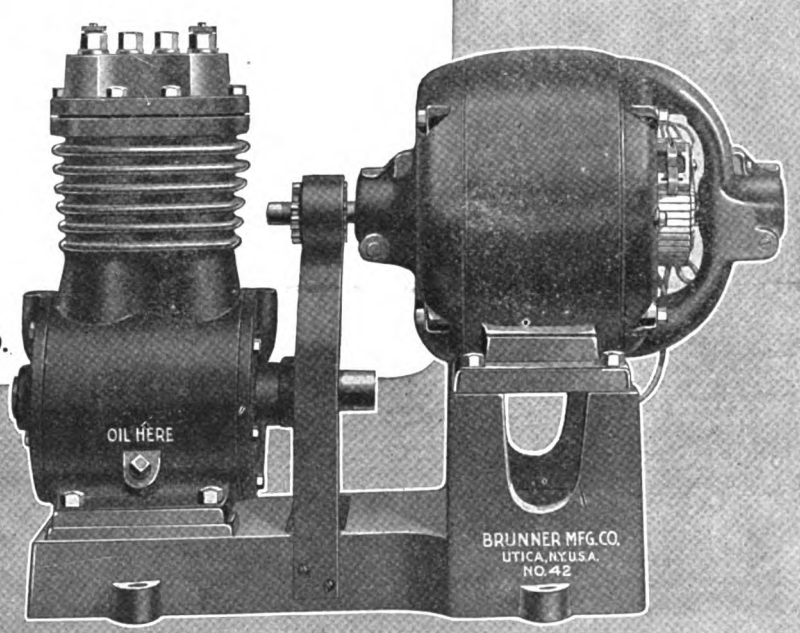
Brunner engineers use the laws of pneumatics ---they know the intricacies, complex problems and possibilities---after years of study and putting these laws into practice their resultant products give consistent economical Performance.

Write for illustrated folder, displaying all types and sizes.

BRUNNER

BRUNNER MFG. CO.

Works
UTICA, NEW YORK
Sales Offices
UTICA, N. Y.
CINCINNATI, O.
KANSAS CITY, MO.



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Filtered Air

A REAL service to motorists—a service that will bring them to your door—again and again—that will keep them your customers—that will build the utmost good-will for your business. That's what "FILTERED AIR" will mean. It will increase your business surprisingly. A "FILTERED AIR" sign above your door will keep you in constant touch with all classes of motorists, creating an obligation on their part to become your customers.

The No. 7 AU-TO AIR COMPRESSOR furnishes an abundance of perfectly filtered air. A special liquid takes out absolutely all dust and oil—the two worst enemies of tires. The air comes from the tank as pure and clean as from a mountain top.

This is a complete outfit in itself: motor, piping, valves, gauge, automatic unloader, automatic switch and tank—assembled and ready to run. The motor is only ½ horse power. This outfit requires no watching, no tinkering—the tank is kept full of filtered air, ready for motorists—day and night. This outfit furnishes a regular working pressure sufficient to handle the largest pneumatic truck tires.

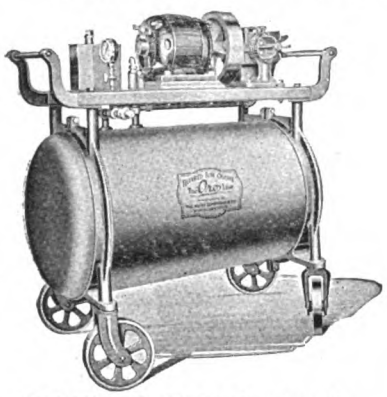
Only 3 Moving Parts!

In addition to the valves there are only 3 moving parts to the compressor mechanism. Such astonishing simplicity must mean durability and continuous satisfactory service. Of course, our regular guarantee of perfect service goes with this machine.

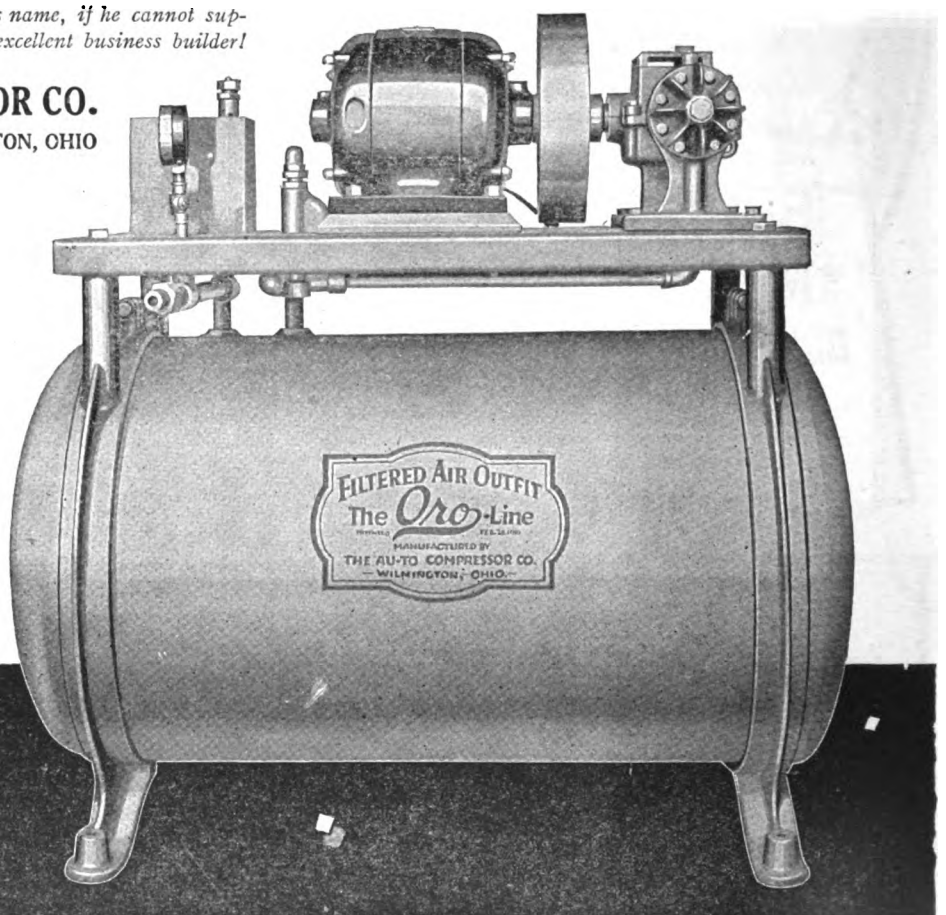
Ask your jobber, or write us, sending his name, if he cannot supply you. Now is the time to get this excellent business builder!

THE AU-TO COMPRESSOR CO.

303 S. Mulberry Street WILMINGTON, OHIO



Model No. 8 Au-To Air Compressor —same as No. 7, excepting that it has large wheel casters, which make it easy to move from place to place in the shop or garage.



a sign like this

Oro FILTERED AIR FREE

brings business.

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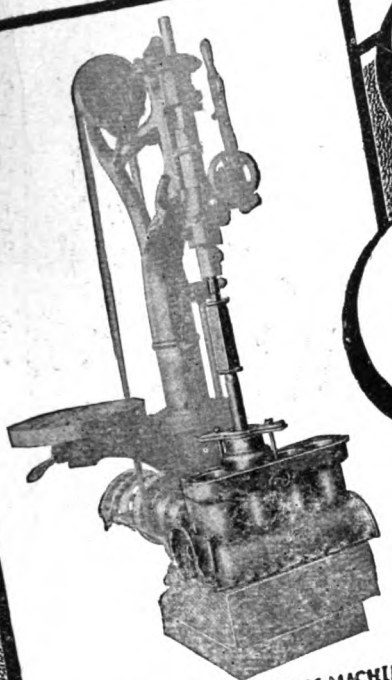
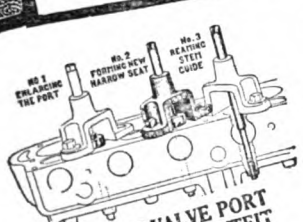
STORM MOTOR REPAIR EQUIPMENT



STORM CYLINDER REBORING MACHINE



STORM VALVE PORT RENEWING OUTFIT

These STORM tools, all of which are money-makers for the garage will interest YOU.

YOU garage owners and repair men can "cash in" big *right now* if you are equipped to properly handle the motor rebuilding work in your community. Now is the time to prepare for thorough overhauling and rebuilding. Change the usual dull winter period into a busy, profitable season. But you can't do this without proper tools. Storm Tools have been designed and are built by practical men. They are guaranteed to increase the efficiency, speed, accuracy, and profit of your work.

Get the Reputation for Doing First-Class Work!

STORM Motor Repair Equipment Will Make That Reputation for You

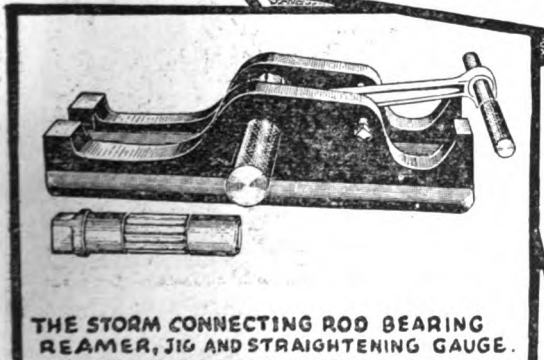
STORM Reboring Machines are made in a variety of capacities—for hand or power operation—are inexpensive and can be handled with accuracy and speed by unskilled help.

Don't send your reboring, the most profitable and important part of the work, out to others. Do it yourself and double your profits.

The STORM Valve Port Renewing Outfit produces *new* valve systems on old Ford motors. The STORM Main Bearing Babbitting and Boring Tool makes *new*, *accurate* main bearings on Ford and Fordson motors.

Fill out the coupon—let us send you further particulars.

Main Bearing Babbitting and Boring Tool



THE STORM CONNECTING ROD BEARING REAMER, JIG AND STRAIGHTENING GAUGE.

The Storm Piston Vise

STORM MFG. CO.
Department P
MINNEAPOLIS
MINN.

STORM
Mfg. Co.
Dept. P
Minneapolis
Minn.

Send us catalog. We are interested in—

STORM Cylinder Reboring Machine.

STORM Piston Vise.

STORM Valve Port Renewing Outfit.

STORM Connecting Rod Bearing Reamer, Jig and Straightening Gauge.

STORM Main Bearing Babbitting and Boring Tool.

Name .....

Address .....

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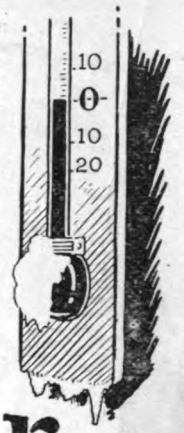
In Zero Weather Remember The COPLEY PRIMER



THE COLDER THE WEATHER THE BETTER THE COPLEY SELLS

When you see a car or truck with a dead engine in a cold garage or on the road you can always count one more certain buyer of a Copley primer.

Burning up the batteries and back breaking cranking will not help. Cold weather and a poor grade of gasoline can beat any combination EXCEPT a Copley Primer.

WITH A COPLEY PRIMER ANY ENGINE CAN BE STARTED INSTANTLY IN ANY WEATHER AND WITH ANY GRADE OF GASOLINE.

The cost is small and the utility and service constant and positive. The Copley is easy to attach, requires no attention and affords results that make it a real car necessity.

Every Copley user is a booster. Every sale brings new customers. It is a business builder and a money maker for all dealers. It is easily the record selling item of the year.

Standard Equipment on Mitchell and Templar Cars

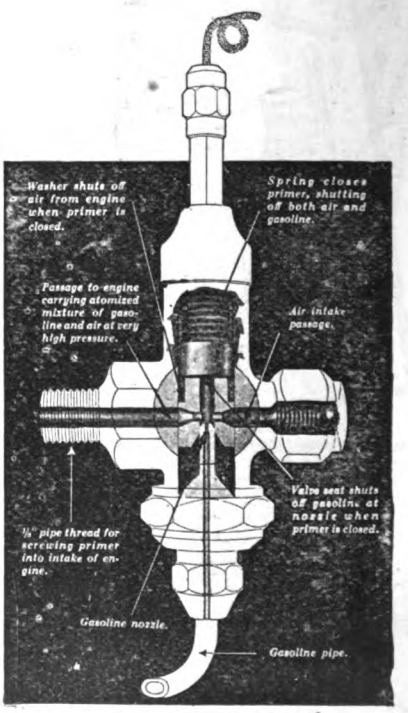
With a low grade of gasoline, it is almost impossible to start a motor in a cold garage on a winter morning or an engine when left standing long in the open. The present gasoline will not evaporate in cold air and there is no carburetor designed that will vaporize it.

When Copley equipped, the motor is turned over, either by hand-crank or starter, the suction of the engine draws a stream of air at high velocity through a small venturi tube where it picks up a quantity of gasoline from a special nozzle. This mixture is converted into a rich, thoroughly atomized gas, which ignites in the cylinders as readily as the mixture in a warm motor.

Unlike other primers, the Copley Primer does not merely inject a small quantity of raw gasoline into the manifold. It not only fires the first cylinder that gets the charge, but is CONTINUOUS IN ACTION as long as it is held open, and will even run the motor without the help of the carburetor.

Write at once for our proposition.

List Price $6 00, including war tax



BAY STATE PUMP COMPANY

BOSTON, 564 East First St. MASS.

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What AMAZON *Means to Dealers*

DEALERS find Amazon Tires profitable to handle because Amazon Tires become a real "hobby" with their users. They continue to sell them because Amazon users have come to know what Amazon rubber means.

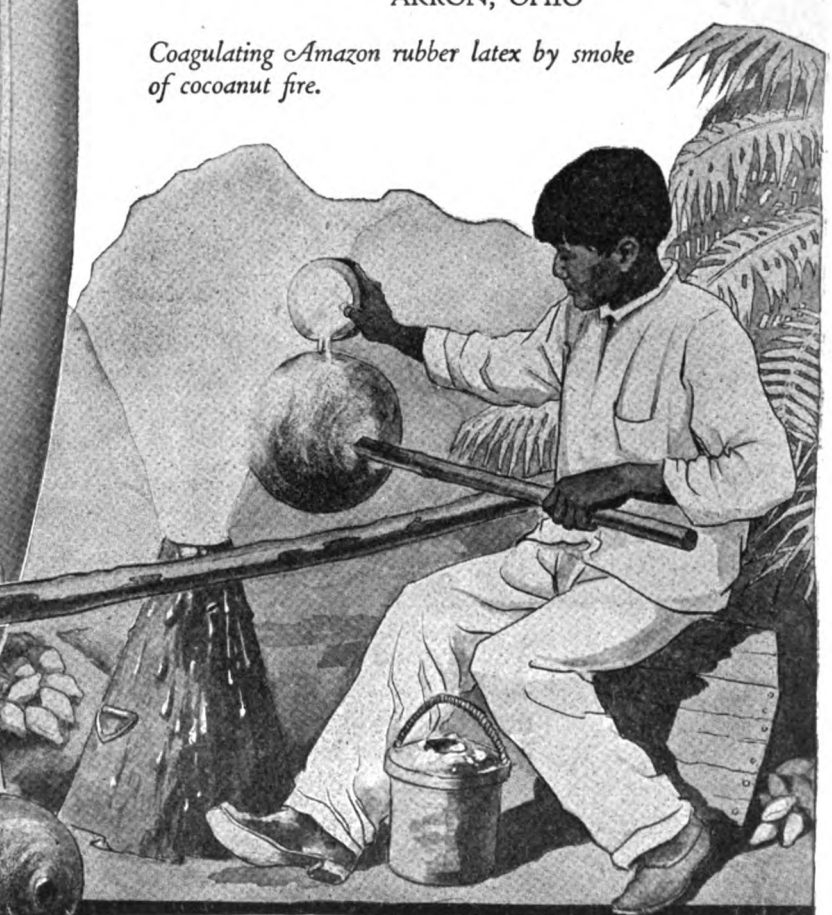
Amazon Tires have the same sturdiness as the native up-river Para rubber that goes into them. They have all the live rubber qualities found in the highest degree in the upper Amazon district where rubber tree growth is natural and most luxuriant.

This accounts for the sturdiness of Amazon Tires—for their ever increasing demand—for the success of Amazon dealers everywhere.

Dealers: Increased production now enables us to add a limited additional number of accounts. Write today for our proposition.

THE AMAZON RUBBER COMPANY
AKRON, OHIO

Coagulating Amazon rubber latex by smoke of cocoanut fire.



AMAZON

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IN a good window display, the "Girl with the Edison MAZDA Automobile Lamps" is the center of attraction. She will build you an ever-growing lamp business if you are an Edison MAZDA Lamp Agent.

* * * *

If the lamps you sell are not backed by MAZDA Service write at once for the Edison Automobile Lamp Agency plan. Edison Lamp Works of General Electric Company, Harrison, N. J.

47D-65

EDISON MAZDA

EDISON LAMP WORKS OF GENERAL ELECTRIC COMPANY

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Here's Good Winter Business—Equip Fords with Dyneto NON-Stallable Starting & Lighting Outfits

Dyneto TRADE MARK REGISTERED

Sell a high grade, dependable Starting and Lighting System—one that is proven to have "big car" quality. Dyneto—a NON-Stallable Starting and Lighting System for $85. (With a good dealer profit.)

The System is complete, with motor-generator, storage battery, battery box, all wiring, switches, brackets, sprockets, etc., etc. Can be easily installed.

It has the same characteristic features as the Dyneto system that has been used continuously since 1913 on America's highest priced light weight car, the Franklin.

Makes Fords NON-Stallable

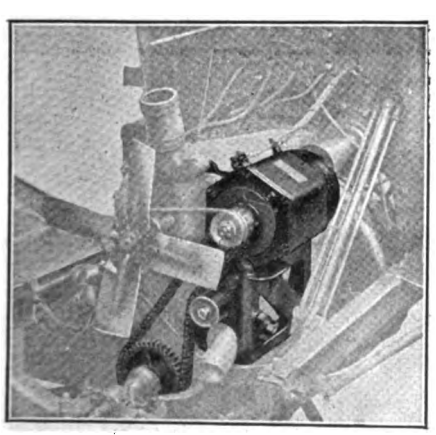
The big advantage of this system over others is that it makes the engine NON-Stallable. If too sudden application of clutch brings motor to stop, Dyneto instantly takes hold and starts it—**automatically—driver** doesn't have to press a button or move a lever.

In emergency, Dyneto is powerful enough to move car out of danger, without the motor.

$85.00

Retail F. O. B. Syracuse

Dealers' Discount



Liberal Discounts To Live Dealers

Only a limited number of these outfits are available for immediate shipment, and orders will be filled in the order in which they are received. Write for discounts for dealers. Better wire quantity you wish reserved for you.

DYNETO ELECTRIC CORPORATION

SYRACUSE, N. Y.

Export Representatives:

BENJAMIN WHITAKER, Inc.

21 State St., New York, N. Y.

56 Ludgate Hill, London, E. C. 4.

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The Steatite Insulator

No extremes of heat and cold can break this insulator. It is proof against electrostatic puncture. It will stand against physical shocks that would shatter the porcelain in plugs you now sell.

This is a blunt plain statement of fact—a long proved claim, standing alone in the whole field of spark plug manufacturing endeavor.

And now note the electrode design

The needle point central member sheds the slightest particle of oil before it can reach the spark gap—the double curved ground electrode is also designed to reject the oil before it reaches a point where sparking heat could decompose it.

Carbon formation is therefore impossible and so the Liberty Spark Plug needs no cleaning—it takes care of that job itself.

With the unbreakable Steatite Insulator no short circuit is possible—the electrode arrangement prohibits carbon—the simple but correctly designed parts assembly guarantees against compression leak.

The Liberty Spark Plug is a business maker. It will work on and on to the lasting satisfaction of every car, truck or tractor owner who selects it as a replacement. It is a plug of distinction made to sell to super-critical buyers.

The list price is $1.50—Our trade propositions will appeal to jobbers and dealers—Write or wire.

LIBERTY

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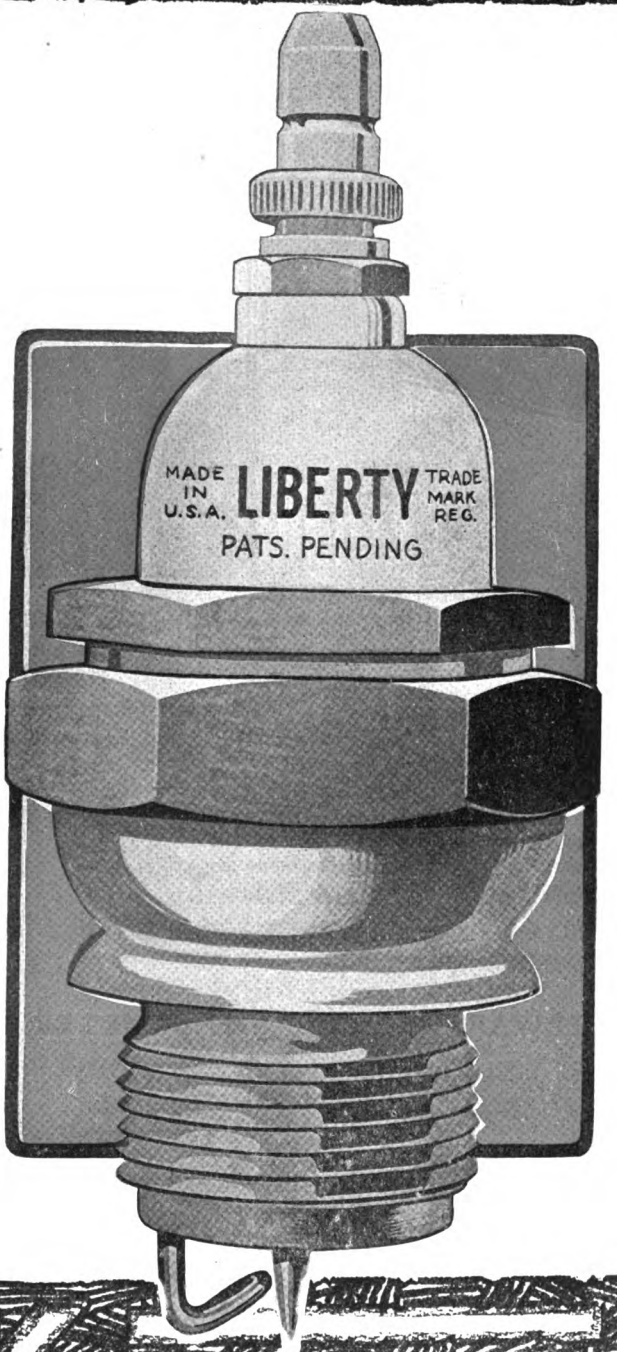
A Dome of Strength

DEALERS—*Aside from the service The Liberty Spark Plug guarantees its users, you will find that its very appearance holds a strong appeal. Sturdy and oversized, it "looks" all of the built-in qualities it possesses. The heavy shell is of brass, burnished into a glistening golden surface. The solid Steatite Insulator Dome, topped by the brass connection, completes a design of substantial beauty. It is indeed the aristocrat among plugs. Liberty Spark Plugs will sell themselves right out of your show case.*



The Federal Corporation
100 North Elm St.
Westfield, Mass.

SPARK PLUG

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The Biggest Attraction in Accessories at the New York *and* Chicago Auto Shows

WHEN you entered the Accessory Divisions at either the New York or Chicago Auto Shows and looked for the crowds, you invariably found them at the Stewart-Warner Exhibits.

Why? Because everyone interested in motor cars knew from past experience that it is there you will find the latest and best in accessories. And they were not disappointed this year.

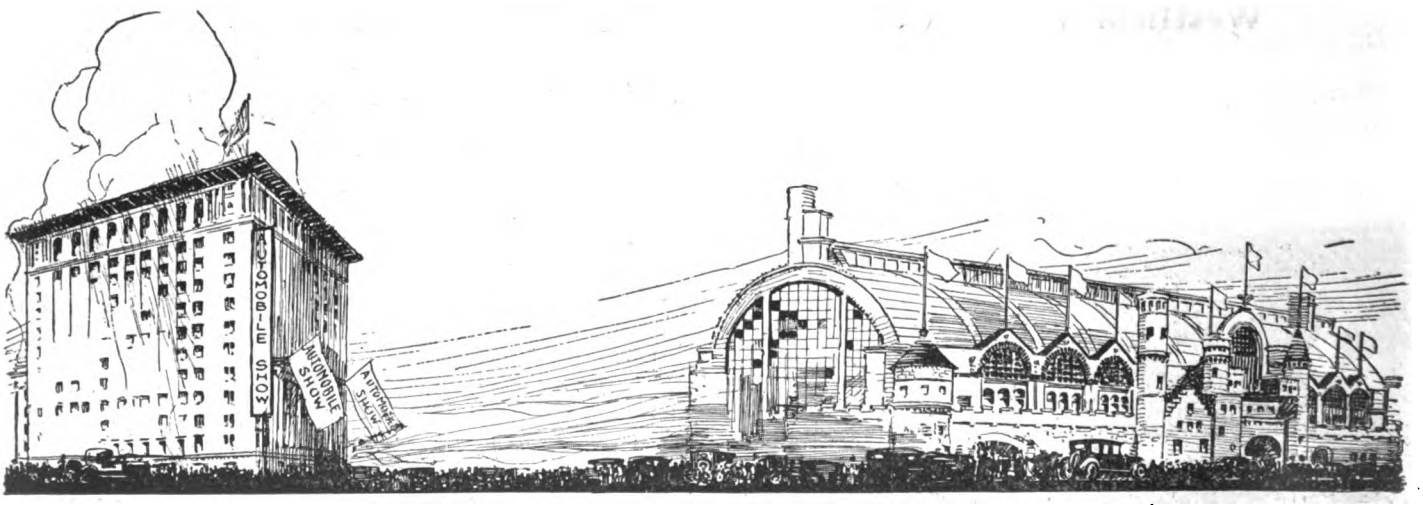
The 1920 line of Stewart Custombilt Necessities contains many new and important accessories, and is the most complete ever offered motorists. Never has a line of accessories achieved such universal popularity, such dominance in the field.

If you are going to buy a new car this year see that it is completely Stewart-equipped. You can accurately judge the value of a car by its equipment. Look for the name Stewart.

If you intend retaining your present car, complete its equipment with Stewart Products. You will thus add to your car's appearance, to its efficiency, its performance and to your own motoring pleasures. Any good dealer will be proud to show you the Stewart Necessities you need. "No car is complete without them."

STEWART-WARNER SPEEDOMETER COR'N. **CHICAGO, U.S.A.**

A Nation-wide Chain of Service Stations.



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100% EFFICIENCY

At a Minimum Cost

WAKEFIELD WIZARD WRENCH

ADJUSTABLE OPEN END

Five double end wrenches -at $3.00- can't compete with a WIZARD

No. 120.

$1.50

No Knurl Adjustment.
Every opening is absolutely positive.
No Back Lash.

Instantly Adjusted to Ten Sizes.

5 S. A. E. Sizes, 10 U. S. Standard, Cap Screw Sizes, 4 Set Screw Sizes, 9 U. S. Standard Sizes, Length, 7¾". Thickness, ⅜". Width, 2⅛".

A single tool that replaces five of the same type.

With range instantly adjustable to ten sizes as follows: 1-4, 5-16, 3-8, 7-16, 1-2, 9-16, 19-32, 11-16, 25-32, 7-8.

These settings are made instantly and each is accurate as to fit. There can be no play or backlash.

It is a high grade Wakefield product, of heat treated carbon steel, made with an experience of 30 years of wrench making.

A Wizard wrench is a necessity in every shop, garage or service station and in the tool kit of every car, truck, motorcycle or bicycle.

It has the utility of the average wrench set, it is the acme of time and labor economy, and the cost is cheap when measured by service.

The price is $1.50 each.

Jobbers and Dealers

Wizard wrenches bear the Wakefield trade mark, known the world over as a standard of excellence.

We are at full production. Our sales proposition is a big business opportunity. Our discounts are liberal. We solicit your inquiry.

C. E. WAKEFIELD

Sole Manufacturers for over Thirty Years of Adjustable Automobile, Bicycle and Motorcycle Wrenches.

WORCESTER, MASSACHUSETTS, U. S. A.

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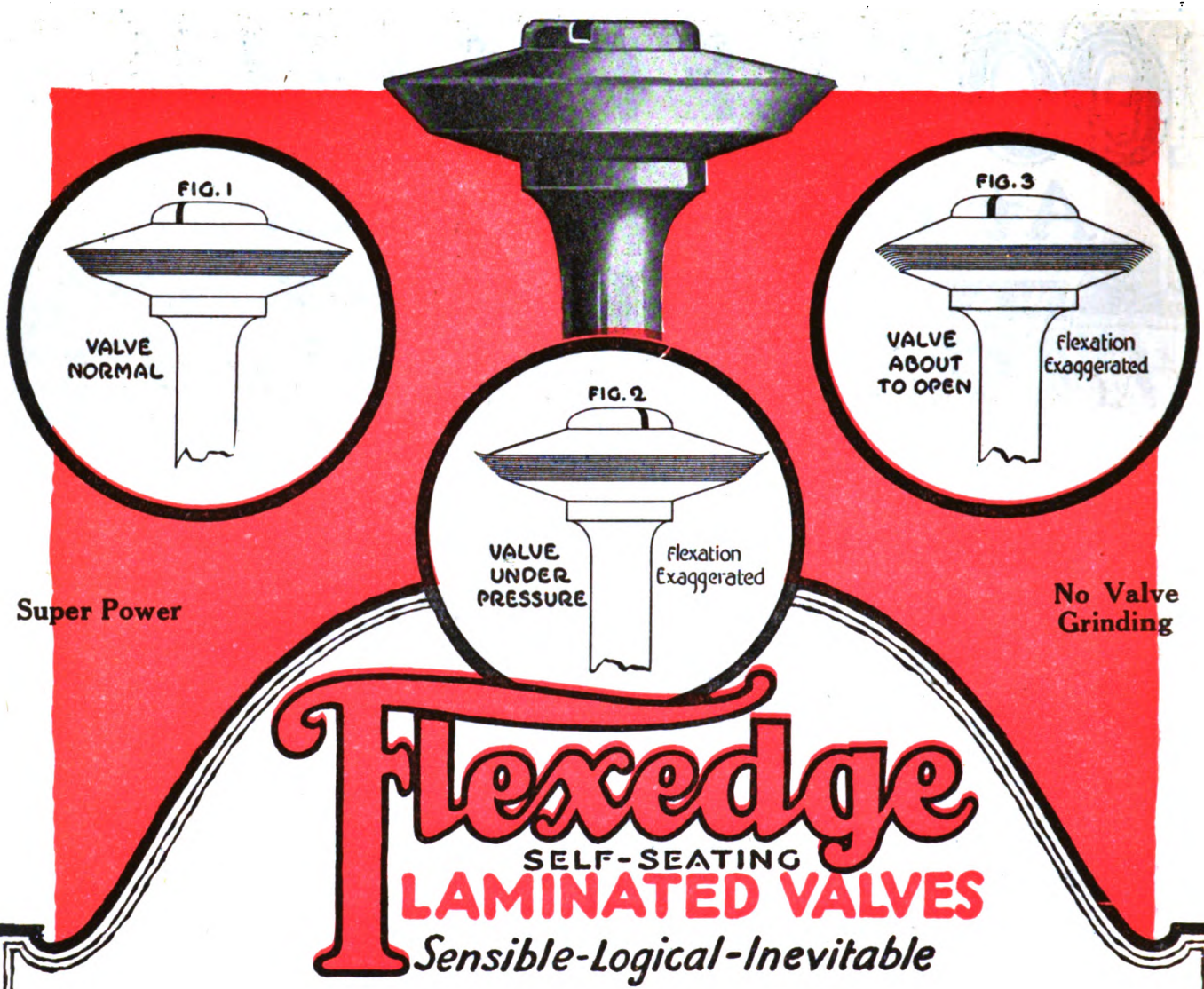

Super Power

No Valve Grinding

Flexedge

SELF-SEATING

LAMINATED VALVES

Sensible-Logical-Inevitable

A Valve-Seat Carbon Remover at Work While You Drive

5000 Dealers Have Tested Sample Flexedge Valves and Pronounced Them the Answer to the Carbon Problem

Immediately following the announcement of FLEXEDGE VALVES, we were flooded with orders for sample sets for test purposes. As a result, dealers and car owners all over the country have written to us stating that FLEXEDGE VALVES positively eliminate valve grinding and produce exceptional power and efficiency of motor operation. Naturally after our own preliminary testing we expected that a big demand would be forthcoming. Consequentiy we were prepared, and today we are filling orders from dealers in almost every hamlet and metropolis in the Nation.

FLEXEDGE CONSTRUCTION PREVENTS CARBON DEPOSITS

The FLEXEDGE principle is merely a slight flexation, which is so small as to measure only a tiny fraction of a thousandth of an inch, yet sufficient to gently scrape the valve seat, removing the tiny flecks of carbon, which collect after each explosion. FLEXEDGE SELF-SEATING VALVES continuously grind themselves, always seat. They are installed just like all other valves.

FLEXEDGE JOBBERS.

CHANSLOR & LYON CO., San Francisco, Seattle, Los Angeles, Tacoma, Spokane, San Diego, Portland.
THE BECKLEY-RALSTON CO., New York, Detroit, Chicago, Kansas City, Pittsburgh, San Francisco.
HERRING MOTOR CO., Des Moines, Iowa.
THE GIBSON CO., Indianapolis, Ind.
MOTOR & MACHINISTS SUPPLY CO., Kansas City, Mo.
REINHARD BROS., INC., Minneapolis, Minn.
MOTOR CAR SUPPLY CO., 1451-5 Michigan Ave., Chicago, Ill.
J. D. GRANT CO., Fargo, N. D.
CHICAGO AUTO. SUPPLY HOUSE, 1349-53 Michigan Ave., Chicago Ill.
NICOLS, DEAN & GREGG, St. Paul, Minn.
REPASS AUTOMOBILE CO., Waterloo, Iowa.
WESTERN MOTOR SUPPLY CO., Milwaukee, Wis.

Send for a Test Pair Today

SELF-SEATING VALVE CO., 706-8 Townsend St. CHICAGO, ILL.

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Is this

the tire you'd like to handle?

This is the Hand-Built Madison. Tire merchants everywhere have come to recognize the exceptionally high standard of tire endurance set by the Madison. We try to build better tires—not the most tires. We build Madisons by hand, because it is impossible to obtain those extra miles with machinery alone. We build Madisons by hand because we know of no other method which can produce a tire of the same stamina and long life.

Madisons bring superb endurance to the owner and bigger business to the tire merchant. If you have or would like to build up a trade that is not satisfied merely with "a tire"; a trade that knows the wisdom of buying tire endurance,

Sell Madison Tires

SUPERB ENDURANCE

Madison Tire and Rubber Company, Inc.

SUPERB ENDURANCE

254 West 57th Street, New York.

NOT CHEAP BUT BETTER

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The Standard Spark Plug of the World

The old, old story of AC dominance was retold at this year's New York and Chicago Automobile Shows. A census taken of the passenger cars and motor trucks on display showed that more fine cars were equipped with AC Spark Plugs than with all other makes combined. The dealer takes no chances in stocking a line that has the endorsement of the leading automotive engineers of the country, or in recommending and selling spark plugs that are used as standard equipment on the leading makes of automotive vehicles. That line is the AC. Concentrate upon it. Write today for complete dealer information.

Champion Ignition Company, FLINT, *Michigan*

These manufacturers use AC Spark Plugs for factory Equipment

Acason Trucks
Ace
Acme Trucks
Advance-Rumely Tractors
Ahrens Fox Fire Trucks
American Beauty
American-La France
Anderson
Apex Trucks
Apperson
Appleton Tractors
Argonne Four
Atco Trucks
Auburn
Austin Manufacturing Company
Available Trucks
Avery Tractors
A & T Tractors
Bates Steel Mule Tractors
Beck-Hawkeye Trucks
Bellanger Freres (France)
Bessemer Trucks
Betz Trucks
Birch
Bour-Davis
Braddon
Bradley
Briggs & Stratton Motor Wheel (formerly Smith)
Brockway Trucks
Buffalo Motors
Buick
Bullock Creeping-Grip Tractors
Cadillac
J. I. Case T. M. Co.
Chalmers
Chandler
Chevrolet
Chicago Trucks
Clark Tractors
Cleveland
Cole
Collier Trucks
Comet
Commonwealth
Conestoga Trucks
Continental Motors
Curtiss Aeroplanes
Daniels
Dart Trucks
Davis
Defiance Trucks
Delco-Light
Denby Trucks
Diamond T Trucks
Diehl Trucks
Dodge Brothers
Doman Engines
Domestic Gasoline Pumping Engines
Dort
Duesenberg Motors
Dyneelectric Plants
Eagle Tractors
Economy
Elmira
Essex
Excelsior Motorcycles
Fairmont Ry. Motors
Federal Trucks
Flour City Tractors
Frontmobile
F-W-D Trucks
Galloway Engines
Gary Trucks
Genco Light
Glide
G. B. S. Motors
G. M. C. Trucks
Gramm-Bernstein Trucks
Gray Dort
Hackett
Hahn Trucks
Hall Trucks
Harvey Trucks
Hatfield
Haynes
Herschell-Spillman
Holt Tractors
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Hudson
Hupmobile
Hurlburt Trucks
Independent Trucks
Jackson
Johnson Motor Wheel
Jordan
Jumbo Trucks
Kalamazoo Trucks
Kearns Trucks
Kent Concrete Mixers
Kissel Kar
Kleiber Trucks
Klemm Trucks
Knox Tractors
Koehler Trucks
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New Britain Tractors
Noble Trucks
Oakland
Old Reliable Trucks
Oldsmobile
Oneida Trucks
Owens Light & Power Plants
Packard
Paige
Pan
Parker Trucks
Paterson
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Phianna
Pierce-Arrow
Pilot
Pioneer Tractors
Pittsburgher Trucks
Porter
Premier
Ranger Trucks
Red Wing Thorobred Motors
Reo
Re Vere
Reynolds Trucks
Riker Trucks
Roamer
Roberts Motors
Robinson Fire Trucks
Rock Falls
Rowe Trucks
Rutenber Motors
Samson Tractors
Sandow Trucks
Sanford Trucks
Saxon
Scripps-Booth
Scripps Motors
Seagrave Fire Trucks
Signal Trucks
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Speedway Motors
Standard "8"
Standard Trucks
Stanwood
Stearns-Knight
Stearns Tractors
Sterling Engines
Sterling Trucks
Stewart Trucks
Stockton Tractors
Stoughton Trucks
Straubel Engines
Sullivan Trucks
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Swartz Lighting Plants
S-S-E Co.
Tiffen Trucks
Tioga Tractors
Titan Trucks
Tower Trucks
Trego Motors
Union Marine Engines
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United Trucks
VanBlerck Motors
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Vim Trucks
Wallace Tractors
Walter Trucks
Ward La France Trucks
Westcott
White
White Hickory Trucks
Whitney Tractors
Wichita Trucks
Wilson Trucks
Wisconsin Motors
Wolverine Tractors
Woolery Ry. Motors

U. S. Pat. No. 1,135,727, April 13, 1915, U. S. Pat. No. 1,216,139, Feb. 13, 1917. Other Patents Pending.

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THE ACCESSORY AND GARAGE JOURNAL
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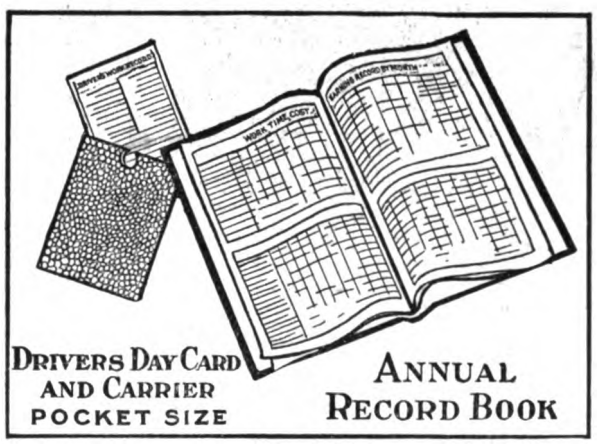
Know what it costs to Run your Truck
Learn what your Truck Earns
Know your Truck Profit and Loss

UNIVERSAL MOTOR TRUCK ACCOUNTING SYSTEM



The system includes an annual record book, 350 drivers' day cards, a day card carrier and full instructions.

Any owner can start this system at any time with an old or new truck of any make or type.

Any boy or girl clerk can maintain all records for one or a hundred trucks.

Each system is good for one year, nothing more is needed or necessary.

The records show at a glance any and all items entering into the earnings and cost of operation.

It is extremely simple. 100% complete and full working instructions are supplied with each system.

It is almost self-operating.

Price $10 — Delivered

Address Record Department
MOTOR TRUCK
Pawtucket, Rhode Island.

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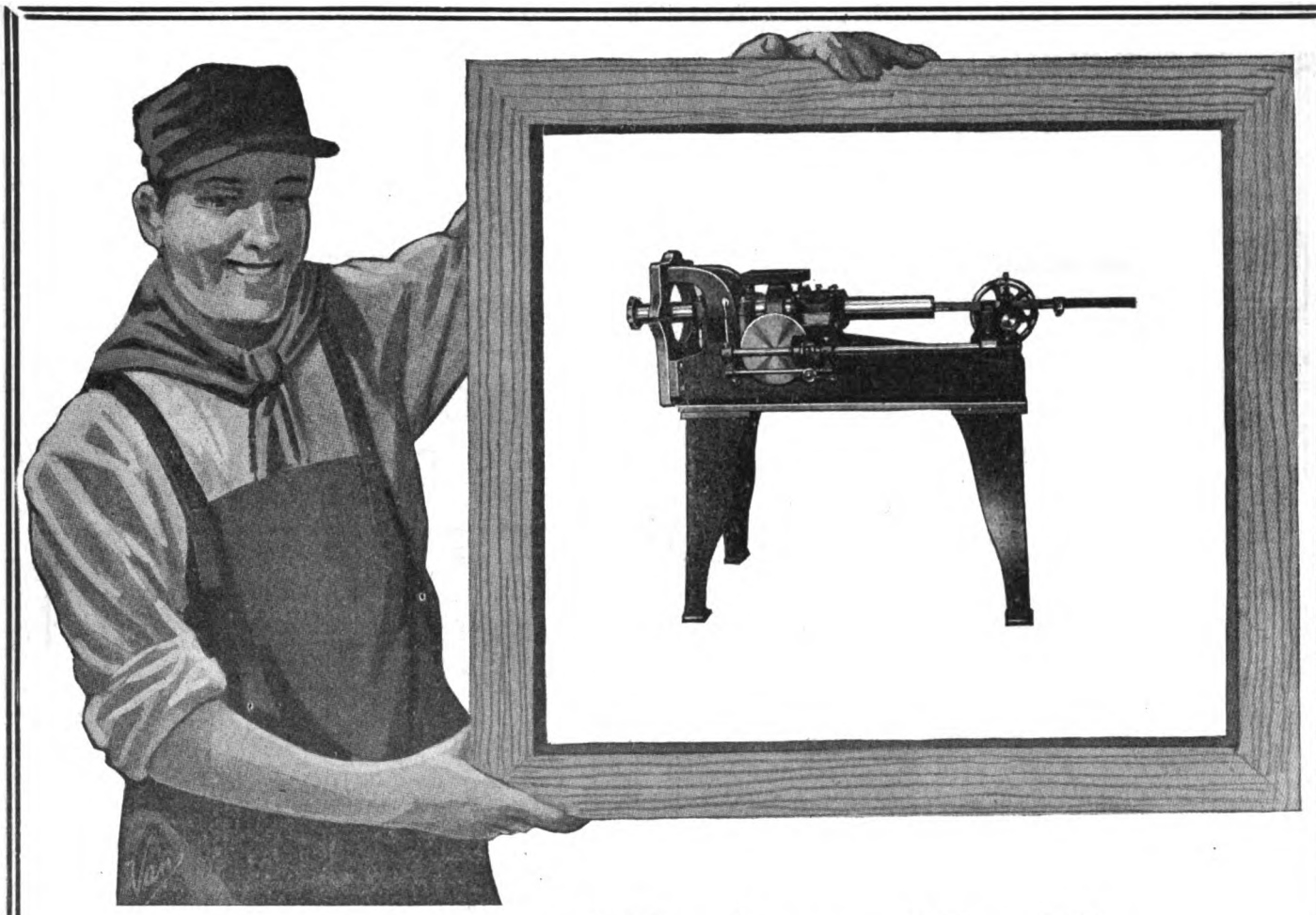

A Picture of Business Health

You'll never need a doctor for your business if you have a Marvel No. 5 in your shop. It is always in shape—is spack and span—ready for work. It always does a high-class job and is the greatest little money maker you ever saw. It works faster and does better work at less cost than any machine ever invented and handles any gas engine cylinder from a MOTORCYCLE TO A TRACTOR.

Marvel Cylinder Re-Boring Machine No. 5

In your shop will double your man-power—will turn wasted time into profitable hours—will establish you in the Re-boring business and show a profit on your books.
The Marvel No. 5 is power-driven—automatic—accurate and speedy. It has been endorsed by hundreds of schools and colleges and automotive repairmen.

GET THE PROFIT

There's a lot of extra money floating around in your community and you can get it with a Marvel No. 5. Think of the hundreds of owners of motor cars, trucks and tractors whose cylinders need reboring. Cash in on it. Get in shape to rebore them on a Marvel No. 5 and fit them with Marco Oversize Pistons.

MARCO PISTON SERVICE

WRITE US TODAY

We will outline our entire proposition. We will tell you what a Marvel No. 5 will do for you—Will show you the profit you can expect. We will explain how, through our Co-operative Business Building Advertising, we help bring customers to your shop and how the Marvel No. 5 will hold them.

MARCO PISTON SERVICE

Marvel Machinery Company

516 Loan & Trust Building, Minneapolis, Minn.

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The ACCESSORY and GARAGE JOURNAL

VOL. IX. PAWTUCKET, R. I., JANUARY, 1920 No. 9

New York and Chicago Shows Strike the Keynote of Big Business

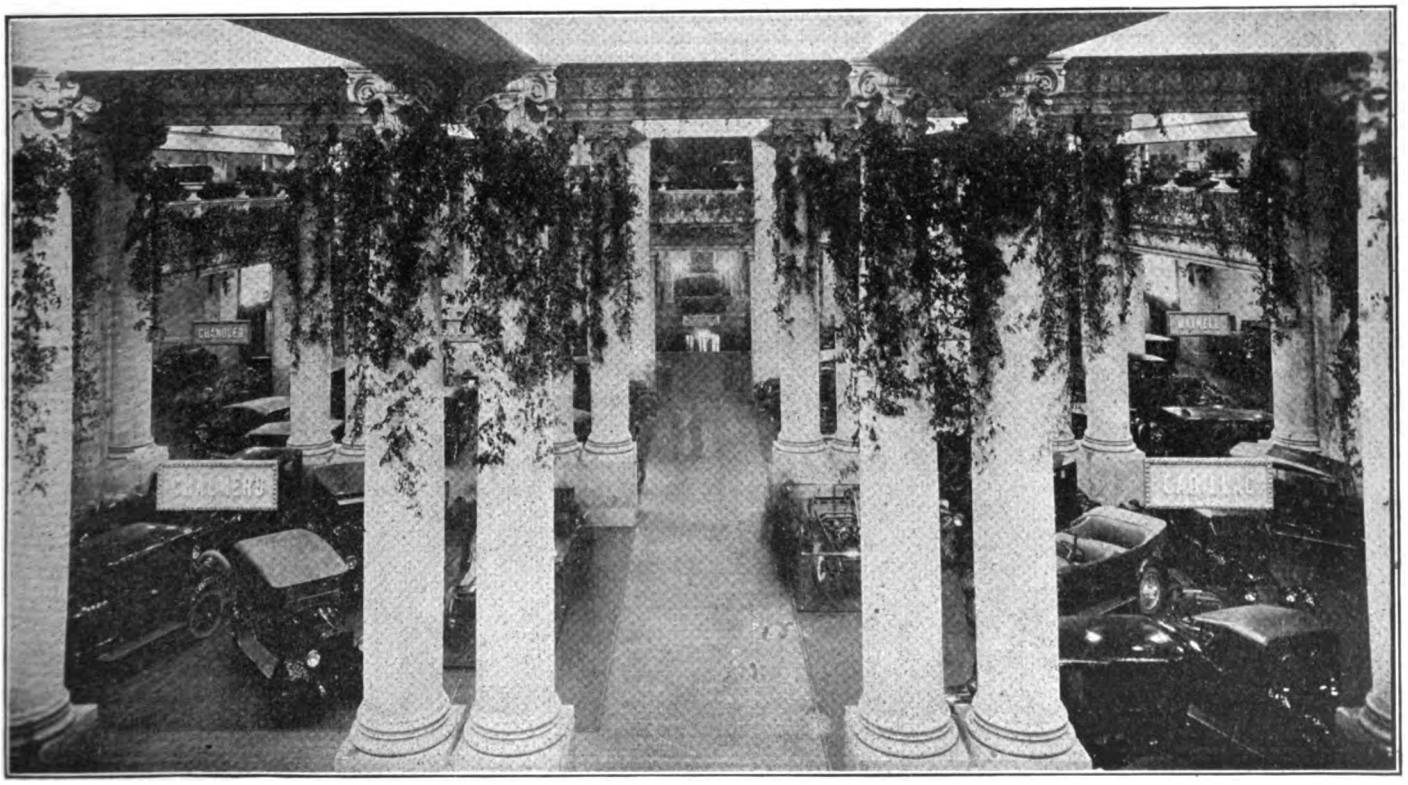
Twentieth National Displays Feature Practicality and Utility of Motor Car--Representative Exhibits in All Sections

THOSE who are in a position to be well qualified to pass accurate judgment are unanimously of the opinion that never before in the history of the big automobile shows has so large a proportion of those in attendance, both at New York and Chicago, been prospective buyers of cars or equipment. As a rule in the past the number of merely curious spectators has far exceeded actual purchasers, but careful observation this year indicates that these proportions were reversed.

Every year exhibitors have strived to offer at the big shows something that would appeal to every class of spectator who might pass their cars in review. There has been a desire to cater to the practical business man as well as the curious woman, either of which might be a potential purchaser. This was pre-eminently the case this year, although the method of appeal differed from the majority of cases heretofore.

The displays this year were particularly noticeable on account of the absence of freak designs and flashy finish. They were practical business shows and necessarily so, for the real desideratum was a sensible and serviceable car, combining comfort and economy, and the majority of models on exhibtion presented just these characteristics.

If anyone visited this year's show with the idea that he would see many marked changes in the design and construction



General View Down Main Aisle of Passenger Car Show in Grand Central Palace, Showing the Graceful Effect of the Floral Decorations.

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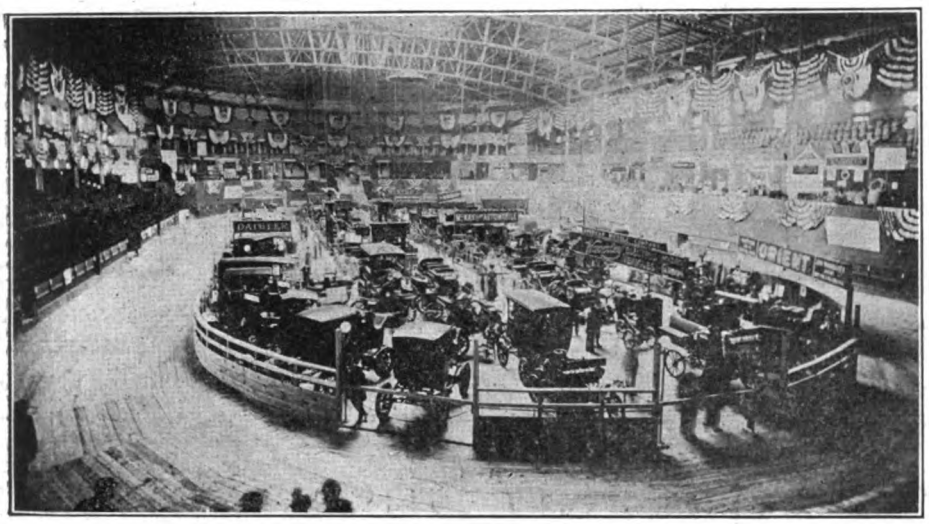


Glimpse of First Passenger Car Show Held in Madison Square Garden, New York, in 1900, Giving an Idea of Enormous Development of Industry.

of the 1920 offerings, he was doomed to disappointment. The cars looked very much like those of a year ago and it was only by close examination that the little touches of refinement and minor improvements that would necessarily mark a year's progress in the industry could be noted.

The "post-war" car was predicted by some a year or so ago as one which would show revolutionary tendencies in many important characteristics, whereas what appears to have actually developed is a further and more complete standardization of the best of the old designs—a veritable "survival of the fittest." These changes, many of which, as the designers state, are the outcome of valuable experience gained during the war period, although not especially noticeable to the casual observer, are not the less important. The strengthening of various parts and the simplification of mechanical construction are the principal phases. The main design has been left practically the same as for the past two years with a tendency, however, towards straighter lines from hood to tonneau.

In the matter of finish all car builders seem to have treated the matter from a most conservative standpoint this season as black was the prevailing color for the standard vehicle. The strikingly brilliant hues and startling color combinations of two and three years ago were this year confined almost entirely to special jobs of the sport and racy type. The family car is dark in color, usually black or dark green, and very little trimming of contrasting color is used.

The closed car manifested its rapid development during recent years by easily becoming the leader among the types shown this year. In fact nearly every exhibit that contained more than one model displayed some form of the completely enclosed machine. The sedan was in the majority, but the limousine, landaulet and town car were seen in large numbers.

One of the refinements in the sedan is borrowed from abroad—the glass partition separating the tonneau from the front seats. This division is adjustable and may be dropped out of sight, leaving the standard sedan arrangement.

As the enclosed cars have increased in popularity there has been a change in the style of the upholstery. The leather which is a necessity in open cars to provide a material that will withstand all kinds of weather conditions, has been replaced in many enclosed models by the softer and more refined plush, corded cloth and other materials more in harmony with the elegance of indoor furnishings.

Heaters as Standard Equipment

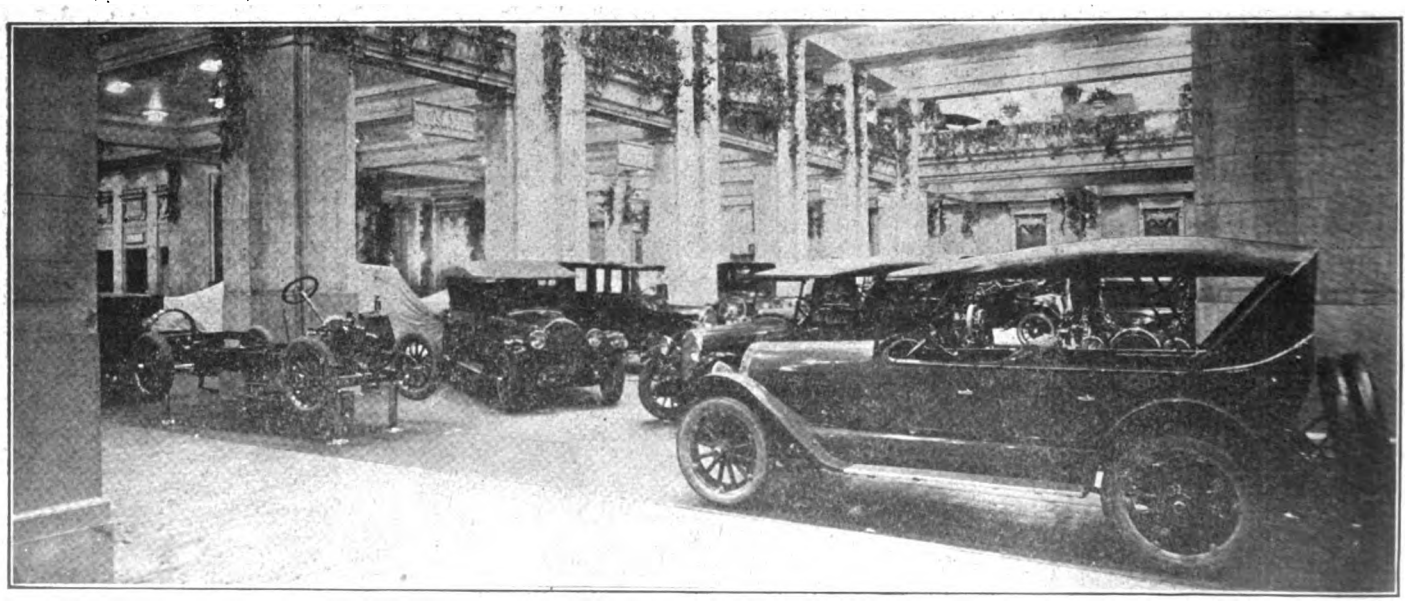
Another development which has logically accompanied the popularity of the completely enclosed car is the introduction of some form of heater as standard equipment, thus perfecting these models for all-year use in any climate. Thirty exhibitors at this show displayed models provided with heaters. This largely exceeds the number of cars so equipped heretofore; in fact, it has hitherto been largely experimental, but the prophecy is now made that some form of heater will soon become standard on all closed cars. It is also significant that this refinement is noted quite as often in the medium priced vehicle as in the more expensive models.

The luxurious equipment of the interior is a noticeable feature. Many of the conveniences and comforts that were formerly included only in the most expensive makes are now added to the standard furnishings of the more moderately priced cars. These included such details as cigar lighters, vanity cases and compartments for cigars and cigarettes, all showing the extent to which designers are catering to the most exacting tastes of a fastidious clientele.

Wire Wheels on the Increase.

While the standard artillery or wood spoke wheels are still in the majority, the wire type was seen on more cars than ever before, and it is obvious that it is gaining in popularity. Disc wheels, which were in vogue last year and 1918 as a war time characteristic, are still found on many of the more luxurious cars.

The requirement in regard to non-glaring headlights now demanded in many states has resulted in the equipment of practically all the new models with some form of lenses that will comply with the regulations. In some cases even the spot



Transverse View of Exhibition Hall, Grand Central Palace, Showing the Setting in

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light has been supplied with a form of lens that is meant to eliminate the glare without impairing the volume of light.

Mechanical Features Predominate.

It is fast becoming the rule that the owner or prospective buyer of a car who is entirely ignorant of the mechanical make-up of the modern motor car is rare exception, and to meet the desire of such to learn everything possible of the internal economy of the automobile, the manufacturer has used various methods of showing the power plants of his models in actual operation. Many engines were mounted on blocks and cut away to show the interior of the cylinders. Some of these were in motion, being operated by electric motors. Small electric lights illuminated the interior so that all operations could be clearly seen. Other engines were mounted so as to be cranked by hand.

In many cases some exclusive feature of the power plant of a particular car was thus graphically demonstrated.

Decorative Features.

In the novelty and effectiveness of the decorative scheme, Manager Miles again manifested his originality and taste at the Grand Central Palace this year. The imposing features of the entrance were accentuated by the simplicity of treatment, and the visitor was prepared by his first glimpse, through a frame of bay trees and floral masses, for the carrying out of the attractive plan in the interior. Garlands of smilax and greens brought the design into harmony with the spirit of the holiday season, and also suggested the approach of spring. Each display was enclosed by a white railing supported by white posts capped with brown. The big windows that light each of the four floors were curtained with especially designed fabrics. But the "piece de resistance" was embodied in the tapestry panels set at regular intervals along the walls, which depicted fanciful scenes of English country life done in the old English manner. They bore coats of arms and at the top were imprinted the names of the adjacent exhibitors.

General View, Accessories Division, Grand Central Palace, by Which May Be Noted the Comprehensive Character of This Section of the Show.

Attendance Was Large.

In point of attendance it is conservatively estimated to have considerably exceeded previous years, notwithstanding the fact that the admission price had been raised to meet post-war conditions. The exhibition halls were well filled at all times and during the rush hours of the afternoon and evening the public was present in veritable throngs.

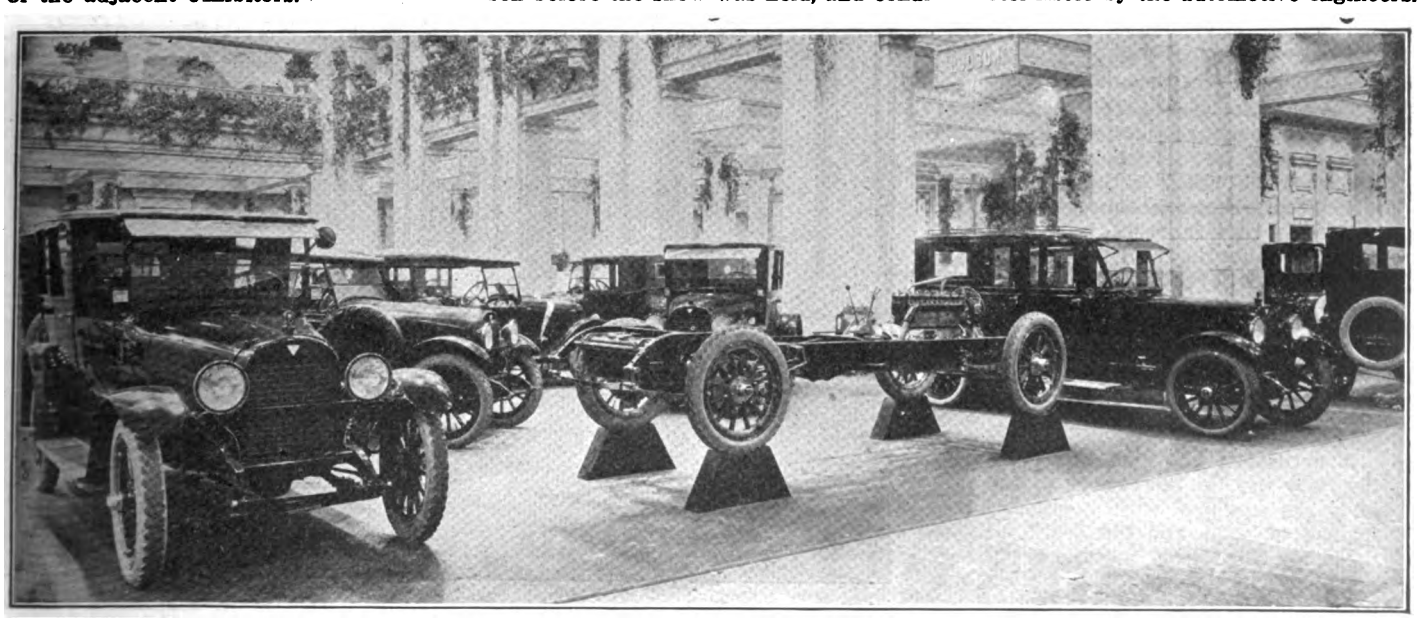
Considered from its business aspects, it was thoroughly demonstrated that the productive capacity of the motor car industry is still very limited when contrasted with the apparently almost limitless absorptive capabilities of the automobile using market in the United States and abroad.

In many instances it appeared that those in attendance came to the exhibition with a clearly defined idea of what would best meet their needs and tastes, and manufacturers' representatiyes were confronted not so much with questions of comparisons of styles and types as by problems of delivery when the order was once booked. It is stated that on account of the unprecedented demand for cars during the opening part of the season before the show was held, and conditions which have materially reduced production, many exhibitors, with the exception of those prepared to produce on a quantity basis, or a few of the new comers whose products are not yet so well known, were somewhat embarrassed when pressed for promises of immediate delivery.

Events During the Week.

Among the social events of show week participated in by organizations affiliated with automotive interests were the following:

On Monday, Jan. 5, the Rubber association dined at the Waldorf hotel. The annual dinner of the National Automobile Chamber of Commerce was given on Tuesday, Jan. 6, at the Hotel Commodore. On Wednesday, Jan. 7, the National Automobile Show Managers' association had a luncheon and meeting at the headquarters of the Automobile Dealers' association, the professional section of the Society of Automobile Engineers dined at 1 o'clock, the 12th annual banquet of the Motor and Accessory association was held at 7:30 o'clock in the grand ball room of Hotel Commodore, and carnival night was observed at 9 o'clock at Hotel Astor by the automotive engineers.



Harmony with Holiday Season and Including a Number of Representative Car Displays.

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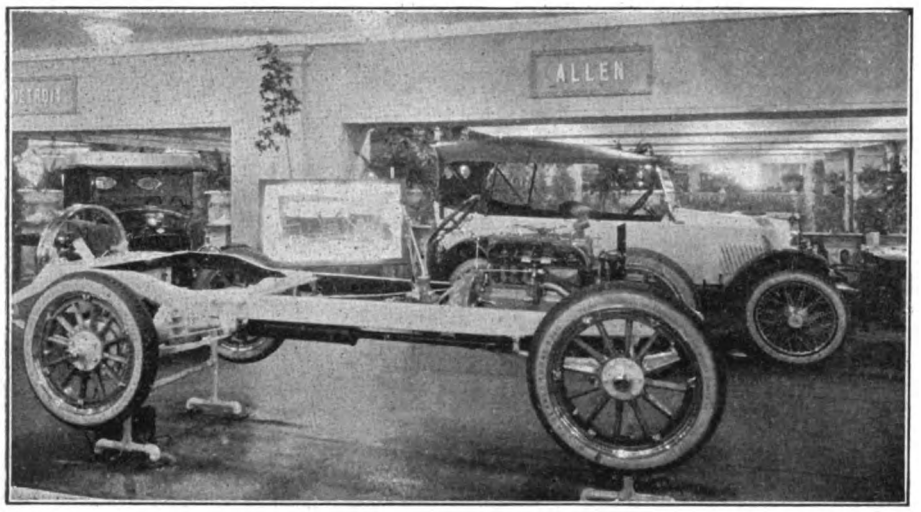


Showing of Allen Motor Car Co., Columbus, O., Included Latest Model Touring Car and Chassis.

Features of Motor Truck Shows

The overwhelming success of the commercial car section of the show was felt by many to be a remote possibility, when considered in the light of the unfavorable location of the Eighth Coast Artillery Armory for housing an exhibition so far distant from the normal down town show district. There were those, too, who advocated that this class of vehicle should be shown independently of the passenger car section in point of time, while still others maintain that the motor truck and its components are at best doubtful prospects as successful exhibition features.

There is, however, no doubt in all minds that in many respects this show of 1920 was as successful a truck exhibition as could be staged, and this was manifested in many ways. Manufacturers reported that business was transacted in good volume, and it is unquestionably the fact that many of them, if they book no more orders for some time to come, will be fully engaged in filling those already listed for a considerable period.

The foreign demand for the commercial wagon was plentifully in evidence and extremely encouraging.

Exhibits Were Beyond Criticism.

The exhibits were beyond criticism as regarded quantity, quality and effective arrangement, and afforded an epitome of whatever is of utility in this great branch of modern transportation.

As was true in respect to passenger cars, not much in the way of noticeable modifications over previous years was manifested in the machines on view. A development of interest was the advent in considerable numbers of the light truck forms designed and equipped for higher speed than the heavier types.

Increase in Pneumatic Tires.

A noticeable phase of this section of the show was the increase in the number of trucks equipped with pneumatic tires instead of solid, and the desirability of these air filled tires for many types of machines to lessen road shocks was pointed out by many truck and tire manufacturers.

The solid tire is by no means in the discard, however, as a large number of giant cars, equipped with enormous solid rubber shod wheels were in evidence and, of course, the dual form at the rear were common on the heavier vehicles.

Many Parts Were Shown.

Practically every exhibit of a complete truck or tractor was supplemented by a display of parts that came in for its full share of inspection. An unusual number of rear axles was shown with both worm and chain drive. A comprehensive exhibit of engines was also of particular interest to the mechanically inclined.

The collection of statistics that made up an important exhibit showed the cost of transportation by trucks as compared with the horse drawn method. This was studied by many business men who were interested in the tiuck as a means of solving their delivery and shipping problems.

Transportation Congress.

The sessions of the Transportation Congress will be repeated at the Chicago truck show.

Accessories Attracted Much Attention

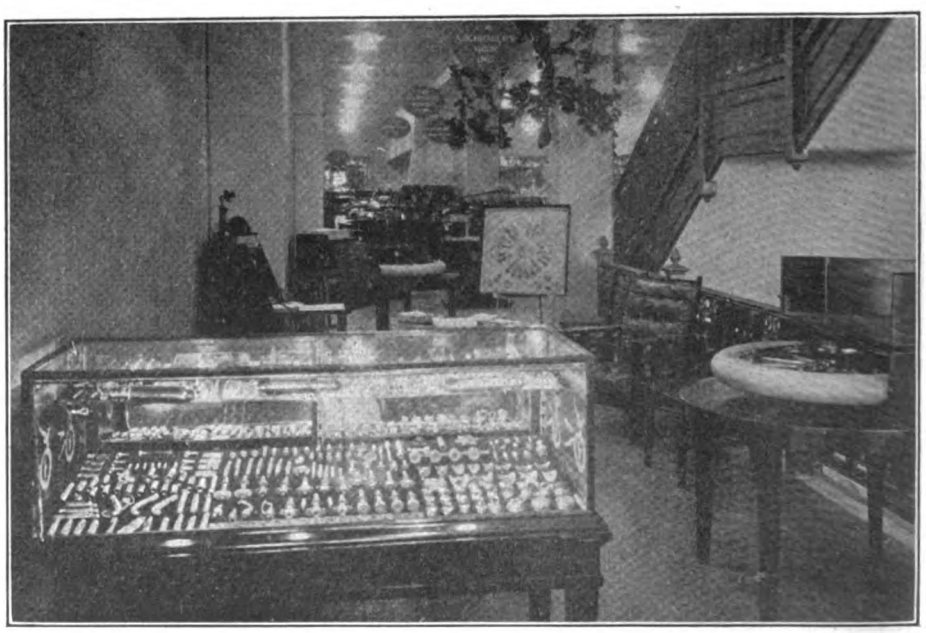
The allotment of space for the accessories division at both the Grand Central Palace and the Armory, made for a more adequate representation and effective arrangement than ever before. The exhibits devoted to passenger cars at the Palace, as was to be expected, outnumbered the truck section at the Armory, but there were 75 exhibitors making displays devoted exclusively to the commercial wagon at the latter place alone. At the Palace the entire fourth floor was devoted to this department.

No section of the show appeared to attract more attention than this part devoted to accessories. Here thousands of the parts that make up the automobile and its components were on view, as well as the components themselves, and the myriad devices that are designed to add to the convenience and comfort of the motorist, the utility and economy of operation of the car, and to facilitate the care and repair of the automobile in repair shop or garage.

These devices were attractive not alone from their novelty and practicality, but also by the striking mechanical methods of demonstration. This section of the show alone might afford many hours of pleasant and profitable study to those specializing in automotive mechanics and the up-to-date knowledge thus disseminated was more comprehensive and of more utility in many respects than could be gained by a long period of actual repair shop experience; while even the casual non-mechanically trained observer could not fail to be attracted and amazed.

This part of the big building hummed with the whirr of machinery and it seemed as if every component or device that had any movable features might be seen in operation during the hours the exhibition was open. The entire range of up-to-date tools, garage appliances and

(Continued on Page 49.)



One of the Representative Accessory Booths Was That of A. Schrader's Son, Inc., Brooklyn, N. Y.

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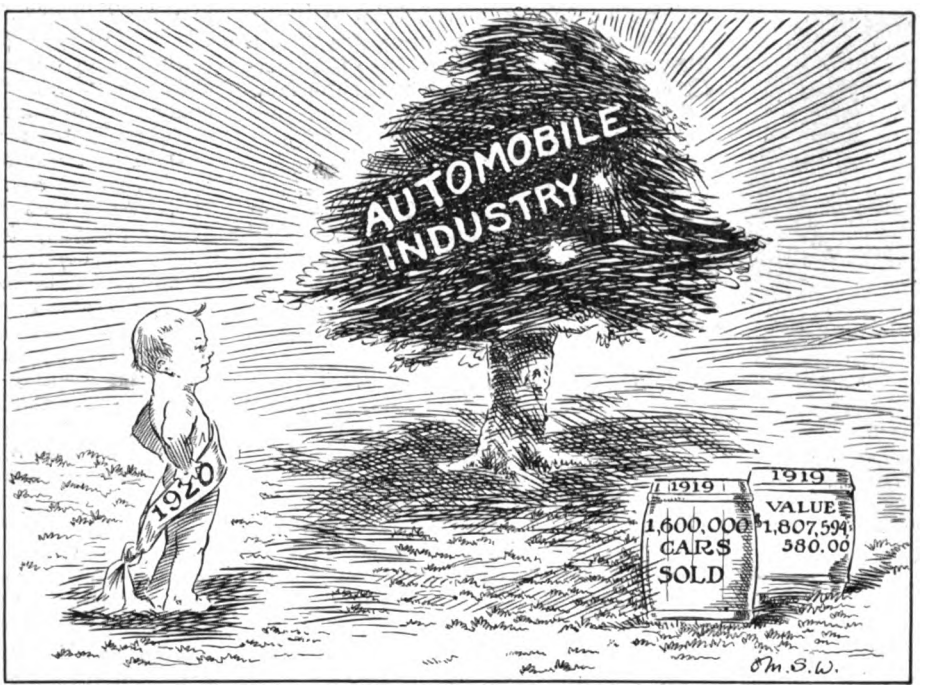
Notes of the Industry and Trade

Prosperity of Past Year Is Demonstrated and Predictions Are Favorable for Busy Season to Come

THAT the past year has been a prosperous one in the automobile industry can be well realized from the statement that the total number of automobiles turned out in this country in 1919 is estimated to have been over 1,600,000, including passenger and commercial cars. This represents a total money value, conservatively figured, of $1,807,594,580, and statement is made by the National Automobile Chamber of Commerce that the automobile industry has gone up to second place in the great activities, becoming second only to the steel industry. It is also predicted that on the same basis of increase at least 2,500,000 new cars will be sold in the United States in 1920.



The Infant Year: "If My Tree Bears as Good a Crop as It Should This Year, It Will Fill Good Deal Bigger Barrels Than Those."

It is estimated that there are now in use in this country over 6,000,000 automobiles. In order to fully appreciate what these figures really mean, it may be stated that the seating capacity of these 6,000,000 cars is not less than 30,000,000 persons. This may be compared with the total seating capacity of the railroad cars of the country, of which there are 55,705, which is about 3,500,000 persons.

To transport the persons now carried by automobiles would require 60,000 new railroad passenger cars ($11,000 each), at a cost of $660,000,000; 12,972 new locomotives ($35,000 each), at a cost of $524,000,000, and duplication of passenger tracks, stations and employees at an expense very difficult to calculate.

If every motor car now in use in the United States traveled 3000 miles a year, a low average, and carried three passengers each mile covered, the total passenger mileage would be approximately 45,000,000,000.

The disappearance of the automobile would make it necessary to increase the horse population by about 25,000,000. It requires the produce of five acres of well farmed land to feed a horse for one year. This would mean that 125,000,000 acres more, heavily cropped, would be necessary to care for the additional live stock. There are now about 25,000,000 horses in the country.

It may also be stated in this connection that the latest reports indicate that nine tenths of all the motor cars in the world were built in the United States. In first nine months of the past year the United States shipped to foreign countries cars exceeding $75,000,000 in value, at which rate the total value of exports for the year should be above $100,000,000, or an increase of nearly 60 per cent. over last year.

NEW LOCKPORT GEAR CO.

The recently incorporated Dittmer Gear & Manufacturing Co. has commenced razing the old buildings on the Mansfield Glass Co.'s site at Lockport, N. Y., which was purchased by A. H. Dittmer, president of the company, to make room for an up-to-date plant to be constructed of steel, brick and concrete.

The property purchased has a frontage of 264 feet on Grand street and a similar amount on Green street, and has a depth of 252 feet from Grand to Green street. The unit to be built will have a floor space of 22,000 feet.

The Dittmer Gear & Manufacturing Co. is capitalized at $175,000. A cooperative plan with its employees will be put into operation from the outset, as all will be encouraged to become stockholders in the concern.

President Dittmer has associated with him men of practical experience in the lines to be manufactured by the company, among them being W. J. Riley of Lockport, who resigned a position as buyer of machinery, tools, etc., with the Covert Gear Co. to accept the office of efficiency engineer with Dittmer company.

NEW FOUNDRY FOR BURD RING CO.

The new foundry recently completed by the Burd High Compression Ring Co. at Rockford, Ill., maker of Burd high compression and quick seating piston rings, will more than triple the production capacity of the plant.

Burd piston rings are individually cast from a tough gray iron of special analysis, filtered so that all impurities are removed, to insure absolute uniformity of metal texture, greater strength, prompt and perfect seating and freedom from flaws, porous spots and other defects.

The progressive systems and improved processes of making piston ring castings installed have also aided in attaining the desired increased output.

COLUMBIA MOTORS EXPANDS.

The Columbia Motors Co., Detroit, is to increase its production facilities by the immediate occupancy of the plant formerly occupied by the B. F. Everitt Co. at the junction of Mack avenue and the Michigan Central railroad, which it recently acquired. The new buildings are conveniently located only a few blocks away from the present factory, and will provide adequate facilities, pending the erection of the new factory on Fort street, work on which was delayed by the building and fuel conditions.

PURITAN CO. REMOVES.

The Puritan Machine Co., Lafayette building, at 10th street, Detroit, Mich., has purchased the property at the corner of Fort and Eighth streets, now occupied by the All Power Truck Co., and will at once move its manufacturing department to the new location.

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Saxon Reorganization Is Ratified

Stockholders of the Saxon Motor Car Corporation, Detroit, unanimously indorsed the reorganization plans of the company as outlined by C. A. Pfeffer, secretary and treasurer of the corporation. This plan provides the concern with a working capital of between $2,500,000 and $3,000,000. Expansion policies will be carried out.

C. A. Pfeffer, Secretary-Treasurer Saxon Motor Car Corporation.

The Saxon Motor Car Corporation is now reorganized under the laws of New York, creating a new stock issue of 200,000 shares of no par stock, 60,000 shares of which is exchanged share for share with the present stockholders, and 120,000 shares will be marketed through an underwriting syndicate. The remaining 20,000 shares will be reserved for general corporate uses.

This new plan will put the company on a solid financial footing.

THE NEW ENGLAND MILLS SEEKS LARGER QUARTERS.

The New England Mills Co., Chicago, announces a change in location which has been made necessary by a rapidly increasing business, and a desire to secure the convenience of having show rooms, offices and warehouses combined at one place. The former show rooms and offices, at 1219-1221 South Michigan avenue, have been abandoned and the sales and accounting departments will in the future be at the warehouse at 1027-1033 West Van Buren street.

The New England Mills Co. is a well known manufacturer, jobber and distributor of automobile and truck accessories, robes, blankets and leather goods. The officers are: President and treasurer, Ed. C. McCoy; vice president, Frank J. Enright; secretary, Richard A. Linehan. Among the products for which it is the exclusive distributor are the Empire, Fidelity and Nemco brands.

COTTA TRANSMISSION CO. EXPANDS.

The Cotta Transmission Co., Rockford, Ill., is making plans for increasing production and improving sales arrangements for the new year. D. W. Bay, formerly sales engineer of the Motor Bearings division of the Hyatt Roller Bearing Co., has been appointed sales manager of the Cotta organization, and F. W. Ramey, who returned from overseas to take up duties on the Cotta staff, is Mr. Bay's assistant. W. J. McLaughlin, formerly of the Continental Motors Corporation, is in charge of production.

The building of transmission for truck and tractor service has been placed on a large quantity basis by means of the progressive system of assembly in the modern daylight factory located in the new manufacturing district of Rockford.

In the past year the Cotta company, switching from a production that was 90 per cent. for war purposes, has brought its commercial sales and production up past the high point of war work without any government business now being included in its volume.

NORMA CO. INCREASES PRODUCTION.

On Dec. 10 the Norma Co. of America, manufacturer of Norma Precision bearings, moved its factory from the Bronx, New York City, to Anable avenue, Long Island City, N. Y., where a modern four-story reinforced concrete building has been acquired.

This will give largely increased factory facilities, making possible the augmented output of Norma bearings necessitated by the growing demand for these high-precision units. The new plant is being rapidly equipped with special machines and the full capacity will be available shortly.

The executive offices at 1790 Broadway have been consolidated with the factory at the new address.

DUPONT INCREASES CAPITAL.

The DuPont Motors Manufacturing Corporation, Wilmington, Del., has increased its capital from $100,000 to $200,000.

Van Derhoof Forms Bacon Motors

Frederick C. Van Derhoof, who recently resigned as general manager of the automobile department of the Standard Steel Car Co. of Pittsburgh, after being associated with that concern since the organization of its automobile department eight years ago, announces the formation of the Bacon Motors Corporation at New Castle, Pa., of which he has been elected president. This new concern will build a light six, moderately priced car, which will be ready for market early in the spring.

The Bacon Corporation has purchased, at New Castle, a 21-acre factory site, including a new automobile factory, 500 feet long by 100 feet wide, of thoroughly modern construction, capable of producing 50 cars a day. It is capitalized at $1,500,000, which it plans to increase shortly to $2,500,000, and starts business without a dollar of indebtedness. The erection of a three-story building 50 by 600 feet is also projected for a body factory, upholstery and painting department adjacent to the present plant. The ground site has a frontage of 687 feet on Butler avenue, a main thoroughfare of the city, and extends 1461 feet along the tracks of the Allegheny Western railroad, from which spur tracks extend into the plot.

Mr. Van Derhoof has associated with him the following officials, all men of large business experience in Pittsburgh and vicinity: Vice president, F. W. Bacon, New Castle; secretary and treasurer, George N. Glass of Pittsburgh; additional directors, D. W. McNaugher, C. D. Scully, W. E. Provost and Edwin N. Ohl, all of Pittsburgh; assistant secretary-treasurer, E. C. Hopkins, New Castle; sales manager, H. L. Archey, Philadelphia. The engineering department is in charge of Erling Oyen, who resigned from the same department of the Standard Steel Co.

The Little Motor Kar Co., Dallas, Tex., has closed a deal for a large plot of land at Havre de Grace, Md., and will start in the early spring on the erection of the first unit of an eastern plant, to be of concrete and steel, 100 by 500 feet.

Modern Factory Recently Purchased by Bacon Motors Corporation at Newcastle, Pa.

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Records That Master Details for the Dealer

By Walter Engard.

AFTER he has footed up his annual inventory sheets, the average garageman and auto dealer feels that after all has been said and done the information which the annual inventory affords him is entirely too indefinite. Ninety-nine times out of a hundred the actual net returns from the business fall far short of what he had expected to make and to which he is justly entitled in view of the amount of business he had done through the year just closed. He takes his pencil and tries to figure out why it is that he had not made more money, but there is nothing in his inventory that will tell him or enable him to figure out where his profits have gone. The inventory sheet doesn't show the dealer where his leaks may be, or what he might do to better the situation.

The business man wants facts. He deals in facts and when he operates his business in the realm of surmise and fiction the results are apt to be disastrous. No dealer can hope to operate his business during these days of keen competition, rising costs and narrower margins of profit with even a moderate degree of success unless he is in position to know every important fact and figure regarding his business, not at the close of the year as some dealers do, but at the close of every business day, week and month.

There is no one factor that is so imperative to the successful management of a garage and accessory business as is that of accurate records. The dealer who must wait until the annual inventory is taken in order to determine whether or not his business is making money, whether or not every department of his business has been conducted successfully throughout the year, and whether or not there has been some leak in the business that has caused the profits to shrink, is taking a mighty big chance.

SALES TICKET

Sold to ---------- Date ----

Address ---------- Dept. ----------

Salesman

Quantity	Description	Cost	Amount

Records should be to the garageman and auto dealer what a thermometer is to a physician, or a carburetor to the automobile—in other words, indispensable. Records are absolutely necessary at all times to the life of the business. They enable the dealer to keep a tab upon the temperature of the business and to know at any time whether or not the business is being conducted profitably. They further show him what each department of his business is doing, whether or not each department is being carried on successfully, whether or not there is some place in his business that needs quick action and prompt attention in order to apply a remedy to cure defects shown by his records. Such records afford the dealer an accurate means for correcting errors or extravagances in policies and methods, for checking the accumulation of otherwise inevitable losses and for quickly developing plans which will result profitably.

It is necessary for the dealer who wishes to secure the information necessary for the efficient control of his business, to install a proper system of records. The best system of records for any business is one that will give the dealer all the information necessary for the efficient management of his business with the least effort. This system should be simple, easy to operate and at the same time complete and accurate. It should be convenient and economical. Such a system cannot be of such character that the cost of maintenance will be excessive, yet it must be complete or a very large part of its value is lost.

There is published here just such a system of records. It provides for a complete summary of the daily transactions. Only a few entries are required each day, yet it is complete and will at all times be a mirror of the business. It will show every day and any day every important fact regarding the business. This system is composed of:

(1) a sales ticket. (2) a repair order. (3) a labor ticket. (4) a time ticket, (5) a daily record of sales. (6) a daily record of expenses.

Before going into details regarding this system of records and its working, I wish to emphasize this one fact: That success will result only if the necessary care is given to getting it started right and keeping it going. Records can be made practically automatic, but they are bound to require some intelligent supervision, and they are not worth the paper upon which they are written unless you make them a practical guide for the future control of your business.

You will note that this system of records provides for keeping the sales in each department of the business separately; therefore, the very first thing to do in adopting it is to departmentize your stock. In order to operate any business at the very highest point of efficiency it is necessary that the dealer be in a position to determine that each small part of his business is being operated successfully. One small part of the business, creating friction, may cause the entire business to come to a standstill; that is, a leak, a loss, a waste, somewhere in the business, may cause the entire business to be operated at a loss. But if the dealer has his business thoroughly departmentized he will be

REPAIR ORDER

Name ---------- Date ----------

Address ---------- Phone ---------- Make Car ----------

Job No ---------- License No. ----------

Instructions

Order Rec'd by ---------- Signed ----------

Owner

You are hereby authorized to furnish all necessary materials and labor to make the above repairs

Promised ---------- Foreman ----------

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LABOR TICKET

Charge to_____Date_____

Address_____ Make Car_____

Hrs.	Kind of Work	Workman	Rate	Amount

Foreman

able to lay his finger upon that department which perhaps caused the loss in plenty of time to apply a remedy and thus save the entire business from failure. The garage man and auto dealer cannot hope to operate his business at the highest point of profit to himself unless he has each department of that business running successfully, and in order to do this he must have his business departmentized. The following departmental classification is suggested, although it can be changed to suit requirements, depending upon the size of the plant and the various kinds of merchandise handled:

(1) automobiles, (2) tractors, (3) trucks, (4) accessories, (5) tires and tubes, (6) oil and gasoline, (7) repairs.

Of course there are some garages that may need an entirely different classification, but the point to bear in mind is the necessity of departmentizing your business in order to handle it better, and by so doing you will be able to know just what each department is doing.

Your next step is that of marking every article in stock. For this purpose you should provide price tickets upon which you may enter the cost mark and the selling price. Price tickets in the form of shipping tags may be used on all such articles as automobiles, trucks, tractors, tires, repair parts, etc., while price tickets in the form of stickers may be used on small items such as tubes, cans of various articles and package goods of all kinds. This is very important in connection with this system of records as will be shown a little later in this article. No article should be allowed to go into stock until it has first been marked with the cost mark and the selling price.

All accessories, tires, tubes and repair parts should be kept in the accessory department.

As soon as you have completed this operation, that of marking the stock, the system is ready for operation. In presenting this system, and for that matter any system, it is necessary that you thoroughly understand that you must adopt the use of sales tickets for making a record of every transaction. This is very important if your records are to be accurate and unless they are accurate they will be of but little value to you.

A sales ticket should be made out by the salesman for every sale whether for cash or credit, entering the date, to whom sold, the department from which the article is sold, the quantity, the name of the article, the cost mark and the price received.

As these records provide for keeping a separate record of the sales in each department, and the sales ticket provides for the entry of the name of the department from which the article or articles was sold, it will be necessary for the salesman to make out a separate sales ticket for articles sold from the various departments; that is, should a salesman sell a customer a new machine, an extra tire and tube and a spotlight, he will make out three separate sales tickets, one for the machine from the automobile department, another for the tire and tube from the tire department and a third one for the spot light from the accessory department. This will facilitate the work of the bookkeeper in keeping the sales of each department separately and will not cause the salesman any great inconvenience.

In the case of supplies and repair parts used in the repair department, the foreman of the repair department should make out a requisition order for such supplies and repair parts as are needed by the workmen in the repair of the cars. This requisition order should designate to whom the supplies and repair parts are to be charged. When this requisition order is delivered to the stock keeper, who is in charge of the accessory department, he will deliver to the workman such supplies and repair parts as are designated and then will make out a sales ticket charging the customer with such supplies and repair parts as are used on his car. The requisition order should be pinned to the sales ticket and turned into the bookkeeper along with the sales ticket. This gives the stock keeper protection should the owner of the car dispute the purchase of any supply or repair part, for by producing the requisition order the owner will see that it was used in the repair of his car and it will also show which workman secured the supply or repair part.

These sales tickets should go immediately to the bookkeeper, also the cash received if the article was paid for. The bookkeeper should have a blank piece of paper on her desk so ruled as to keep the record of sales in each department separately, having two columns for each department, and as these sales tickets come to her she should enter the amount on the sale under the correct department, also the cost of the articles sold, keeping the costs in one column and the sales in another.

At the close of the day the bookkeeper will total these columns, thus securing the amount of sales in each department and also the cost of all goods sold in each department. She will then turn to the "Daily Record of Sales," form of this system, and enter the figures as provided on this form. Under the heading "Total Sales" she will enter the total amount of all sales in all departments, showing the volume of business for the entire day, also the total cost of all the goods sold.

At the close of the month the bookkeeper will total each column, for it will be noticed that this form provides for the sales records for one month; that is, a new form must be used for each new month, and on the extreme left hand side a column has been provided for entering the date upon which the figures are entered. By totaling each column you have the total sales for each department, also the cost of all the goods sold in that department during the month. Subtracting the cost of the goods sold from the amount of the sales you have the amount

TIME TICKET

Job No_____.Date_____

Workman	Kind of Work	Time Record
		Start
		Stop
		Start
		Stop
		Start
		Stop
		Start
		Stop

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of gross profit made in each department. This form enables you to keep an eye upon the progress of each department. From it you may determine which department is forging ahead the fastest and which will need a little pushing.

In the repair department you will provide a "Repair Order" such as illustrated herewith. When a car is received for repairs the foreman of the repair department will make out a "repair order," entering the name of the customer and his address, the date, the make of car, the license number, the job number and instructions as to what is to be done to the car. This repair order should be made out in duplicate, one for the foreman and one for the workman.

You will also provide a "Time Ticket" such as illustrated on preceding page. Of course in using a time ticket it is not absolutely necessary to have a time clock, but every garageman will find a time clock a very valuable fixture of his equipment. When a workman starts in on a repair job he will take the repair order and note the instructions; then he will take a time ticket and enter the job number, the date, the name of the workman, the kind of labor he does and the time he begins on the job. As soon as he quits the job he will enter the time he quits. It doesn't matter how many men may be working on this job the time ticket provides space for the record of each man, showing the length of time he puts in on it and the kind of work he does. There is only one time ticket for each job, thus facilitating the work of figuring the hours that are to be charged to that particular job.

All time tickets should be turned into the foreman of the department at the close of each day and as soon as all tickets are turned in he will make out a "Labor Ticket," as shown, entering the name and address of the customer, the date and make of car; also the number of hours each workman spent on this job, the kind of work each did, the rate per hour to be charged and the total amount of the labor charge. These labor tickets will go into the office each evening whether the job is completed or not, a new ticket being made out the next day if the job isn't completed.

The total amount of all labor charge as shown by the labor tickets for the day will be entered on the "Daily Record of

DAILY RECORD OF EXPENSES

Date_____ 19___

	Date	Item	Am't	Distribution to Departments						
				Auto	Tractor	Truck	Access.	Tires-Tubes	Oil-Gas.	Repair
Percent. Ratio to Sales			%	%	%	%	%	%	%	%

Sales" form to the credit of the "Repair Department" as provided on this form. You will note that this form does not provide for the entry of any costs under this department. All costs in this department are expenses and are charged direct to the expense account, and all material used in the repair department is charged through some other department as sales.

Now the "Daily Record of Expense" form provides for an accurate record of all expenses and every cent paid out for operating should be charged on this form, entering the date, the items and the total amount, and then it should be distributed to the various departments according to their participation in it. For instance, all salaries will be charged in one item and then each department should be charged with its share of that expense. Rent should be also charged to the various departments according to the space they occupy. Office expense will be proportioned to the various departments according to the volume of sales in each department. The same is true of such items as heat, light, insurance, taxes, manager's salary, advertising, etc. Of course any items used exclusively by any one department will be charged directly to it and not proportioned to any other departments, such as waste used in the repair department; an advertisement advertising accessories will be charged to the accessory department, etc. At the close of the month each column should be totaled and here you have the cost of operating each department of the business. At the bottom of this form you will note that space has been provided for entering the percentage ratio the expenses bear to the sales, thus showing the dealer whether his percentage of mark-on has been sufficient to cover his cost of operating and to leave him a fair margin of profit.

Good management is not a matter of guess work. The dealer or garage man does not use good judgment when he guesses. There is but one right way to handle a system of records properly.

With this system the dealer knows at the close of each month which departments have made money and exactly how much. The "Daily Record of Sales" shows him the amount of gross profit and by deducting the cost of operating that department as shown by the daily record of expenses he has the exact net profit made from that department. He doesn't need to guess at one single important fact in his business. He does not guess whether or not his repair department is self-maintaining; his records show him whether or not it is. His daily record of sales shows him how much was taken in by this department during the month and the expense record shows him how much it cost him to operate it. This system of records eliminates the necessity of guess work, develops the weak spots and enables the dealer to know just where his profits are going, and he has every important fact and figure right at his finger tip at any time.

DAILY RECORD OF SALES

Date_____ 19___

	Date	Total Sales		Automobiles		Tractors		Trucks		Accessories		Tires & Tubes		Oil & Gasoline		Repairs
		Cost	Sell	Cost	Sell	Cost	Sell	Cost	Sell	Cost	Sell	Cost	Sell	Cost	Sell	Sell

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Portage Rubber Co. to Build New Unit

DIXIE RUBBER CO. INCORPORATED TO MANUFACTURE IN SOUTH.

John T. Johnson, works manager of the Portage Rubber Co., Akron, O., is working out production plans that entail the construction of a large additional unit at the factory at Barberton, O., to comprise a header building with three wings, each of which will be 60 by 200 feet and several stories in height. This new unit will be devoted almost exclusively to the production of cord tires.

Mr. Johnson, who is a graduate of the mechanical engineering college of Cornell university, was for many years with the B. F. Goodrich Co. at Akron. Starting in the cord tire department he soon became manager of that branch and later was placed in charge of the tire experimental department. For a short time he was works manager of the Cord Tire Corporation at Chester, W. Va., leaving that position to go to the Portage company.

The Dixie Rubber Co. has been incorporated at Memphis, Tenn., and will build a plant in that city for the manufacture of automobile inner tubes and casings and by-products which will utilize the waste material resulting from the making of the accessories mentioned. This is said to be the only establishment of the kind in the South. The list of officials is as follows: Vice president and general manager, L. C. Cadenhead, Mahned, Miss.; vice president and assistant general manager, Thomas Kirk, Memphis, Tenn.; secretary and treasurer, T. J. Gresham, Indianola, Miss.; directors, C. N. Elliott, Memphis; J. M. Clower and J. W. Peyton, Dwyer, Miss.; E. N. Case, Sunflower, Miss.; M. H. Henry, Hickory Flat, Miss.; M. Gerstel, Memphis; G. W. Currie, Hattiesburg, Miss.; Ike Mendel, Memphis; H. B. Bixler, Akron, O.; Julius Thompson, Percy, Miss.; E. V. Catoe, Webb, Miss., and Theodore Read, Memphis. The office of president is not yet filled.

The Ray Tire & Rubber Co., Chicago, represented at Birmingham, Ala., by Thomas Z. Tyler, plans to build in the southern city a factory with a daily output of 25,000 interliners for puncture proofing automobile tires. The product will be of cotton and the machinery will include equipment for manufacturing as well as rubberizing cotton fabric. Buildings and machinery will cost $250,000.

John T. Johnson, Works Manager, Portage Rubber Co., Akron, O.

The Fort Wayne Tire & Rubber Manufacturing Co., Fort Wayne, Ind., has announced the appointment of B. E. Lorentz of Jeannette, Pa., as general factory superintendent. Mr. Lorentz has been associated with the Pennsylvania Tire & Rubber Co. of Jeannette for a number of years, resigning the position of production superintendent to go to Fort Wayne.

The Stanwood Rubber Co., Elizabeth, N. J., announces that it has secured the services of George Culp as general sales manager. Mr. Culp was for some years associated with the United States Tire Co., joining that concern soon after its organization. The Stanwood Co. recently acquired the controlling interest in the Hardman Rubber Corporation, Belleville, N. J., which concern is, however, continuing the marketing of its own brands of tires and tubes. The Stanwood company is erecting a factory at Elizabeth capable of turning out 1000 Stanwood cord tires a day, which will be in production about the middle of January.

The Ardmore-Akron Tire & Rubber Co. has its new factory nearly completed and expects by the first of the year to be turning out 500 tires and tubes a day.

Firestone Co. Holds Annual Meeting

BIG VOLUME OF BUSINESS REPORTED AND EXTENSIVE PLANS FOR 1920.

At the annual meeting of the Firestone Tire & Rubber Co., Akron, O., held Dec. 15, it was announced that Firestone sales are now being made at the rate of $150,000,000 a year, and this is the goal set for 1920. Reports submitted showed that the sales for the fiscal year ending Oct. 31 were $91,078,513.70. This is an increase of 20 per cent., or $15,277,006.91 over the previous year. It was also announced that the company will pay an extra dividend of $2 a share to stockholders of record Dec. 15, and that the directors looked forward to being able to put each quarterly dividend on that basis.

Profits for the year, after allowances for depreciation and losses on bad accounts, were reported to be $9,306,978.19. From this amount $2,597,787.30 was paid during the year in dividends, and the balance was placed to surplus, subject to corporation income and profits tax accrued.

The directorate elected by the stockholders is made up as follows: H. S. Firestone, A. C. Miller, L. E. Sisler, S. G. Carkhuff, J. C. Robertson, J. W. Thomas, Harvey S. Firestone, Jr., A. G. Partridge, C. A. Meyers, T. Clemens. The directors re-elected the following officers: President, H. S. Firestone; vice president and general counsel, A. C. Miller; secretary, S. G. Carkhuff; treasurer, J. G. Robertson. Three new vice presidencies were also created, as follows: In charge of sales, A. G. Partridge; in charge of manufacturing, J. W. Thomas; in charge of offices and purchases, Thomas Clements.

The company issued in connection with its annual report a particularly attractive booklet under the title "Things That Interest Firestone Shareholders," which contains information of value to all interested in the activities of the company.

The Virginian Rubber Co., recently organized at Charleston, W. Va., will spend $225,000 for the initial unit of its plant, to have a daily capacity of 1000 tubes and 500 tires of cord and fabric construction.

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SHILTS ASSISTANT SECRETARY WITH GOODYEAR.

The Goodyear Tire & Rubber Co., Akron, O., has promoted W. D. Shilts, who has been with the organization for 14

W. D. Shilts, Assistant Secretary, Goodyear Tire & Rubber Co.

years, to be assistant secretary of the company. On being graduated from Mt. Union college Mr. Shilts came to Akron as personal secretary for the manager of the automobile tire department. He had planned while in college to make the law his profession, but realizing, after two years of association with Goodyear, that his opportunities with an organization of that scope might be practically unlimited, he decided to remain in the tire business. From that time his rise was rapid. He was soon made assistant to G. M. Stadelman and chosen as head of the automobile tire department, then manager of the salesman's department. His broad vision, coupled with exceptional executive ability, quickly brought further recognition and he was made chairman of the Board of Control.

His recent appointment as assistant secretary is the latest tribute to his efficient service with the Goodyear organization and he will continue to act as chairman of the Board of Control.

VICTOR RUBBER STOCK.

The authorized issue of the common stock of the Victor Rubber Co., Springfield, O., consists of 50,000 shares, 35,000 of which are being offered at this time, the balance remaining in the treasury of the company. There were recently sold by brokers in Cleveland, O., within a short time 9900 shares offered and the allotment is said to have been three times over-subscribed.

Of the present issue a liberal amount is reserved for old stockholders and employees, and the balance was offered to the public at $35 a share. By 11 o'clock of the day the stock went on the market there was not a share on sale at the offering price. Chicago brokers offered $37, but could not be accommodated.

FIRESTONE CO.'S NEW MECHANICAL BUILDING.

The Firestone Tire & Rubber Co., Akron, O., has under construction a mechanical building on a site near Plant No. 2 at Akron. It will be three stories high and is designed to house the electrical, machine, pipe, carpenter, pattern and tin ships, and will coordinate under one roof all the activities in these departments which has been distributed through the various buildings of the big plant.

With a frontage of 325 feet on Main street the building will have a depth of 315 feet. Approximately 80 per cent. of the wall space will be glass, thus giving fine lighting advantages. The floor will be of wooden blocks laid on reinforced concrete. The cost of construction will be about $400,000.

The total floor area of 303,457 square feet is divided as follows:

Unloading tracks and platform, 14,860; steel storage, including aisles, 34,556; manufacturing, S. A. E. department, 29,650; pneumatic rims and accessories, 39,470; plating, 9825; galvanizing, 9825; inspection, 9825; S. A. E. storage, including aisles, 35,685; pneumatic rims and accessories, including aisles, 53,370; packing, shipping and receiving, 176,660; shipping tracks and platform, 7000; trucking space, 2000; mechanical departments, machine shop, 6000; electrical shop, 1800; pipe shop, 3000; carpenter shop, 3000; stock room and aisles, 3000; office and entrance, 12,925. Total main building, 293,457. Boiler house, 10,000.

THIRD PLANT AT JACKSON.

The Ajax Rubber Co., Inc., with factories at Trenton, N. J., and offices at New York, has decided to build its third large plant at Jackson, Mich. The estimated cost is $750,000, and it will employ a force of 1500 workmen, with a daily output of 2500 automobile tire casings.

TIRE DEALER'S IMPROVEMENTS.

The Crabtree-Hardin Tire Co., 10th and Garrison streets, Fort Smith, Ark., which is the distributor in that section of Hood and Goodrich tires, has enlarged and made extensive improvements at its headquarters.

United States Rubber's Training Plan.

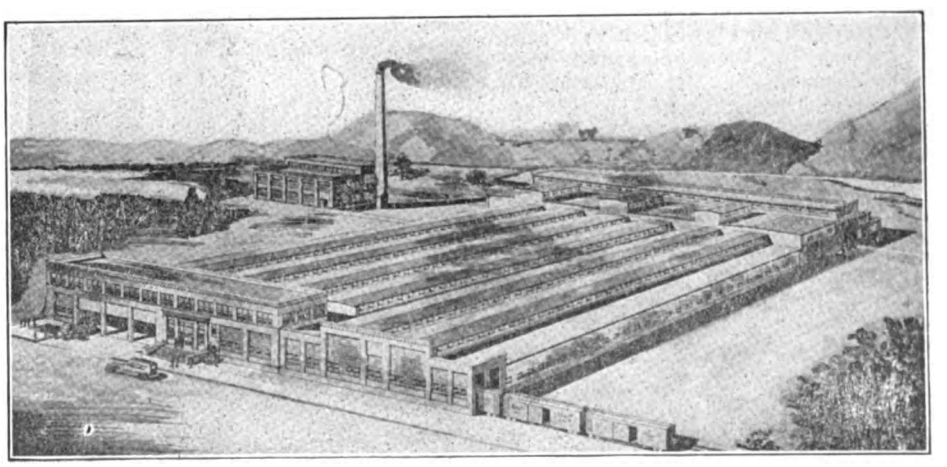
The tire division of the United States Rubber Co. has just inaugurated at its plants at Hartford, Conn.; Detroit, Mich., and Indianapolis, Ind., a plan of training its foremen and other members of the supervisory force, which is of considerable interest. Classes at these three plants, totaling 825 men, have been formed to pursue a course in modern production methods, which comprises the study of specially prepared textual material, the solution of practical factory problems and pertinent discussions. Six meetings are to be held at the plants at three-week intervals. At each meeting a lecture will be delivered by an experienced production man to be followed by a round table discussion. Included in the group, besides the foremen, are the chief plant executives, which insures that the policies of the company will be correctly interpreted. The subjects covered are as follows:

"How to Promote Team Work in the Shop," "Handling Workers by Methods That Make for Harmony and Efficiency," "Improved Methods of Factory Organization," "Handling Materials and Equipment Productively," "Reducing Costs and Stopping Leaks," "Modern Ideas of Management."

The course is conducted under the direction of the Business Training Corporation of New York.

ERIE TIRE COMPANY TO BUILD.

It is reported that J. Frederick Seiberling, who recently resigned the vice presidency of the New Castle Tire & Rubber Co., is to be general manager of the reorganized Erie Tire & Rubber Co., Erie, Pa., and that A. G. Seiberling, general manager and vice president of the Haynes Automobile Co., will be associated with him. It is also stated that plans are under way for the construction of a factory group with a capacity of 1000 tires a day and that tubes will also be made, the entire output of the plant for the next two years being contracted for in advance.



New Mechanical Building, Firestone Tire & Rubber Co., Akron, O.

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Upper Cut-Away Portion Shows Sturges Cord Tire Sole.

Lower Shows Tire Over Which Sole Is Applied.

RUBBER SHIPMENT VALUED AT $1,500,000.

What is declared to be the biggest shipment of crude rubber ever consigned to an American company was recently received at Akron, O. It consisted of 3,000,000 pounds and is valued at $1,500,000. It has been on the road four months, coming from Sumatra, and will furnish material for 350,000 average tires.

SWINEHART ENDURANCE TESTS.

Thornton Roberts, manager of the Colonial Garage & Repair Co., Baltimore, Md., local distributor of Swinehart tires, made by the Swinehart Tire & Rubber Co., Akron, O., recently made an endurance test of a set of these tires on a 1½-ton Packard truck and they ran 45,512 miles.

The Keystone Tire & Rubber Co., New York City, has recently secured what is thought to be the largest tire order for export given to any American company since the war. This amounts to $3,000,000 for tires to be used on taxicabs throughout France. Yves de Villers of this company has just returned from abroad and brought an order for $500,000 worth of tires to go to London.

The J. & D. Tire Co., Charlotte, N. C., has changed its name to McClaren Rubber Co. and will manufacture McClaren tires under the direct supervision of H. L. McClaren, former president and general manager of the Racine and Ajax Rubber companies. Mr. McClaren is president and treasurer of the McClaren Co.

The Goodyear Tire & Rubber Co., Akron, O., has found the demand for the booklet, "The Story of the Tire," from schools and colleges so widespread that it was necessary to issue a second edition, which is just off the press. It is claimed that 8000 institutions of learning, from coast to coast, are using it as a reference work and text book.

The Star Rubber Co., Akron, O., will distribute Star tires at Waco, Tex., through the Texas Motor Supply Co., which is under the managemnt of J. G. Hudson.

FEATURES OF STURGES CORD TIRE SOLE.

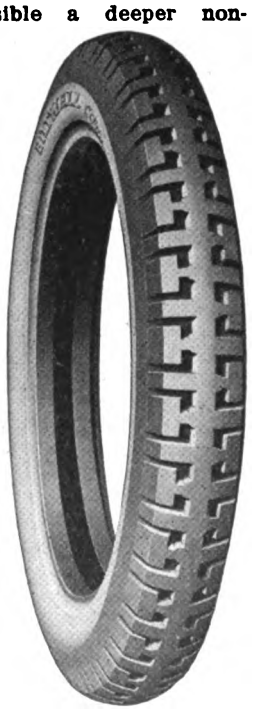
V. K. Sturges, president of the Sturges Tire & Rubber Co., Oakland, Cal., the original inventor of the tire sole idea which is covered by United States patents, has recently perfected a new Sturges cord tire sole which embodies new and improved features. Having in mind the increasing popularity and proved efficiency of cord tires, Mr. Sturges, after exhaustive experiment, is convinced that he has produced a cord tire sole which is well adapted for use with tires embodying the cord principle. These soles are scientifically constructed from new, live, resilient rubber and standard weave cord tire fabric.

Mr. Sturges believes that a tire properly cured cannot stand the additional cure or cooking made necessary in the process of retreading, and that double curing damages the fabric, causing the rubber to become hard and brittle, through oxidation. The Sturges cord tire sole is claimed to be in no sense a retread or a makeshift.

In applying the Sturges cord tire sole the worn casing is properly prepared by buffing off the rubber projections until the surface is smooth. The sole is placed entirely over it and held thereto by a specially prepared cold cure, self-vulcanizing cement, which causes the sole to become an integral part of the tire. It is held to the rim by inflation, the same as the tire. The Sturges cord tire sole fits over all sizes of cord tires and is marketed with "no limit mileage" guarantee.

BILTWELL CORD TIRE.

An unusual cord tire, guaranteed for 10,000 miles, has just been placed on the market by the Biltwell Tire & Rubber Co., Akron, O. Its most striking characteristic is stated to be its square-shouldered tread, which conveys an impression of extraordinary thickness, presents a large area of traction surface, and makes possible a deeper non-skid pattern and prolongs this quality of the tire for several thousand additional miles, it is claimed.



The Biltwell company, while one of the youngest tire makers in the Akron district, is reported to have made great strides in production during the past few months, and is installing equipment which will double the output within the next three or four months. The present factory is one of what will ultimately be four similar units.

V. K. Sturges, President, Sturges Tire & Rubber Co., Oakland, Cal.

BIG FOREIGN MARKET FOR AMERICAN TIRES.

"American industry will be forced to extend itself to the utmost during the next few years to supply its foreign trade if the present export demand for automobile tires may be taken as an indication," said H. A. Githens, general sales manager of the Federal Rubber Co., Cudahy, Wis., at the New York automobile show. "America has had French, Norwegian, Swedish, Spanish, Dutch, Swiss and many other commissions, seeking the establishment of greater, more extensive trade relations with America, and even England is turning to this country for relief in the matter of automobile tires."

To make the most of the opportunity now offered in this foreign field, the Federal Rubber Co. moved its export offices from the plant at Cudahy to 38-40 West 62nd street, New York, where, under the direction of G. H. Hamilton, representation has been secured in a large number of important trade centers abroad.

BATES MADE VICE PRESIDENT.

At a recent meeting of the directors of the Amalgamated Tires Stores Corporation, New York City, George J. Bates, who was elected a director two months ago, was made vice president. Mr. Bates was for many years connected in an executive capacity with the Firestone Tire & Rubber and Diamond Rubber companies.

The Ashland Tire & Rubber Co., Ashland, O., is to be represented next year in Europe by George W. Rohn of the export brokerage firm of A. Metzner, Cleveland, O. He will make contracts for Ashland tires in the following countries: France, Holland, Belgium, Switzerland, Germany, Jugo-Slavia, Czecho-Slavia, Roumania and Great Britain.

The Achilles Rubber & Tire Co., Binghamton, N. Y., has increased its capital from $1,000,000 to $2,000,000.

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United States Rubber Co. Dividends

At a meeting of the directors of the United States Rubber Co., held Jan. 8, it was announced that a 12½ per cent. stock dividend will be paid on Feb. 19 to stockholders of record Feb. 5. This will amount to $9,000,000 on the common stock. This is an addition to the regular quarterly dividend of two per cent. on the junior issue, which will be paid Jan. 31 to stockholders of record Jan. 15. A quarterly dividend of two per cent. on the preferred stock was also declared, this, too, being payable Jan. 31 to stockholders of record Jan. 15.

It was reported that at the close of the year the company had no outstanding notes or obligations other than current accounts and acceptances necessary in the conduct of its business; that the cash in bank was over $15,000,000 and that there were $2,800,000 of Liberty bonds in its treasury.

The very substantial enlargement of tire plants at Detroit, Indianapolis, Hartford, Providence and Kitchener, Canada, now in progress will, it is estimated, more than double the present product.

G. & J. CO. TO ENLARGE PLANT.

The G. & J. Tire Co. has purchased the entire block of property in Indianapolis, Ind., bounded by Cook, Noble, Louisiana and Georgia streets, on which work on additions and improvements to its plant has been started. When these additions are completed it is stated that the payroll of the company will be $75,000 a week.

The deeds for the new property, 31 in all, were recorded in the name of the United States Rubber Co., the parent organization of the Indianapolis company. The G. & J. Co. manufactures motorcycle tires and inner tubes for automobiles.

KELLY-SPRINGFIELD DIVIDENDS.

The Kelly-Springfield Tire Co., New York, has declared the following dividends:

Quarterly, one per cent., payable Feb. 2 to stockholders of record Jan. 17; stock, three per cent., Feb. 2, to stockholders of record Jan. 17; quarterly, two per cent. on eight per cent. preferred stock, Feb. 16, to stockholders of record Feb. 2; quarterly, 1½ per cent. on six per cent. preferred stock, Feb. 16, to stockholders of record Feb. 2.

NEW DEALER FOR RACINE TIRES.

The business of the Racine Tire & Rubber Co., 180 East State street, Columbus, O., has been purchased by the Dowdell-Horseshoe Rubber Co. and the latter concern will distribute Racine Horseshoe tires and tubes, made by the Racine Rubber Co., Racine, Wis., throughout central and southern Ohio. Those chiefly interested are Raymond Dowdell and C. O. Leonard, both of Columbus, O.

PERTINENT NOTES.

Estimated consumption of rubber for year 1919, 350,000 tons.

Value of rubber industry in America alone, $1,000,000,000.

Seventy-five per cent. of rubber used is devoted to supplying tire equipment for motor vehicles.

Production of tires in this country has practically trebled in five years.

At rate automobile industry is growing, demand for tires will shortly reach 72,000,000 tires a year for motor cars alone.

United States motorists spent over $1,000,000,000 for automobile and truck tires in 1919, not including inner tubes and repair materials.

A UNIQUE INNER TUBE TEST.

A somewhat sensational but convincing inner tube test was made on the streets of Cleveland, O., recently when, as shown in the illustration, a big touring car rolled along having in tow a one-ton Day-Elder truck, the tow line being an Owen inner tube, manufactured by the Owen Tire & Rubber Co. at its factory in Bedford, O.

The tube was not specially built for this test and to prove that there was no trick to the demonstration, the cars halted and Harry Young, the Day-Elder distributor, who was steering the truck, applied his brakes, while the touring car started ahead. With the increasing tension the tube stretched out 20 feet or more before it broke. The crowd who witnessed this culmination of the test were thoroughly convinced as to the high qualities and strength of the Owen product.

ADDITION TO GATES PLANT.

The Gates Rubber Co., Denver, Col., has two additional units under construction, which will increase the floor space from eight to 14 acres, and make room for 500 additional employees. The Gates company recently introduced the Gates Double-Mileage tires.

Big Merger of Tire and Rubber Stores

The American Tire & Distributing Co., Inc., New York City, has just taken over 17 tire stores, that have been in business from three to 10 years, and will continue to operate them as separate units. Each sells automobile tires of all the standard makes and also accessories, both wholesale and retail. In most instances the same men who have made them successful will continue in charge. Following are the stores that are included in this merger: E. Schoonmaker Co., Inc., with stores at 85 Walker street and 835 Seventh avenue, New York City; Newark, N. J., and Utica, N. Y.; Broadway Tire Jobbers, Inc., 250 West 54th street, New York City; Public Service Tire & Rubber Co., Inc., Newark, N. J.; Smith-Haines, Inc., 1862 Broadway, New York City; Associated Rubber Co., Inc., 132 Front street, New York City; Dean Motor Supply Co., Inc., with stores at Albany and Utica, N. Y.; Economy Tire Exchange, Newark, N. J.; Auto Tire Exchange, Inc., with stores at Detroit, Mich., and Newark, N. J.; Henschel Tire & Rubber Co., Inc., 1675 Broadway, New York City; E. J. Willis Co., with stores at 83-85 Chambers street and 65-67 Reade street, New York City; Seaboard Tire & Rubber Co., Inc., 13 Mechanic street, Red Bank, N. J.

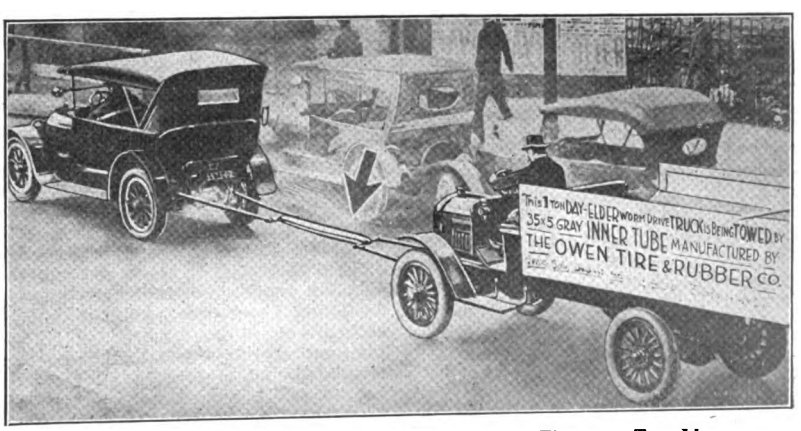
MOVES HARTFORD BRANCH.

The Hartford branch of the Kelly-Springfield Tire Co., New York City, has moved from 41 High street to the Hartford Realty Co. building, Ann street. The manager of the Hartford branch is C. C. Chaffee and the office manager is H. T. Sinsabaugh.

PHOENIX RUBBER CO. EXPANDS.

The Phoenix Rubber Co., Akron, O., is erecting an addition to its plant, which will be 60x120 feet and will cost $60,000.

The Portage Tire & Rubber Co. has filed articles of incorporation at Albany, N. Y., to deal in rubber tires, etc. Capital, $100,000. Incorporators, Samuel B. Howard, George V. Reilly, Robert K. Thistle.



Motor Truck Being Towed by Automobile with Owen Tire as a Tow Line.

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Notes of the Industry in Canada

GOODYEAR INTERESTS ERECTING IMPORTANT EXTENSIONS.

The Goodyear Tire & Rubber Co. of Canada, Ltd., has in process of erection at its new plant at Toronto, Ont., three extensions and two smaller buildings. The present main building is 100 feet wide by 460 long, four stories and basement. One of the extensions makes a 100-foot addition to the main building. The other two extensions, measuring 100 by 120 feet, four stories and basement, are connected to and run south of the main building. There is also under construction a building 50 by 80 feet, to be used for the manufacture of chemicals, and another 50 by 75. These various additions will give an increased capacity of 1000 pneumatic automobile tires a day, bringing up the output to 3500 tires a day. In addition to automobile tires the plant is thoroughly equipped for the production of motorcycle and bicycle tires and rubber accessories. The factory has been operating at full capacity, 24 hours a day.

K. & S. Tire & Rubber Goods, Ltd., Toronto, Ont., reports that for the first six months of 1919 its net earnings were $75,080.57, and it is estimated they will exceed $135,000 for the entire year. The net earnings in 1918 were $85,245.91. Gross sales in 1918 were $593,000, and for 1919 are estimated at $1,000,000. With the additional plant in operation, it is estimated that gross sales will reach $1,600,000 in 1920 and over $3,000,000 in 1921; and that the net earnings for 1920 should be $225,000, and for 1921 over $400,000.

The F. E. Partridge Rubber Co., Ltd., Montreal, Que., is building a four-story addition, 60 by 100 feet, which will afford employment for an increase in workmen from 350 to 500. This company makes Partridge rubber tires, tubes and rubber sundries, such as hot water bottles and tobacco pouches, the daily output at present being 475 tires, 600 tubes, 500 hot water bottles and 1000 tobacco pouches.

The Oak Tire & Rubber Co., Ltd., Oakville, Ont., manufacturer of Royal Oak tires, has production plans calling for the enlargement of its factory this spring by the addition of another story, 60 by 200 feet, which will enable it to double the present output. Ninety hands are now on the pay roll and the plant has been running 23 hours a day.

The Canadian Consolidated Rubber Co., Ltd., has appropriated $1,000,000 for the enlargement of the Dominion tire factory at Kitchener, and the work is now going on. Extensions are being erected at both ends of the factory, each being 110 by 130 feet, four stories high and giving 143,000 square feet additional floor space. This will more than double the present capacity.

The Goodyear Tire & Rubber Co. of Canada, Ltd., whose headquarters are at Toronto, Ont., has opened an office and warehouse for handling its trade in Northern Saskatchewan in the Ross block, 118 Third avenue, South, Saskatoon.

The Gregory Tire & Rubber Co. is planning to build a plant at Port Coquitlam, B. C., at a cost of $175,000. The managing director of the company is J. A. Cunningham, president of the British Columbia Manufacturers' association.

The Canadian Consolidated Rubber Co., Ltd., is planning an enlargement of its plant at Port Dalhousie, Ont., to cost $80,000. A pressure vulcanizing plant that will cost approximately $35,000 is one of the principal units to be added. The vulcanizing process will be used in addition to the heater curing system.

The Amee-Holden Tire Co. announces the completion of its factory at Kitchener and will be in a position to make tire deliveries early this spring. The common stock of this company, which went as a bonus with the seven per cent. bond issue, was recently quoted at $40 to $41 a share.

SPECIALIZES IN INNER TUBES.

The Courier Rubber Co., Inc., recently formed, has opened sales offices at 150 Nassau street, New York, and is pushing the distribution of the Courier Red Floating inner tube, its experts being convinced of the superiority in general of red tubes over gray. The Courier Red is a non-blooming product. The Courier company also manufactures a gray tire which is guaranteed to have equally good physical qualities. It is claimed that the Courier tubes will stand all recognized tests as to tear, etc. The guaranteed specifications are as follows: Specific gravity, .98, i. e., floating stock; tensile strength, from 2500 to 3000 pounds a square inch; a stretch from 8½ to 9½ times its original length.

The president and vice president of the Courier Rubber Co. are, respectively, Robert E. Clift and William D. Laurie, both well known in the rubber trade.

VICTOR CO.'S EXTENSIVE BUILDING SCHEDULE.

The Victor Rubber Co., Springfield, O., is in the midst of an extensive building schedule, which is making possible the constant increase in production. Early in 1919 the first unit in the new programme was completed and the cord tire department is just now moving into the second building. In addition to these a large structure is under way which will house a battery of new vulcanizers.

These units will provide over 25,000 additional feet of floor space and will enable the organization to double the production of Victor tires. All of these new units are of uniform construction, hollow tile, entirely fireproof, light, perfectly ventilated and modern in all respects. For the past few months the factory has been operating at capacity, 23 hours a day with three shifts.

Changes in Firestone Personnel

NEW SUBSIDIARY OF THE HOOD RUBBER CO.

The Firestone Tire & Rubber Co., Akron, O., has made the following additions to and changes in the personnel of its various departments and branches: Joe M. Dine, former special representative of the truck tire department in the Northwest, with headquarters at Minneapolis, has been designated as branch manager at Dallas, Tex. L. A. Brown will succeed Mr. Dine at Minneapolis, being promoted from truck tire sales manager. James Roddy, a salesman, succeeds Mr. Brown. C. W. Brown of the branch operating department, has become office manager at St. Louis to succeed M. O. Halverstadt, who goes to Des Moines, Ia., to take over the duties of office manager in the place of G. H. Smoots, resigned. A. W. Hugh, office manager at Columbus, O., has been transferred to a similar position at Fargo, S. D. George Jacoby goes from Toledo, O., to Great Falls, Mont., as office manager, and E. A. Snyder goes from Kansas City to Minot, N. D., in a similar capacity. L. E. Steele, city salesman at Milwaukee, Wis., has been transferred to the Chicago branch. A. L. Miller, salesman at the San Francisco branch, has been promoted to be special pneumatic sales representative in the same district. H. J. Guther, city salesman at Chicago, has been appointed special representative for truck tire sales, with headquarters at Chicago. M. D. Millan has become city truck tire salesman at Spokane, Wash., and Frank H. Gilchrist a truck tire salesman at Omaha, Neb. C. H. Gerhold, formerly of the western division of cycle tire and accessory sales, has been made manager of the new tire accessory sales department. H. P. McWilliams becomes cycle tire sales manager, coincident with the consolidation of the eastern and western sales division of the motorcycle and bicycle tire sales departments, both trade sales and manufacturers' sales promotion coming under his jurisdiction. A recent acquisition to the selling organization is George W. Keller, who becomes special representative of the new cycle tire sales department, with headquarters at Chicago and territory embracing several states.

The Hood Rubber Co. of Watertown, Mass., has formed a new subsidiary under the name of Hood Products, Inc. The new company, which will deal in all kinds of rubber and leather goods, has been incorporated under the laws of Massachusetts with a capital of $1,500,000, consisting of 10,000 shares of preferred and 5000 shares of common stock. Dividends on the preferred stock will be cumulative at seven per cent.

The Ibex Tire & Rubber Co. of Canada, recently incorporated, is making plans for the erection of a factory at Oshawa, Ont. F. W. Bull is president of company.

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Up-to-Date Methods of Vulcanization and Suggestions

Compiled by the Goodyear Tire & Rubber Co.

A RECENT 6000 mile inspection tour in the interest of vulcanizers, revealed the surprising fact that a large percentage of those who are having trouble with vulcanizing work, with equipment and with repair materials, feel that, regardless of how they handle repair materials and equipment, good results can be and should be obtained.

Now the day of the unskilled repairman has gone. He is rapidly being replaced by the tire surgeon, skilled in his work and rigidly adhering to certain fundamental laws which underlie it. Like the medical surgeon who operates upon a patient, carefully observing all natural physical laws and governing his work by the best accepted practise, the tire surgeon must conform his work to certain natural laws. He must not substitute haphazard methods if he expects success as a vulcanizer and repairman. He dare not ignore the methods of using repair and vulcanizing materials which costly experiments and careful study have proven.

On this trip a repairman who had asked that an expert be sent to his rescue was visited. This man was having serious trouble, although he had had long experience in the business. It was found that he had raised the steam pressure contrary to specifications, so that a cracking of tread material resulted. When questioned about this he replied: "Oh, I know 40 pounds of steam is specified for this cure, but it takes too long. Sixty pounds let's me get out more work. In this way I shorten the time of curing." Expert advice had been disregarded and yet good results were expected.

Another vulcanizer was visited. This man had had special training and had been taught to cut his fabric on the bias, had been given the reasons for doing so and had been assured that excellent results might be expected from this method. Nevertheless, he was found cutting the fabric straight.

These are only examples of conditions found to be widely prevalent. In some cases lack of knowledge of tire repairing was the trouble. In others it was the disregard for established rules which had been taught. Now a man working a problem in addition would not expect to get the correct results if he applied the rule for multiplication. The same principle holds in repair and vulcanizing work. Certain things are known absolutely to be true. It is the interest of the tire repair man—tire surgeon—to get behind a movement, thus increasing the confidence of the tire using public, that will result in better tire repairing.

It is a good plan to give this idea two or three months trial for comparison with past records. Make the repair shop something pleasing to the customer both in appearance and workmanship. Devise a systematic way in which to carry on repair and vulcanizing wrok. Check up shop leakage.

One repair shop visited was a very large one; its proprietor was a busy man who operated a large service station and an accessory store in connection with the repair shop. The repair department was left entirely to the foreman; the owner seldom visited the work room. While going through this room a small box of uncured trimmings was noticed. The box contained a mixed collection of black, white and gray tread gum, cushion gum, building fabric, dust and dirt, together with dried cement. Two full barrels of this same collection was found, practically valueless. It probably weighed 400 pounds in all. This material, had it been kept free, separated and clean, was worth approximately $200. As it stood $30 would have been a good price. There was, therefore, a waste of $170. This is but an example of many similar kinds of leakage noticed.

If the vulcanizer expects to get the results and profit that are rightfully his, it is absolutely imperative to check up on these things.

Method of Mending Large Hole.

A practical method of putting fabric in a section where there is a very large hole or where there is nothing much left but the beads, is to cement the iron core and stitch a ply of fabric down to it. Set the tire over it, stick the beads fast to the core in the usual position. This gives a natural foundation on which to build up the section in the ordinary manner. All the chafed and dirty fabric should be trimmed off around the beads. With this method the correct size and shape of the casing may be maintained.

A few weeks ago in visiting a repair shop, the operation of preparing a casing for a retread was carefully noticed. The old tread was worn, loose and badly cut up. The repair man skinned the old tread off, buffed the carcass and cemented it.

Now several places were noticed where water and dirt had soaked into the fabric. When buffed the old fabric was white and lifeless and rotten. These places, if not watched, will develop separation or loose spots. It is a much better practise to step out a patch at this point and replace it with a clean, new piece of material. In taking this precaution many tread separations will be prevented.

It is poor practise to place the hand on uncured stock while sticking it on the casing, as this will imbed dirt in the material. The sweat also takes away the tacky condition of the stock. Do not handle repair material any more than can be helped.

A section was cut down, the casing buffed and then washed, the rag was very heavily loaded with solvent and the old material and fabric was heavily saturated. After allowing it to stand a very few minutes, cement was applied. As a result a very porous condition developed in the cure, as the solvent had not entirely evaporated. In washing casings, merely use a slightly moistened rag to clean out dust and dirt.

Breaker Strip Loosened.

In making a cure on a sectional retread job a Texas repair man found that the old breaker strip, apparently sound and good, would come loose, spoiling the job. He inquired what might be the cause of the difficulty. There are several possibilities, one is that tread cuts when left to care for themselves, permit water to soak into the carcass and destroy the texture of the breaker. Cement conditions not thoroughly dry or oil in solvents will also loosen the breaker.

Trouble with Air Bags.

A great deal of the trouble experienced in handling air bags is due to improper application for the most part. In handling old stretched casings and poorly fitting bags, the repair man should take care to pad the air bag to fit the casing. The reason for this is that air bags should spread the beads of the casing three-quarters of an inch before it is properly fitted. The bead molds are then applied and the clamp screw turned until the cavity mold fits snugly to the walls of the casihg. Then the air bags should be inflated five pounds and the clamp screw given a three-quarter turn. Now inflate the bag to the proper pressure. Be sure that the air bags are centered in the molds so that only the heavy ends protrude beyond the ends of the cavity.

Get Pure Solvents.

Solvents continue to give vulcanizers as much difficulty as any one thing in the process of repairing. Most of the faulty curing is due to impure solvents. Care should be taken to obtain the purest sort of solvent on the market free from all traces of oil. In washing stock and thinning cement, traces of oil do damage that makes a perfect job impossible.

Answers to Queries.

A western repair man asks this question: "Should one or two plies of cord be left when a blowout is being repaired?"

Cords in the cord tire are laid in groups and must be removed as such. For instance, remove the two sets of plies as follows: Inside first, then the outside group. This will allow replacement.

A repairman from Salt Lake City asks how many plies of cord there are in cord tires. A 3½-inch tire has four plies; a four-inch six plies: a 4½-inch tire six plies, and a five-inch tire eight plies.

Vulcanizers often ask the question: "How can I tell if the job I finish is cured, under-cured or over-cured?" When a tire is overcured it is very hard and firm and if tried with a pencil, gouges out in small chunks, while if the job is under-cured, the pencil jabs will remain and show as dents in the rubber. If properly cured the tire will not show where the pencil jabs were made and will cure with a fine "bloom."

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PLATE XLIII.

DESIGN FOR GASOLINE AND OIL SUPPLY STATIONS

Plans Presented for a Large and Two Smaller Filling Depots, Combining Utility and Attractive Features.

(Designed by the Architectural Department of the Automobile Journal Publishing Co.)

THE design shown and listed as No. 1, Plate XLIII, is laid out for a plot of land 50 by 100 feet. It presents real novelty, yet it is extremely practical owing to the fact that cars stopping to purchase gasoline and supplies will not interfere with regular traffic on the highway in any way. They may drive in off the street completely, pull up to a pump, get supplies and drive on out through the other end of the structure. It will be noticed that the cars drive in at the right hand opening or entrance and out by the exit at the left. A complete semi-circle is described, stops being made only at the pumps, the first car in stopping at the point farthest from the point of entrance, thus allowing three cars to be filled at one time.

The oil pumps are located between the gasoline pumps, there being a total of four. In addition to the oil and gasoline pumps, at least one air tube should be provided.

The driveway is covered, insuring dryness at all times, and during cold weather provision can be made to close in the doorways.

A glance at the plan will reveal the general design of the structure. It is rectilinear in front with a semi-circular bay, as shown, at the rear. To the right of the salesroom is the entrance to the drive, and on the left is the exit, arrows showing the direction. In the store, provision is made for the display and sale of accessories, its dimensions being 32 feet front, with a depth of 25 feet. No stairway to the basement is shown, this being placed where most desirable to the owner, either inside the store or outside from the drive. In the basement a toilet and wash room can be provided, and there is a large area for storage.

Hollow tile walls covered with stucco, trimmed with concrete stone or terra cotta. Foundation of concrete, all walls being at least 12 inches thick with spread footing as shown. Floor of reinforced cincrete with tile inlay. Roof of tar and gravel, properly drained. Heating by steam, electric lights, standard plumbing, etc.

A structure similar to this may be erected for $3000 to $4000.

DESIGN NO. 2.

This little station has been designed to meet the approval of many who want something different yet classy and snappy in appearance. In size it is just 14 feet square. It has openings on all sides, as shown in the elevation. These openings are horseshoe shaped, having doors in two ends, as shown, which give access on a direct axis. As to location, it is shown free-standing, or accessible from all sides and having pumps located at the corners.

It is built of hollow tile covered with stucco having colored tile inlaid to give life to it, contrasting with the white walls. The corners are flanked by buttresses that add immensely to its character, giving a substantial appearance.

The foundation is of concrete with 12-inch walls having spread footing as shown. A basement may be built in which a toilet and wash room could be installed, this being reached through a trap door in the floor by means of a stairway or ladder. The super-structure is hollow tile covered with stucco, eight-inch walls being ample; wood cornice as shown with wooden roof covered with metal, painted red, to give a striking contrast.

The approximate cost would be $700.

DESIGN NO. 3.

A slight variation is here portrayed in the filling station idea. It is a building 14 feet wide and 18 feet long, designed to be erected between two larger structures, utilizing the ground area of what might be a light court.

A glance at the plan will reveal the design. There are three oil pumps, a show case for display and shelves, and a stairway leads to the basement, where provision may be made for toilet and wash room; also space for a small heater, leaving ample room for storage.

The construction is a combination of brick or hollow tile faced with terra cotta. Around the window opening an ornamental band of terra cotta is shown. A classic cornice tops off the front, surmounted by a balustrade on which rests a cartouche out of which springs a flag pole.

The foundation is of concrete, with spread footing, as shown. The floor is of reinforced concrete with tile finish laid in white cement mortar.

The roof, if within the fire district, must also be of concrete, covered with a tar and gravel composition. To give a novel and individual character to the building, colored terra cotta may be used.

A building like the one described would cost about $1500.

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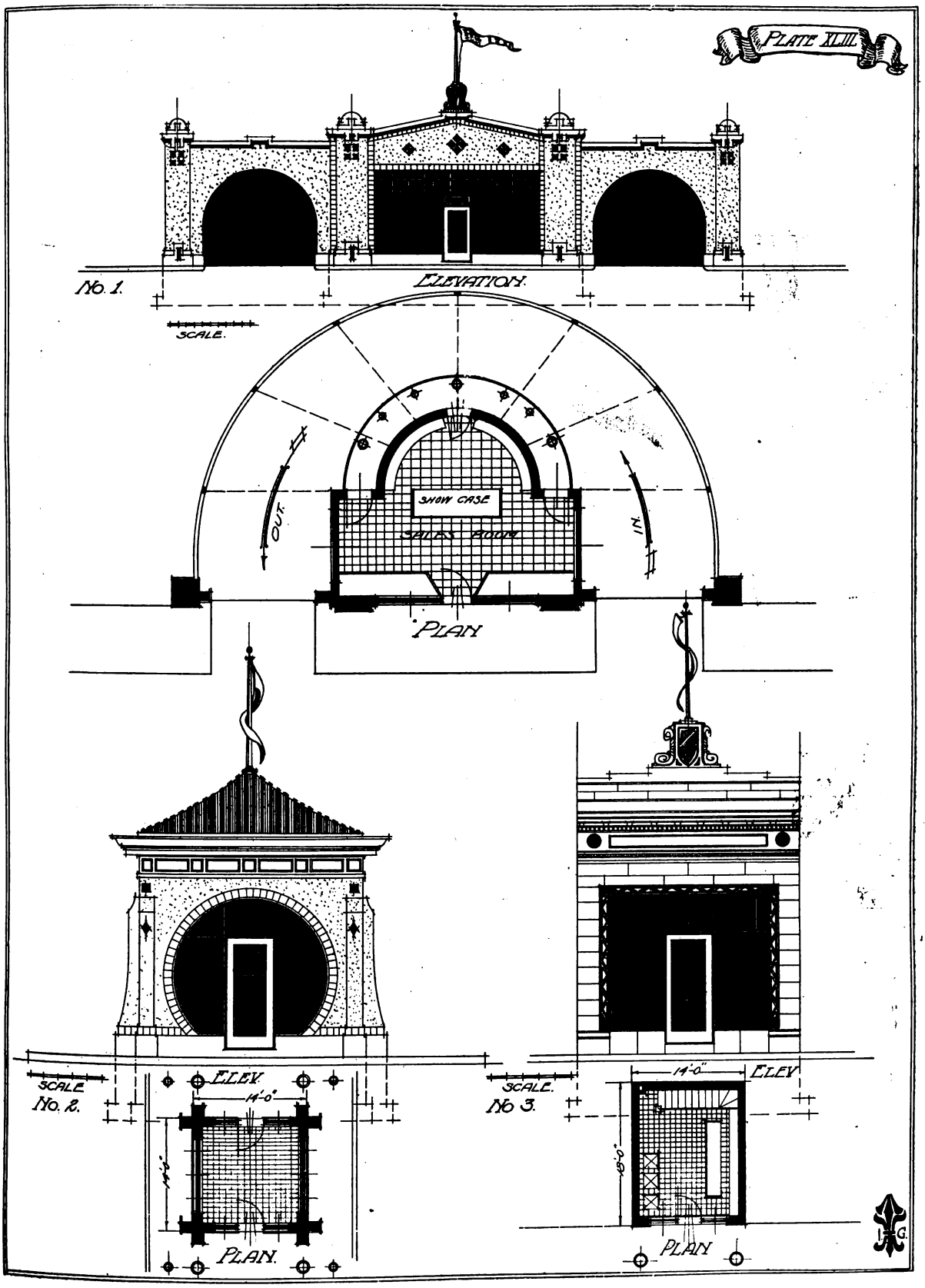

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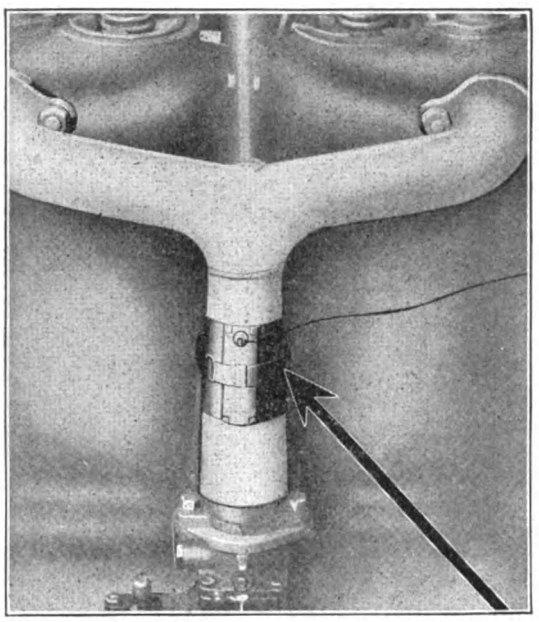
Starting Engines in Low Temperatures

Many Devices for Heating Carburetors, Different Forms of Primers and Garage Heaters of Various Types

STARTING an engine that is cold, especially when the temperature is low, is often difficult. Occasionally real labor is necessary. And in any event the cause, provided the ignition system has not failed, is due to slow volatilization of the fuel.



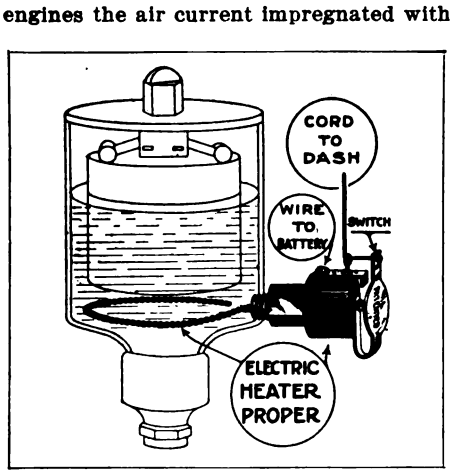
Electric Intake Heater—Electric Intake Heater Co., 115 East Cortland Street, Jackson, Mich.

Gasoline in liquid form is inflammable, and only when it is converted into vapor or "gas" by what is known as the process of evaporation will it become explosive, and it will not ignite instantaneously until it is combined with a certain volume of oxygen from the air.

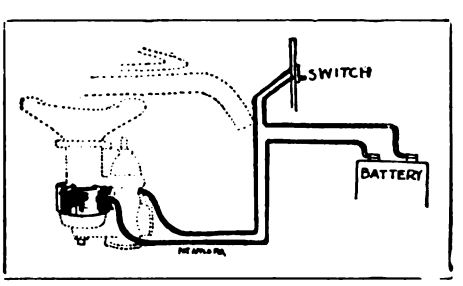
Carburetion may be defined as mixing gasoline vapor with air either by passing an air current over a volume of gasoline or projecting the gasoline as a spray into a current of air. With internal explosion engines the air current impregnated with gasoline is carried into the cylinders and ignited. Carburetor adjustment then is to so proportion the volume of gasoline vapor and air that a combustible mixture is formed.

Carburetion cannot be begun until the air current begins to move through the carburetor, and as gasoline will evaporate in ratio to the specific gravity of the oil with reference to temperature, with cold air and cold fuel the combustible gas originates very slowly. For this reason heating the gasoline until it will volatilize rapidly will promote carburetion. After carburetion has been begun the mixture will improve as the engine heats until it will have what may be termed as maxmium combustibility with a given carburetor setting.

Primarily, then, heating the fuel will improve the mixture. This may be done in several ways, by pouring hot water on the carburetor, by wrapping cloth saturated with hot water about the carburetor, by wrapping a heated chain around the carburetor, or best of all, winding a heated sand filled cloth tube around the carburetor and intake manifold. The use of water is not advised because it chills quickly and is by no means positive, while there is a possibility of water entering the air intake.



Quick-Start Carburetor Heater—Thompson Manufacturing Co., 811 24th Street, Des Moines, Ia.

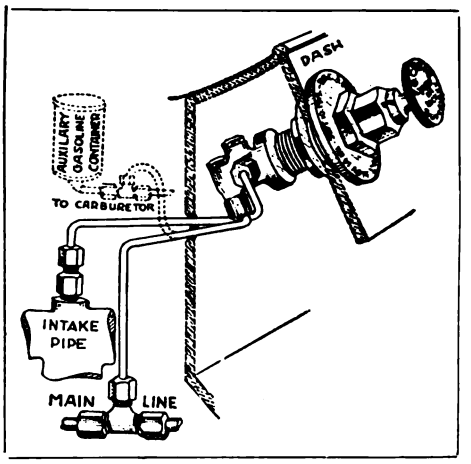


Electric Carburetor Heater—Mechanical Utilities Corporation, 5 North La Salle Street, Chicago.

A chain or a sand bag can be well heated and will sufficiently increase the temperature of the carburetor to positively volatilize the fuel, and either can be used as frequently as desired wherever heating them is practical. They will be useful in any private garage, but, of course, will not serve when a vehicle is left standing exposed in a street, for instance.

Priming the Carburetor.

Priming a carburetor is merely admitting more fuel into it so that a greater volume of gasoline vapor is carried into the cylinders of the engine, but there is no possibility of determining that what is admitted will be a combustible mixture, and while there may be too small a volume of gasoline vapor to burn when a spark is made, there is equal probability that the volume will be such that it will prevent combustion. That is, the fuel may be of such proportions that it will not burn because it is either too rich or too lean. If the gasoline volatilizes slowly it may be lean, or if the carburetor is flooded it may be too rich. In either event the engine must be turned until the fuel admitted will burn, either from increased volume of gasoline vapor or reduction of volume as the mixture is passed into and exhausted from the cylinders.

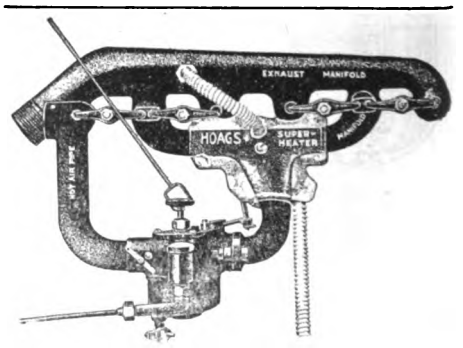


Crone Primer—F. G. Crone, 281 West Ferry Street, Buffalo, N. Y.

Priming the cylinders direct by injecting gasoline into them through compression relief cocks or spark plug bores causes practically the same conditions as have been described as resultant from priming the carburetor. The mixture may be lean or rich or combustible, but in any event this is a hit or miss method.

Engine Must Be Turned.

Either form of priming necessitates turning the engine; if this is done by hand more or less labor is certain and if the engine is started by a motor there is considerable drain on the battery. Good judgment dictates that the battery power be conserved. Unless the mixture is such the engine will start whenever



The Hoag Manifold Superheater—Hoag Superheater Co., Inc., 21 Park Row, New York City.

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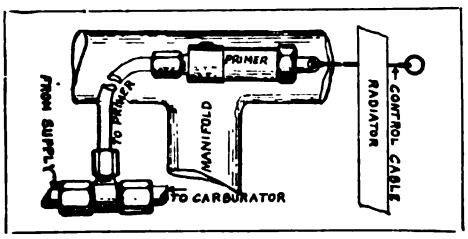
turned the battery will be worked excessively.

Without question the best results are obtainable from keeping the machine in a temperature that will cause free volatilization of the fuel. This can be done in a heated garage, and the initial start of the day can be made by use of the heated chain or sand bag. But there will



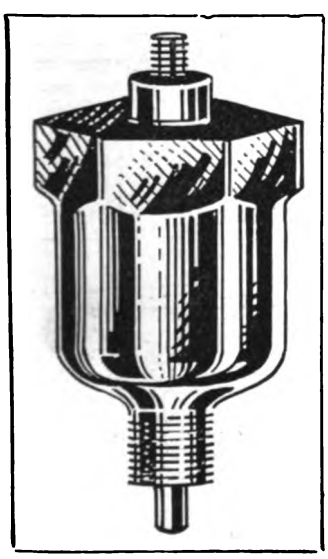
Crone Primer for Fords—F. G. Crone, 281 West Ferry Street, Buffalo, N. Y.

be the same obstacle when starting cold elsewhere.

Different Forms of Primers.

Differing forms of priming devices have been invented—the number that has been produced commercially is large—and these are claimed by the manufacturers to be very efficient. Some of these are electrical, current drawn from the battery heating a coil installed in the intake manifold until the engine has been started. Others draw fuel from the supply tube between the tank and carburetor and inject it into the intake manifold. The principles of these auxiliary starting devices are substantially the same, but the details differ somewhat. The main object is to get combustible fuel into the engine cylinders.

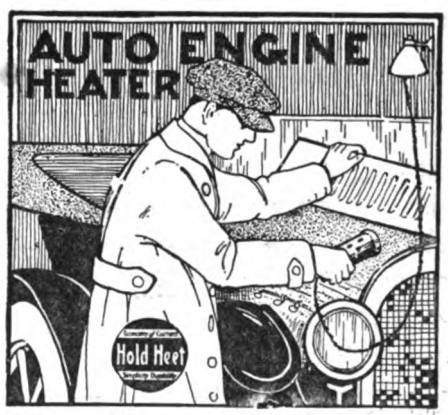
As the temperatures will vary widely and the starting mixture must be approximately to a standard of combustibility, the heating device used must be adequate for any temperature from perhaps 25 below zero as a minimum. The ideal auxiliary is what can be installed on a vehicle, and generally speaking the best result can be obtained from electric heat, for this can be used in any condition. If the engine has cooled and is outside of a garage, no device will be of value for starting. Turning the engine with the electric motor obviates labor, but it is necessarily expensive in cold weather, because the average generator will not sufficiently charge the battery, and this means occasional outside charging with the complications that result from overcharge.



Great Western Electric Carburetor Heater—Great Western Commercial Body Co., Omaha, Neb.

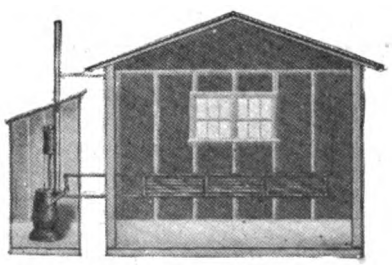
Heavy Drain on Starting Battery.

The average electric lighting and starting system is designed to charge the battery only when there is no light load—the lights not burning—and when the lamps are lighted the current generated will be approximately what is required for them. If the lamps are lighted and the engine is not running there is a drain on the battery. In cold weather the hours of use by daylight, when the battery can be charged, are comparatively short and the demands upon the battery are excessive. If the starts are numerous the draft on the battery will be heavy and the charging is seldom up to maximum unless it is supplemented occasionally from some outside source.



Electric Automobile Engine and Radiator Heater—Russel Electric Co., 140 West Austin Avenue, Chicago.

When the engine is cold and the oil is at lowest viscosity the pistons may be so anchored by the thickened oil that the crankshaft can only be turned with twice the power that would be necessary in warm weather. Starting in such condition necessarily means heavy battery draft, and to add to this the battery capacity is decidedly lessened by low temperature and by rapid discharge, so that



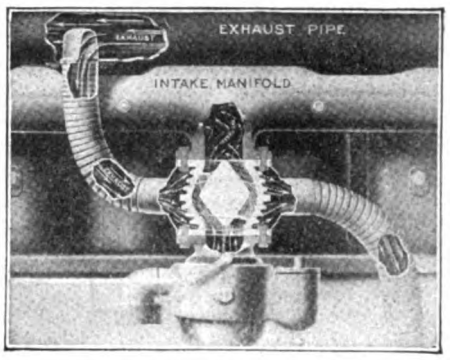
Wasco Ready-to-Set-Up Garage Heating System. W. A. Schleit Manufacturing Co., Inc., Syracuse, N. Y.

with the three results in combination the battery is greatly reduced. This being so there is the more reason for doing all that is possible to have efficient initial carburetion.

Garage Heaters of Various Types.

With reference to heaters that can be used in garages, these are very numerous. The manufacturers make all manner of claim for them. Some are electrical, being in effect a coil or heating unit that may be coupled to a lighting circuit at a lamp socket and placed under the engine hood. If covered with a blanket the radiator will be kept at a temperature that will be sufficient protection and insure easy starting. Other heating devices burn briquets, on precisely the same principle as car heaters, being placed on or close to the engine under the hood of the car.

Garage heaters are various types and turn gas, oil or may be connected with



The Losee Protect-O-Motor "Hot Spot." J. S. Losee, Hebron, Ill.

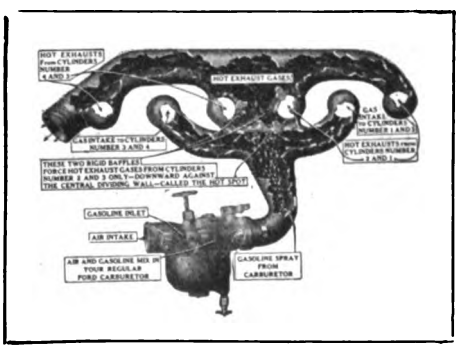
the heating systems of houses. Others may burn coal or coke. Some are designed to be placed near the radiators, and some are intended to heat water that circulates by thermo-syphon movement through the radiator. The car owner can select from these whatever will best suit his own purposes and his own purse.

Little Heat Needed to Prevent Freezing.

Surprisingly little heat is necessary to insure a radiator against freezing in a garage and a single electric light if placed under a hood covered with a robe will be sufficient protection. Where antifreezing solutions or alcohol are not used the only safe protection is draining the radiator, and this should be done each night after the vehicle is used.

When refilling the radiator and engine jacket in the morning, however, care must always be taken not to use water that is hot, for this might crack the cylinders.

When starting a cold engine do not, if started with a motor, keep pressure on the starting switch after firing has begun. Do not race the engine, but let it idle until it is warmed and is firing regularly on all cylinders. Running an engine fast without a load will result in damage or unnecessary wear and needless consumption of fuel.



Anco Evenheat "Hot Spot" Manifold—The Anderson Co., South Bend, Ind.

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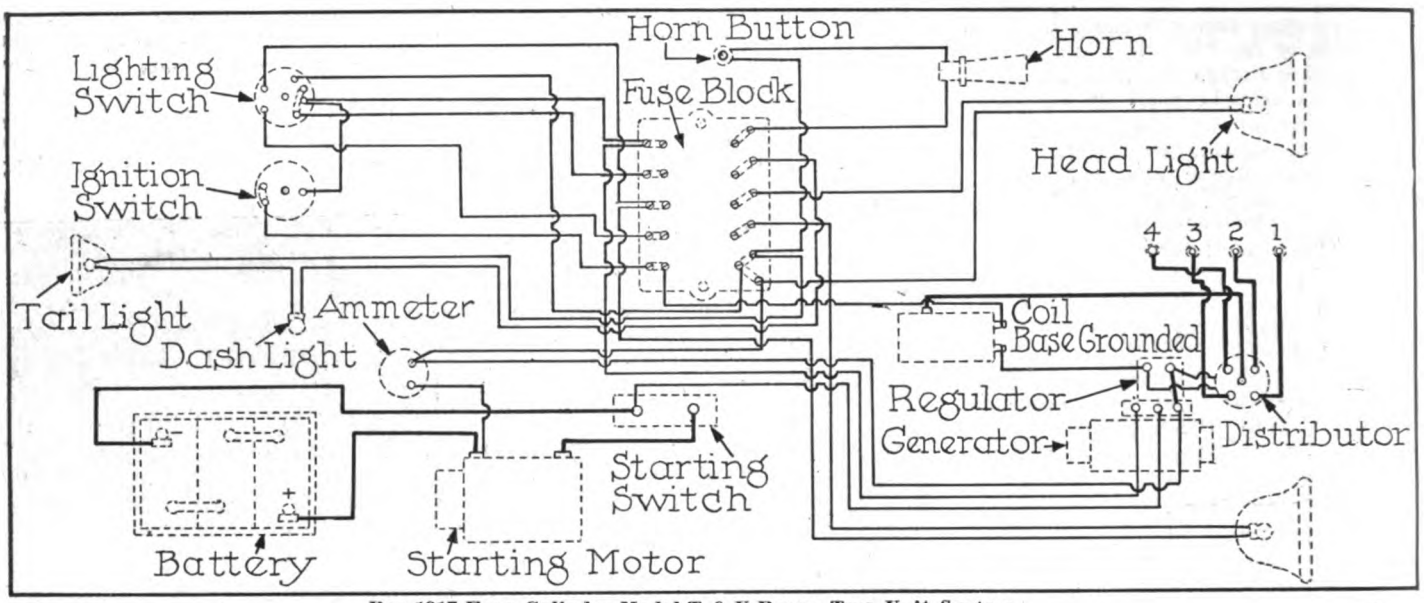
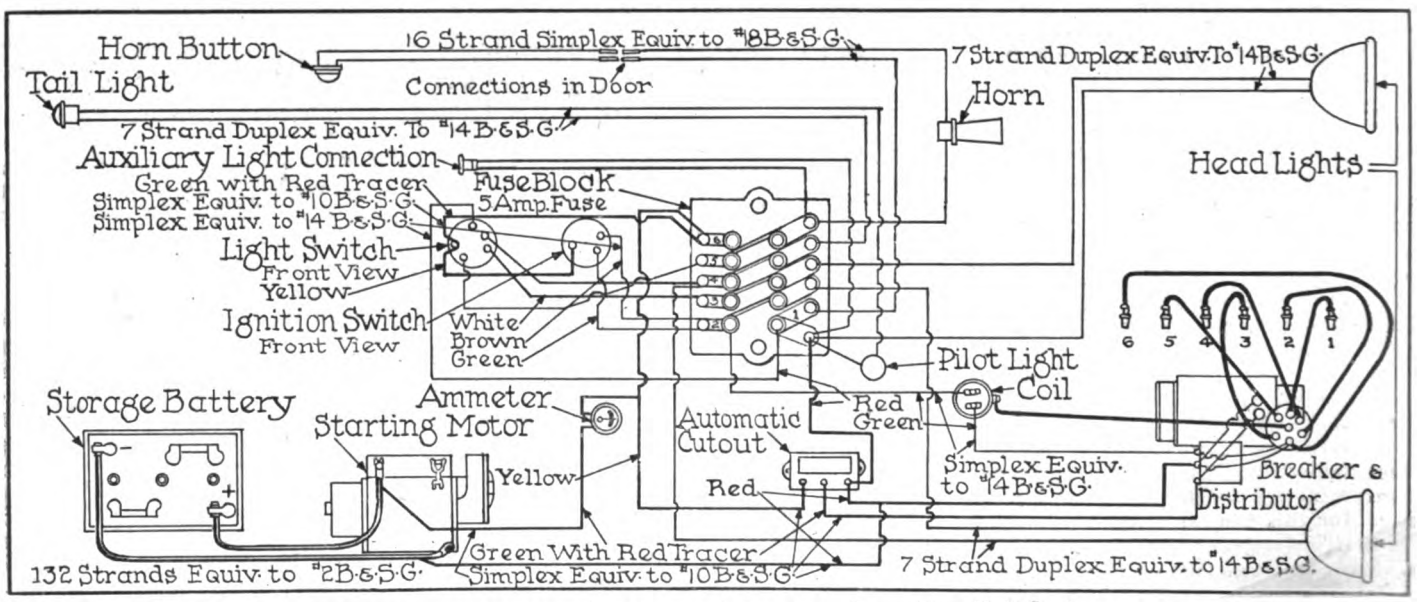
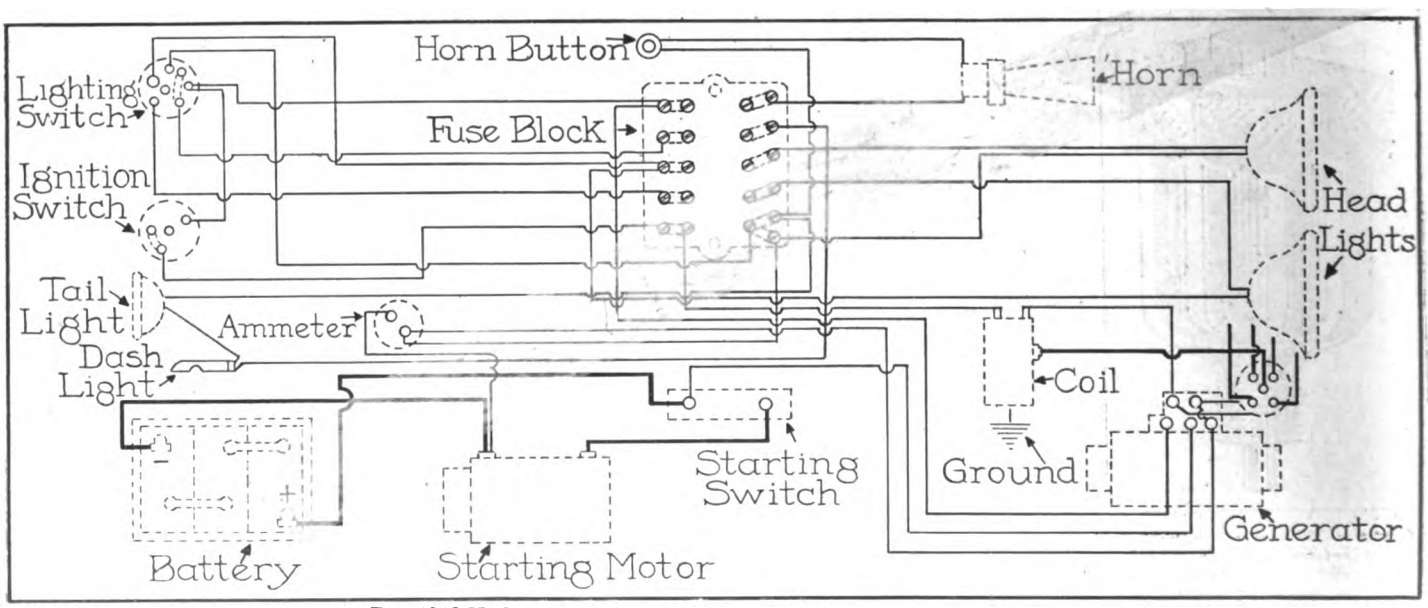
Monthly Wiring Diagram, No. 2



Reo 1917 Four-Cylinder Model T & U Remy Two-Unit System.



Reo 1917 Six Cylinder Touring Car and Roadster, Remy Two-Unit System.



Reo 1918 Model T & U Four-Cylinder Remy Two-Unit System.

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(Continued from Page 32.)

equipment was graphically represente and under continuous demonstration.

One of the most interesting exhibits, in the light of the recent agitation in regard to short measure given at oil filling stations, was a new visible measure shown in connection with an oil supply pump and tank. The appliance is supplied with a 10-gallon glass container marked off into gallons, visible to the purchaser at all times. As a fresh supply of liquid is pumped up through a rubber tube, the amount already in the container is automatically emptied into fuel tank of the buyer's car, so that by noting that the container is filled each time and keeping count of the number of times the container is filled and emptied, the customer can be sure that he is getting the full amount paid for.

There was also a comprehensive display of head lights, spot lights and patent dimmers, all designed to comply with the present regulation in various sections of the country.

Speedometers of various types were belted to motors, demonstrating their principles of operation and utility. Some devices for the dash board were so complete as to afford an adequate record of whatever the motorist would desire to know concerning rate of travel, trip and total mileage, oil and fuel consumption, tire mileage, condition of electrical equipment, etc.

The showing of magnetos, storage batteries and electrical devices was especially complete.

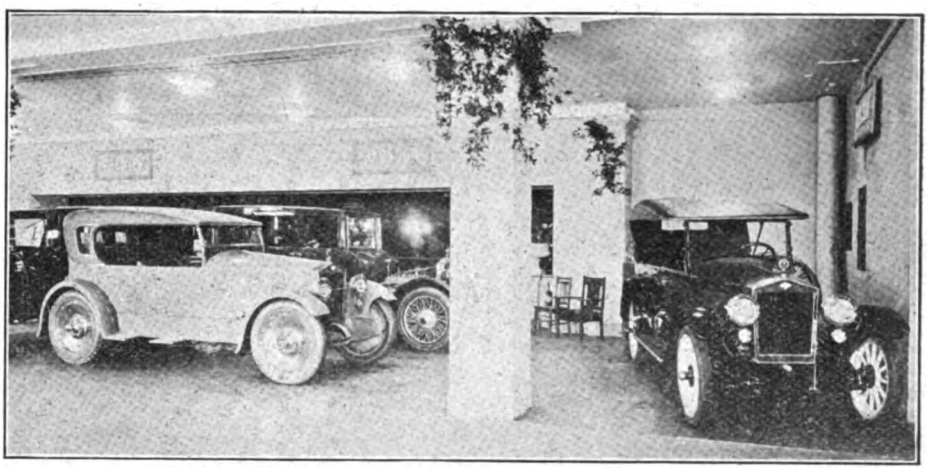
One of the most attractive booths was devoted to robes, auto gloves and especially designed automobile coats, caps and other wearing apparel.

OFFICIALS OF THE SHOWS.

This 20th national automobile show was held under the auspices of the National Automobile Chamber of Commerce, which has been so conspicuous in its successful sponsorship of similar events.

The entire executive department has been in the hands of Samuel A. Miles, whose enviable record as a manager of these nation wide exhibitions is coincident with the shows themselves and forms a notable chapter in the history of American automotive activities.

The president of the Chamber of Commerce this year is Charles Clifton, one of the best known representatives of the industry, and associated with him are the following committees: Passenger car section—John N. Willys, Willys-Overland Co., Cleveland, O., chairman; H. G. Root, Westcott Motor Car Co., Springfield, O.; Harry M. Jewett, Paige-Detroit Motor Car Co., Detroit. Truck section—Martin L. Pulcher, Federal Motor Truck Co., Detroit, chairman; A. J. Whipple, Diamond T Motor Car Co., Chicago; David Ludlum, Autocar Co., Ardmore, Pa.



Up-to-Date Disc and Wire Wheel Equipment Shown on Jackson Cars, Made by Jackson Automobile Co., Jackson, Mich.

CHICAGO SHOW, JAN. 24-31.

The majority of the exhibits were seen again at Chicago the week of Jan. 24-31, the passenger cars and accessories at the Coliseum and Annex and First Regiment Armory. and the truck section and accessories at the International Amphitheater.

The enthusiasm at Chicago proved as great as that manifested at New York. This show has always been considered as the big retail exhibit of the Middle West and it fully sustained its reputation this season.

All of the best exhibits seen at New York were repeated here and many interesting additional features were noted. In fact, it is stated that the western show was more comprehensive in some respects than its eastern predecessor, as many of the cars which were seen in hotel corridors, and some others in private displays, were in the main buildings at Chicago.

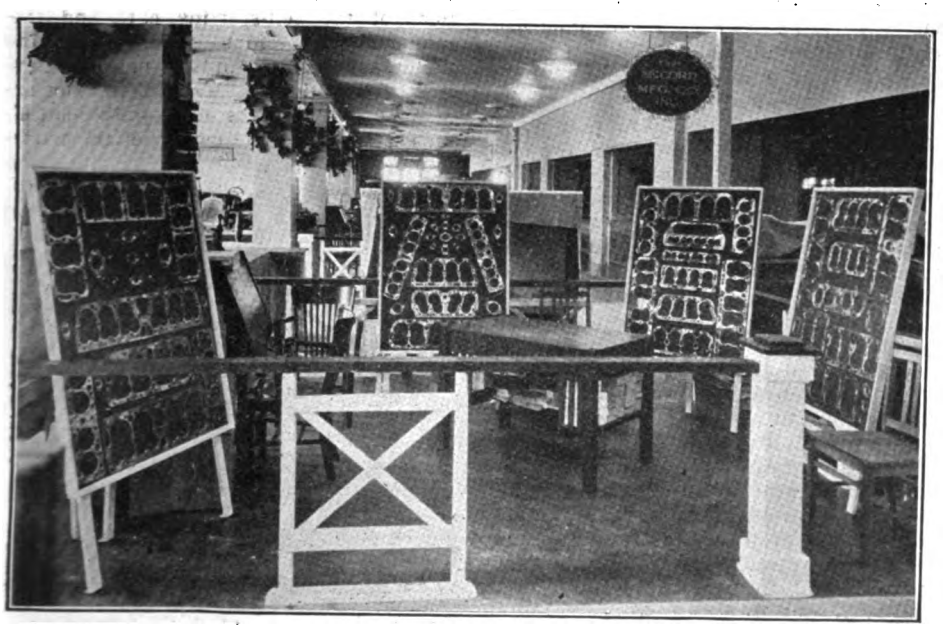
As to the amount of business transacted, while many actual sales were made, the local dealers seemed more concerned in ascertaining the number of cars they might by any possibility include in their allotment for the season rather than taking orders for immediate delivery. Conditions have emphasized the fact that was evident at New York that the visible supply of cars is unquestionably entirely inadequate to meet the increased demand.

The location of the building devoted to commercial cars was more favorable than at New York and this is stated to have had a salutary effect on the interest manifested and the amount of business transacted in this division of the exhibition.

In regard to new cars seen at Chicago, they were built to a high standard, and followed long established lines of design in construction, appointment and finish. As at New York, the six-cylinder car dominated, more than 50 per cent. of the models in the passenger car section being equipped with engines of this power.

The following percentage table of chassis production, embracing every make of American car, shows how the tide has turned in the last 10 years in favor of the six-cylinder type:

Year	Sixes	All other types
1910	10	90
1911	17	83
1912	19	81
1913	36	64
1914	45	55
1915	47.5	52 5
1916	45.8	54.2
1917	47	53
1918	51.7	48.3
1919	53.2	46.8
1920	55.8	44.2



Display of McCord Manufacturing Co., Inc., Detroit, Maker of Gaskets, Shims, Metal Stampings, Radiators, Etc.

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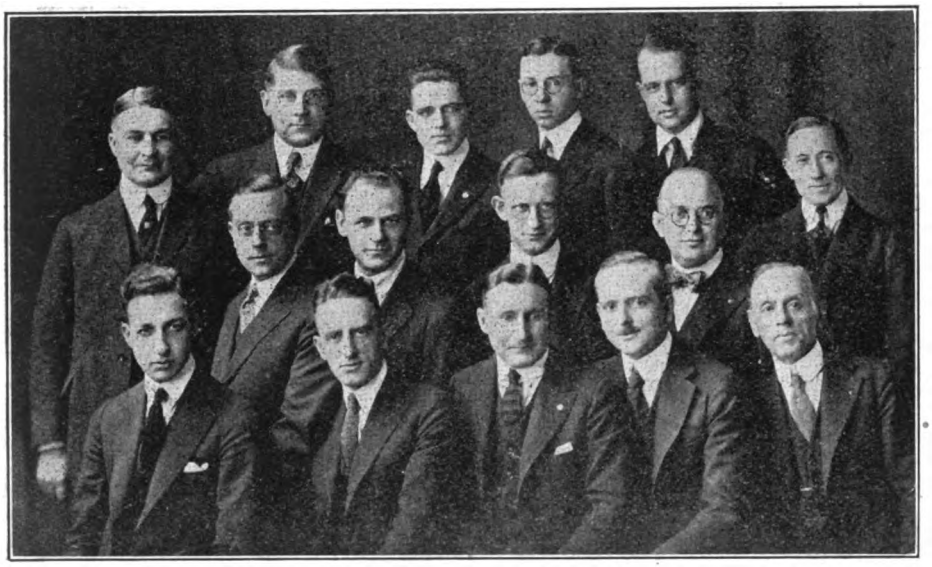
Sales Managers, Bailey-Drake Co., Meet at Home Office in Chicago



Group of Sales Managers of the Bailey-Drake Co., Chicago, Ill., Distributor of Automotive Products.

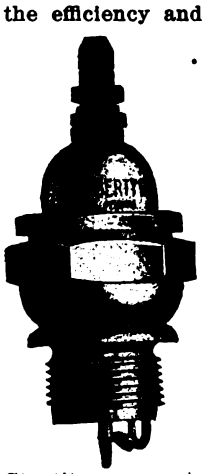
THE accompanying illustration shows a group of branch managers of the Bailey-Drake Co., which recently met at the home office of the company at Chicago, to plan the sales campaign for the present year, the organization covering all parts of the United States.

At this convention it was announced that national sales work had been assumed for some dozen or more important automotive products, including the following: Jackson pneumatic and electric drills and pneumatic valve grinders, made by the Kalamazoo Railway & Supply Co., Kalamazoo, Mich.; Ibsco battery steamer, made by the Illinois Battery Steamer Co., Peoria, Ill.; the Klemme auto hoist and crane, made by the Klemme Manufacturing Co., Davenport, Ia.; the Mentor auto horse, made by the Safety Equipment Co., West Mentor, O., and the Nazett burning-in device, made by the Nazette Manufacturing Co., Eldora, Ia.

The Bailey-Drake Co. was established in San Francisco in 1908, but its rapid growth made a central location of the head office imperative. The president, Fred V. McGraw, advises that the activities cover the entire United States and Canada, with headquarters at Chicago, and branches in New York City, Detroit, Atlanta, Ga.; Dallas, Tex.; Kansas City, Mo.; St. Louis, Mo.; Minneapolis, Minn.; Seattle, Wash., and San Francisco.

LIBERTY SPARK PLUGS.

Extremely broad claims are made for the efficiency and endurance of Liberty spark plugs, made by the Federal Corp., 100 North Elm street, Westfield, Mass., a concern that specializes this product in a large plant with every facility for high grade production. The plugs are made to exclusive design and this and the use of materials are covered by application for patents now pending.



The insulators are Steatite, a material that cannot be broken by extremes of heat or cold, is proof against electrostatic puncture, and will endure against shocks that would shatter porcelain. The heavy shell is brass and the dome shaped insulator is capped with a brass connection. The shapes of the center and shell electrodes are such that oil cannot accumulate upon them in sufficient volume to soot or carbonize, and claim is made that they are in effect self-cleaning. These plugs are made in all standard sizes and they are sold for $1.50 each.

NEW STERLING TREAD.

The Sterling Tire Corporation, Rutherford, N. J., announces that the new Sterling vacuum tread is being adopted for its large size tires as rapidly as the equipment can be placed in commission. It has been tested out under the same conditions as the bar type and is reported to give even greater mileage.

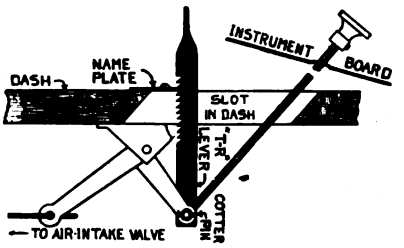
It is stated that as a rule nearly all types of tires are run with insufficient air pressure and when semi-flat the bars, and for that matter any marked raised figures, work on the fabric layers beneath with an uneven kneading action, tending, after long mileage, to separate the layers. It is claimed that the new vacuum tread affords an equal bearing surface over its entire circumference, and that it is also free from the kneading caused by raised figures, which tends to "ball" the friction and make blisters.

"T-R" STARTING AID FOR FORD CARS.

The Tolman-Reeve Engineering Corporation, Chicago, Ill., has just brought out a new and interesting little device, known as the "T-R" Starting Aid for Ford cars, which is something of an innovation in the field of Ford accessories.

It is made in two models, the No. 1 being adapted for the older Ford cars without self-starting equipment, while the No. 2 is for cars equipped with self-starters. Model No. 2 is represented in black in the sketches. It consists of a toothed lever and a name plate. As the choke rod in the Ford self-starting device is raised the notches in the lever engage the name plate and hold the choke rigidly at any desired point. When the lever is tripped by a touch of the foot the choke snaps back to normal through the action of the spring in the carburetor.

Model No. 1 for hand-cranked Fords fills even a greater need than the No. 2, for it supplies the equivalent of the Ford dash choke arrangement found only on the self-starting cars plus the "T-R" Starting Aid feature of fixed choke control. Dash choke control is thus obtained absolutely independent of the wire choke device at the radiator.

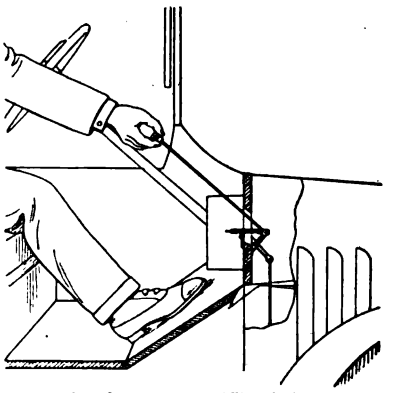


Model No. 2 "T-R" Starting Aid for Ford Cars.

Most drivers, in order to obtain easy starting use a carburetor mixture richer than necessary when the engine is warm. This is unnecessary with the "T-R" Starting Aid, for the carburetor can be set at a thin mixture and a partial choke used for driving the engine while cold.

The device is unique in its ease of installation, its simplicity, the manner in which it fits in with the Ford choke equipment of the self-starting cars and the precision with which it functions. Installation is effected in less than five minutes by inserting the lever in the slot already existing in the Ford dash, cottering as shown and screwing on the name plate.

The model No. 1 retails for $1 and the model No. 2 for 75 cents.



Showing Application of "T-R" Starting Aid on Ford Car.

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Trade
Cochran *Pistons*
Mark

FORD
BUICK
DODGE
MAXWELL
CHEVROLET
CADILLAC
OAKLAND
STUDEBAKER
OLDSMOBILE
LIBERTY
PAIGE
PATERSON

SCRIPPS-BOOTH
COLUMBIA
LEXINGTON
MOON
WILLYS 6
ROAMER
WESTCOTT
HUDSON
ESSEX
NASH
CASE
JORDAN

CAST IRON

GROUND TO SIZE

SIZES

Standard Over-Sizes: .002½, .005, .010, .015, .020, .025, .031¼, .033, .035, .045, .047½, .050.

REBORE YOUR OLD BLOCKS----INCREASE YOUR EFFICIENCY

Cochran Pistons are evenly balanced and eliminate as nearly as possible the vibratory forces set up by the weight of the reciprocating parts.

County Distributors desired as representatives in every state. Write for our proposition.

DETROIT METAL PRODUCTS COMPANY
DETROIT, MICH.

(When Writing to Advertisers, Please Mention the Accessory and Garage Journal.)

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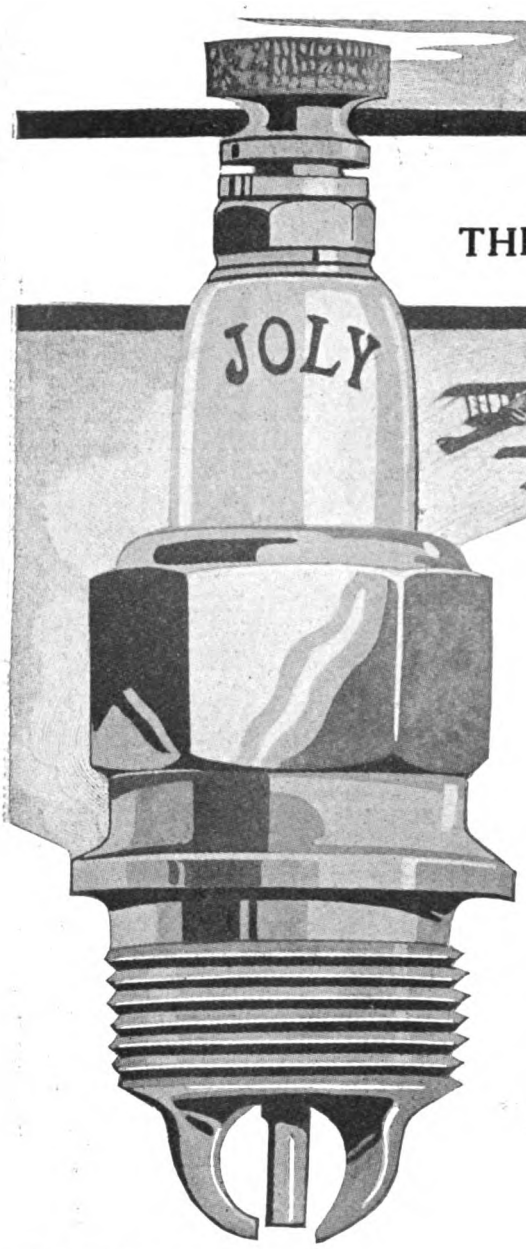
THE WORLD'S BEST PROVED SPARK PLUG



THE "plug weary" millions of car, truck and tractor owners have been waiting for a plug such as the Joly—They have bought on advertised claims, and on recommendation, but it has been the same old story of trouble and short life.

DEALERS—We want you to line up with—stock up with—The Joly Spark Plug—the plug

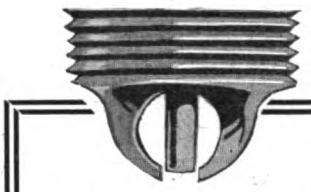
That Sells on Records and Design and Forever Stops Annoyance and Trouble

For Four Years All Allied Combat Airplanes Fired Their Motors With the Joly Spark Plug. 5,000,000 were Required.

This chunky, sturdy plug stood strong for from 70 to 80 hours in the thousands of high compression motors under sustained speed. The airplane engine never idles---never slows down. The land motor gives its plugs a cooling chance.

Consider this splendid record, then ask yourself the question: "What is such a Plug worth to my trade—what is it worth in the building of my business?

There is but one answer: The Joly **Spark Plug will outsell any other Plug on its record alone.**



Why It Cannot Fail

The heavy, integral fingers furnish ample heat radiation. Pre-ignition from plug cause is impossible.
The plug is oversized—breakage is practically impossible. Design of electrode operature allows for no leakage. Insulation is perfect, making short circuit practically impossible.
In every way it is rendering the same car, truck and tractor superservice that made it supreme in the air.

TO THE TRADE—

Aside from selling a plug that knocks the plug grouch **out of your trade, we have a discount proposition that you won't pass up—write today.**

LYONS IGNITION CO.
215-19 Fourth Ave., New York
Factory, Paterson, N. J.

IMPORTANT—Do not tie yourself up on any spark plug contract until you have investigated the Joly Spark Plug and the sales plans back of it.

"JOLY"

(PRONOUNCED "JO—LEE")

SPARK PLUG

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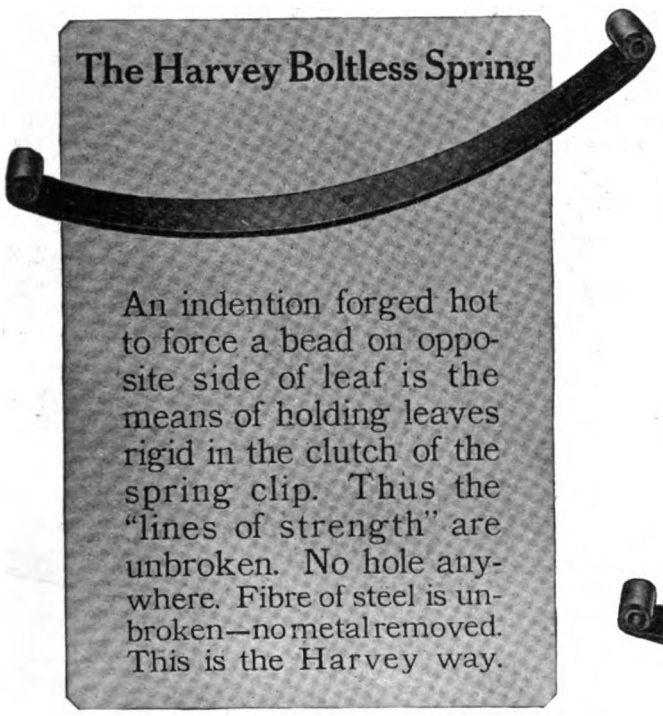
Unbroken Lines of Strength in the Harvey Boltless Spring



TWO methods were employed to make the Harvey Spring excel in strength so that a broad guarantee could be offered safely with every sale. The center hole was eliminated so there are no weak spots. Then the Harvey patented process of heat treating and tempering was solved. These two factors have made the Harvey known in motordom as a spring in which the motorist can place utmost confidence.

Dealers are invited to write for the Harvey book containing specifications for over 1000 kinds of Harvey Springs; also for information regarding our dealer co-operation.

Harvey Spring & Forging Co.
1161-17th Street Racine, Wis.

No longer need automobile spring sales mean added responsibility and eventual trouble for the dealer. He can sell the Harvey Boltless Spring with a guarantee that really protects. Also he can assure resilience that gives the motor car extreme riding ease and eliminates the jolts that wear down tires and mechanism prematurely.

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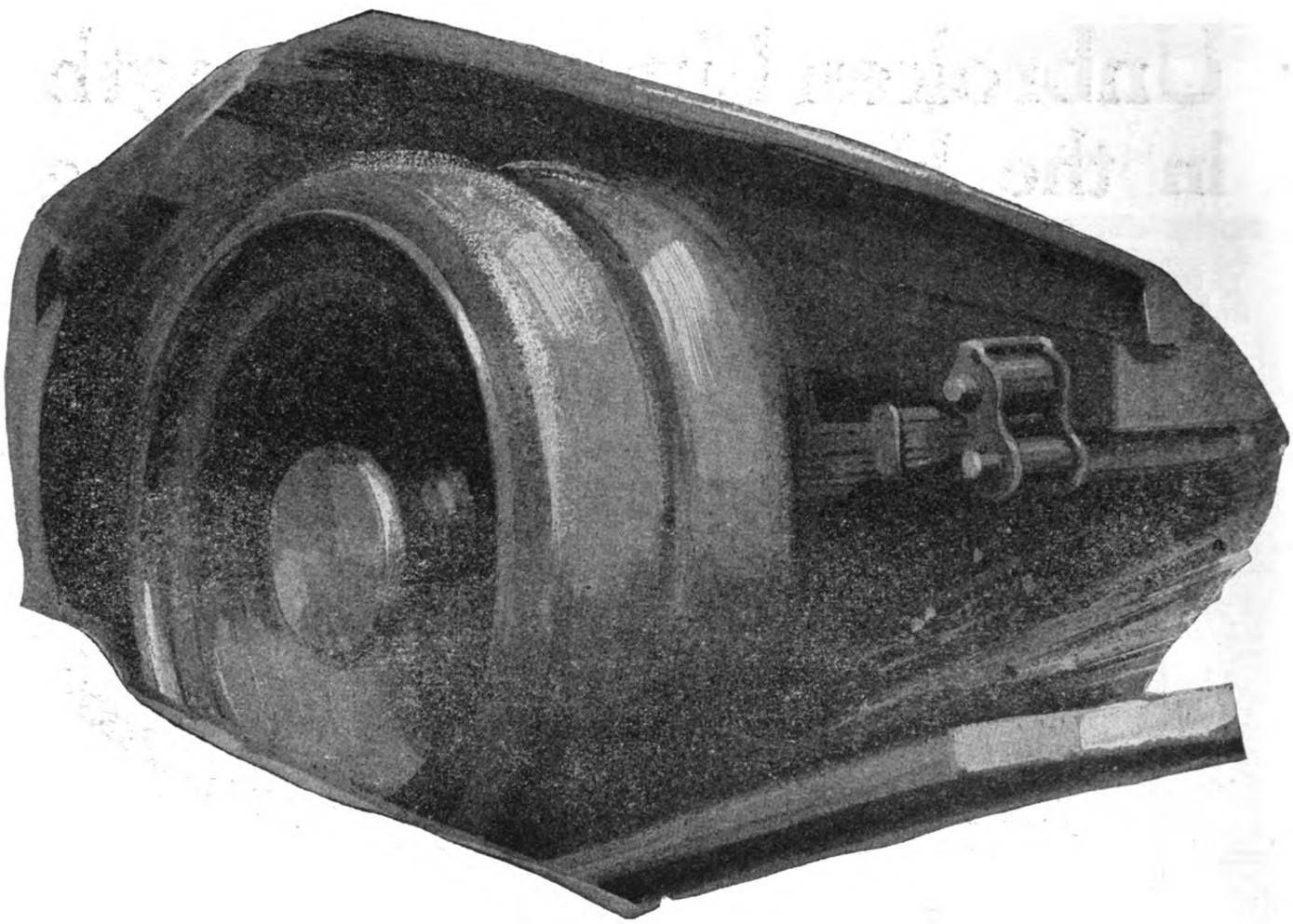
Powrlok in the Rear Axle



Stops Stalling

Powrlok actually does stop stalling and prevents skidding, because it automatically distributes the power to the rear wheels the logical way—in direct proportion to the traction or hold which the wheel has on the ground—instead of in indirect proportion as the ordinary differential does.

It supplies the power to the wheel that can use it instead of giving it to the wheel that wastes it in useless spinning.

Even conservative automobile engineers class it as one of the three or four greatest improvements made in motor cars within a decade. This is best proven by the fact that fifty manufacturers of all classes of automotive vehicles—passenger cars, trucks, tractors and industrial trucks—now use it as standard equipment.

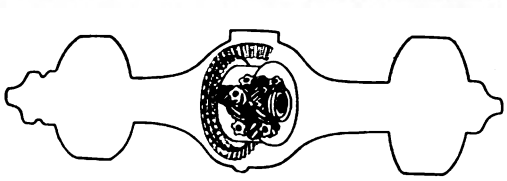
Write for our new booklet entitled—"More Than a Differential."

Specify Powrlok when you buy.

THE POWRLOK COMPANY, 1107 East 152nd Street, CLEVELAND, OHIO

Foreign Representatives: The Powrlok Company, Ltd. Offices: 24 Maddox St. Regent St., London, England. 19 Avenue MacMahon, Paris, France.

POWRLOK

"More than a  differential"

For Motor Trucks, Passenger Cars, Tractors, Industrial Trucks, Axles and Transmissions

(When Writing to Advertisers, Please Mention the Accessory and Garage Journal.)

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Kwik-on-an-off

TRADE MARK

INSTANTANEOUS

At last a dust cap that you don't have to keep on turning forever to put on.

Slip it over the valve-stem and give one turn and it's on.

When you want it to come off—and not till then—one turn in the other direction unlocks it.

Pat. Dec. 24th, 1918
Pat. Sept. 9th, 1919

Price 50 Cents per set of four

Simple, Expeditious, Unfailingly Efficient and Inexpensive

You can be sure that with

SCHRADER UNIVERSAL Kwik-on-an-off

dust caps on your valves, dust and dirt will not get to the valve-cap or inside the valve-stem thereby causing damage to the valve-inside and occasioning a leak.

at your dealer or

A. Schrader's Son, Inc.

Brooklyn, N. Y.

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Automotive MOSCO Equipment

DEPENDABLE PRODUCTS

FRONT APRON FOR FORD CARS

For 1917-18-19-20 Models Only.

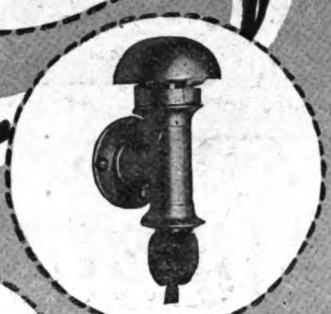
This apron makes a wonderful improvement in the appearance of the Ford Car, and for that reason alone is worth the cost, but it does more than that.

Induces a Larger Volume of Air to Pass Through Radiator.
Prevents Mud from Clogging Radiator.
Reduces Risk of Overheating.
Keeps Lamps Clean.
Prevents Vibration of Mud Guards.

Made of heavy steel, finished with two coats black enamel and baked. Furnished complete with bolts, nuts and washers. Easy to attach.

PRICE $6.50

$7.50 West of Mississippi River.



"TUWAY" COMBINATION DASH LAMP and PLUG SOCKET

The "TUWAY" dash lamp affords a combination of refinement and utility. Its pleasing design makes it an ornament to any car, and this design has the added advantage of giving a greater distribution of light from the same candle power bulb than any other lamp made. In addition it has the exclusive feature of a socket into which to plug trouble lamp, cigar lighter, etc., without interfering in any way with the light of dash lamp. The switch is very conveniently placed in the lamp bracket.

The Tuway is made of brass heavily nickel plated and comes complete with bulb and all necessary screws, bolts and nuts for attaching to either wood or metal dash.

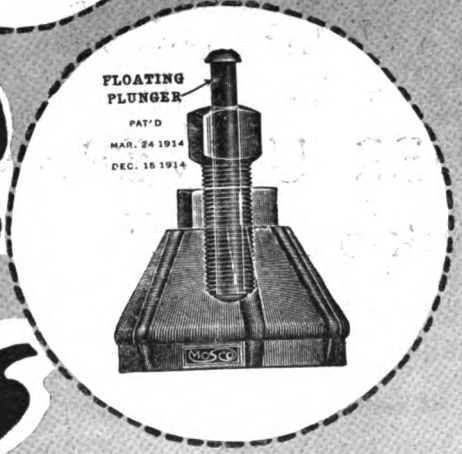
PRICE, $2.50 EACH.

IMPROVED BEMUS BALL CONTACT TIMER FOR FORD CARS

EASIER STARTING—SMOOTHER RUNNING—
LONGER LIFE—SAVES COIL POINTS.

The IDEAL TIMER for the FORD high speed, short stroke engine because form contact is the only one which is correct both electrically and mechanically. This is made by a hardened tool-steel brush coming in contact with steel balls, which are kept in proper position by means of a spring with plug on the end pressing against them. The impact of the brush causes the balls to turn so that a fresh surface is presented for each contact. The brush comes in contact only with the four balls, touching no fibre or insulation. This is a decided improvement over the ordinary type timer, where the roller is constantly wearing grooves in fibre ring which holds contacts. The balls are so located that each has a track of its own on the brush, this insuring a maximum amount of wear.

PRICE, $3.00.



FLOATING PLUNGER WHEEL PULLER

Starts a "Frozen" or "Stuck" wheel instantly. Strike the plunger, turn the screw, strike again and the wheel comes off without injury to hub threads, spokes or axle.

Made for 200 models of 45 popular makes of cars.

MOTOR SPECIALTIES

(When Writing to Advertisers, Please Mention the Accessory and Garage Journal.)

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Automotive (MOSCO) Equipment

DEPENDABLE PRODUCTS

BEAMOLITE SPOTLIGHT

"Built for those who demand the best."

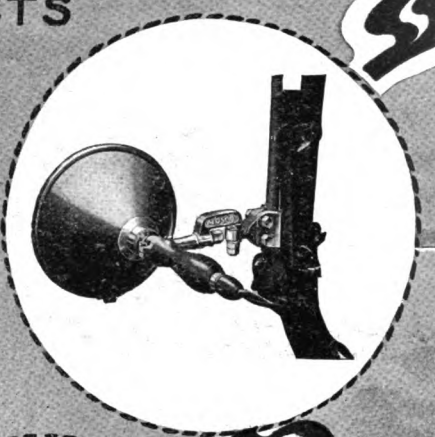
A custom made, quality equipment, strongly constructed, giving a powerful light—a light that lends dignity to any car.

The bracket is of Universal type, made from non-rusting metal, heavily nickel plated and so designed and made that it "stays put" in any position.

The reflector is made of brass, silver plated, on nickel, and highly finished. It affords maximum lighting effect and can be thrown in any direction (even backward).

It can be easily and quickly removed from the bracket when there is need of a trouble lamp. The bulb can be quickly replaced by removing the rim screw.

PRICE $15.00

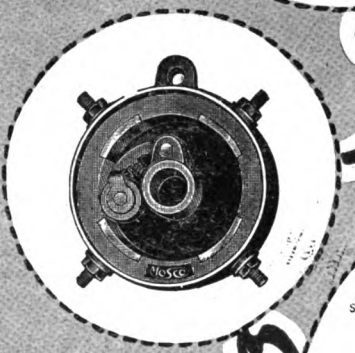


MOSCO TIMER FOR FORD CAR

Case is made of extra heavy pressed steel, finished in aluminum. Gray bone fibre raceway with steel inserts dovetailed in. The threaded terminals are insulated by fibre washers through to contact points, thus removing cause of short circuiting.

PRICE, $1.50.

(Complete with brush.)



JIFFY BUSHING REMOVER

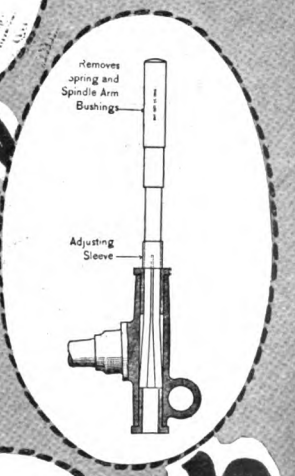
For Ford, Dodge, Dort, Chevrolet, Saxon, Overland and all Cars, Trucks and Tractors having ½" spindle bolt.

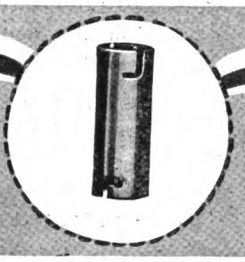
Made of steel, case hardened.

Indispensable to repairman and owner who does his own work. Pays for itself in a few minutes.

The only tool now in use that will remove steering knuckle, spindle arm and spring bushings.

PRICE, $1.50.





Electrical Fittings and Equipment

In the manufacture of "Mosco" Sockets the tubing is swedged on. This eliminates all chance of the plug turning in the socket—a most common cause of trouble when ordinary methods are used. Our inspection and testing in the course of production insures perfect goods and the correct shipments made.

All "Mosco" electrical fittings are guaranteed not to "short circuit" or deteriorate in use of current up to 20 amperes and to afford every satisfaction. With modern machinery and all time and labor saving equipment "Mosco" fittings are turned out in great volume and insures prompt service and delivery.

COMPANY WALTHAM MASSACHUSETTS

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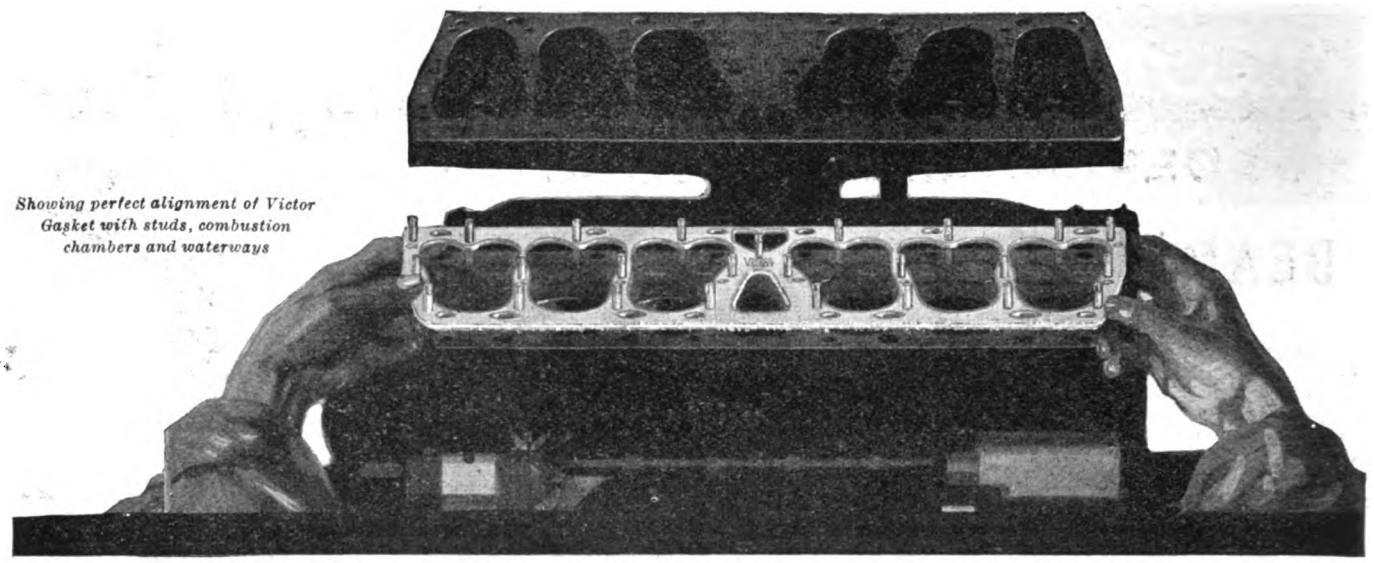

Showing perfect alignment of Victor Gasket with studs, combustion chambers and waterways

We Can Make Immediate Delivery on Gaskets for Standard Equipment

Victor has the largest and most complete line of gaskets made.

Our policy of distributing through hundreds of jobbers makes it possible to get prompt delivery even on obsolete types.

Pacific Coast Representatives
Allied Industries, Inc.
279 Minna Street
San Francisco, California

South American Representatives
C. J. P. Lucas
Galeria Gumes 558
Buenos Aires, South America

With the opening of our new factory our capacity for making Victor copper-asbestos gaskets is more than trebled.

We can make immediate deliveries on large equipment orders.

Already a majority of the manufacturers of America's best motors have specified Victor gaskets as standard equipment for their 1920 production.

Made to exact limits and of the highest quality materials, Victor Gaskets hold compression under the most trying conditions.

Purchasing agents and engineers: Write us for samples and estimates before placing orders for 1920 requirements.

Victor Manufacturing & Gasket Co.
World's Largest Gasket Manufacturers
5750 Roosevelt Road, Chicago, Illinois

The World's Standard Gaskets

VICTOR copper-asbestos GASKETS

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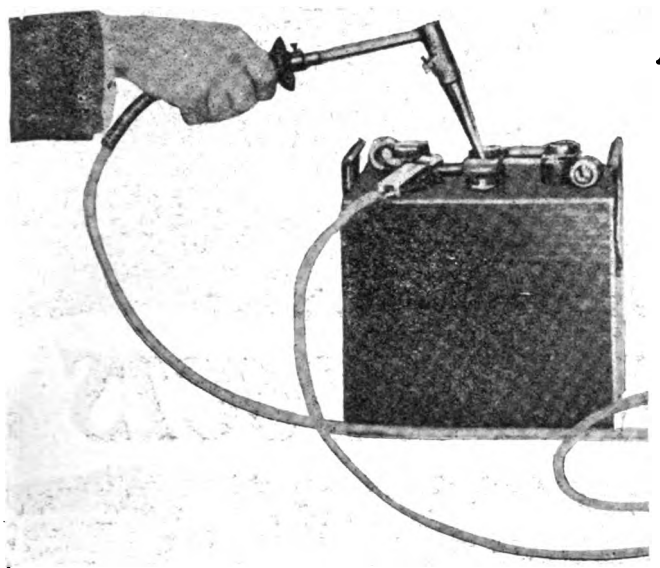

A "Hot Tip" on How to Save Money

Here, at last, is a quick, simple and inexpensive way to do lead burning and soldering work about the garage without gas tanks and other elaborate equipment.

Pyrotip, the G-E Electric Lead Burner

For overhauling and repairing lead storage batteries:

For removing straps to disassemble battery. Hot point of the carbon quickly softens joints, so that they can be pried off in less time and with less effort than by the usual brace and drill method.

In removing battery from car:

Corroded connections which cannot be separated in the usual way can be very quickly unsoldered by the use of the electric lead burner. It is portable and work on the battery can be done in the car.

To build up posts

The sharp tip of the carbon can be easily inserted in the ferrule or asbestos without danger of burning the post loose from the battery. Can be worked into corners and any dirt not cleaned off the post floats to the top as slag.

For building up lugs on plates and assembling plates in groups:

Lugs on plates may be lengthened or cut off quickly. Plates can be assembled in groups very readily using Pyrotip.

To burn on cell-to-cell connectors:

Concentration of the heat at the point of carbon reduces danger of melting sides of joint. Joints are made in less time with Pyrotip.

For other applications:

Many other applications, such as soldering splices, sweating on terminals, small brazing jobs, cutting thin sheet metal and similar uses will occur to the operator. Pyrotip will be found to be a very convenient tool.

Pyrotip Electric Burner

Ask for booklet 3483-B

General Electric Company

General Office Schenectady, N.Y.

Sales Offices in all large cities

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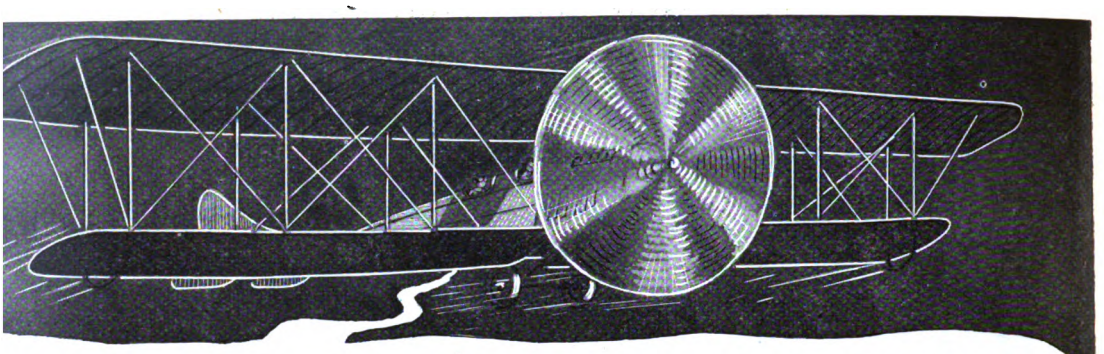

BLUE RIBBON PRODUCTS

Are a Standard Line

Jobbers and Dealers stock the full Blue Ribbon line as they do all other tried, proven and constantly selling goods.

Blue Ribbon products are made by specialists who depend wholly on the quality and service giving satisfaction afforded by lines bearing their trade mark.

There can be no experimentation at the expense of the consumer, dealer or jobber. All Blue Ribbon Specialties must be as good as they are practical in every day use as it is possible to make them.

A nation wide trade, enormous expenditures devoted to development and promotion work as well as the maintenance and operation of the largest plant of the kind in America is too great a stake to gamble against quality.

Blue Ribbon Products today stand supreme. They are passed over the counters backed by an unqualified guarantee on the part of the trade that can leave no doubt as to their merits.

That is why Blue Ribbon Products are a standard line and will always continue to be so.

That is why all jobbers and dealers sell and list them in their catalogues.

Above all else that is why the consumer buys Blue Ribbon trade marked products. Blue Ribbon Products cost no more than others, yet represent the most profitable line that can be placed by the jobber or dealer.

If the **BLUE RIBBON** trade mark is to be seen on your shelves or counter you have a silent salesman in your store that is always working, always earning.

All Blue Ribbon Specialties are sold in quantities to meet any requirement.

The full line affords a complete line and it pays to specialize in known quality goods.

Blue Ribbon Specialties Include:

Blue Ribbon Cold Cream Hand Soap
Contains no pumice or sand.

Blue Ribbon Leak Proof Cement
A permanent radiator cement.

Blue Ribbon Nickel Polish
For nickel parts and trimmings.

Blue Ribbon Auto Body Gloss
For automobile or furniture.

Blue Ribbon Lightning Carbon Remover
Quick and positive in action.

Blue Ribbon Black Enamel
For lamps, hoods, radiators and metal parts.

Blue Ribbon Auto Top and Seat Dressing
A waterproof dressing that restores tops and seats.

Blue Ribbon Hand-On Patch
A self-vulcanizing patch for shoes and tubes that never fails.

Blue Ribbon Cream Metal Polish
For any metal. An easy, quick working, satisfactory polish.

Blue Ribbon Oil Soap
A pure vegetable oil soap for any purpose. All quality and efficient.

This is the time to consider your winter and spring requirements

Jobbers and Dealers: Prices and discounts at request.

International Metal Polish Co.

INDIANAPOLIS, INDIANA.

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GUARANTY Motor Repair Arm

(Pat. No. 1,289,100, December 31, 1918)
Note the date.

"Scientifically made in Rights and Lefts, extended prongs providing greatest bearing surface and strength reinforcement. Saves time and expense. A wrench and a few minutes make a permanent repair. Loosen 6 bolts, tighten nuts, don't disturb motor."

Price $1.50

GUARANTY SPARK INTENSIFIER

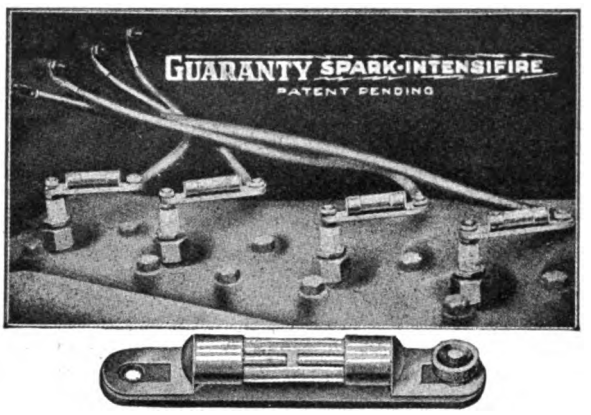
WHICH EXPLODES ALL GAS IN EACH CYLINDER AND MAKES THE PLUG FIRE EVEN IF DEFECTIVE AND CYLINDER THROWS OIL BY JUMPING THE SPARK, MAKING IT HOTTER AND ABSOLUTELY EVEN.

(The Jump-Spark is the most powerful electricity knows.)

GREATLY ADDS TO MILEAGE, MOTOR POWER, SPARK PLUG LIFE AND EFFICIENCY.

Easy starting—Prevents Carbon—No free gas to accumulate in cylinders or throw off through exhaust—Instantly locates source of trouble in case of broken wire, defective coil or timer. Pure Mica enclosed, eliminating all possibility of hazard. Of great value to all autos and trucks, whether Battery, Generator or Magneto.

Box of 4, $2.50. Box of 6, $3.75. Single, 75c.



Guaranty-Pliable-Drive and Extended Frame on Ford Truck

GUARANTY PLIABLE DRIVE

AND EXTENDED FRAMES

FOR FORD WORM-DRIVE TRUCKS

REMOVES ALL LIMITATIONS

$175

ALL MODELS

LOADING SPACE UP TO 10 FEET.

CARRYING CAPACITY UP TO 12 TONS.

Without new propellor shaft, universals and ball bearings

$100

ALL MODELS

Special Radius Rod, Hangers included in each equipment.

GUARANTY MOTORS CO.

436-438 Massachusetts Avenue,
Cambridge, Mass.

Manufacturers of the well known GUARANTY LINE.

GUARANTY Internal Gear Drive Units for converting pleasure cars into Trucks. GUARANTY Power Hoists, Pliable-Drive and Extended Frames for Ford Worm-Drive Trucks, Repair Arms, Etc.

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CRONK SIMPLEX SLIDING GEAR TRANSMISSION for FORDS

A Three-Speed Forward, One Reverse Selective Type Sliding Gear Transmission

This is a new development—a radical refinement of a most practical character—and so it is well worth investigating.

Here we do away with the planetary, with its bands that wear out—that "drag back" on engine power and retard coasting freedom.

We relieve the Ford owner from the mean necessity of using either the low or high gear when conditions call for a better combination of power and speed.

The Cronk Transmission for Fords is a real transmission. It will stand up. Hills and rough roads that heat and wear a planetary transmission on "low" or strain the engine on high, are taken much more easily and efficiently on "second"—and at from 10 to 20 miles per hour at that.

You show a Ford owner this wonderful three-speed transmission. Let him handle the simple "cane shift" in low, intermediate, high and reverse. Show him why he won't have to longer hold down the clutch pedal with his foot for weary miles. Tell him that he doesn't have to court accident by taking bad hills at a high speed. Show him more speed at less expense of fuel.

The Cronk Simplex Transmission for Fords gives the engine its fullest expression of power, flexibility, speed and economy. It gives the driver the same control used on higher powered cars in general.

Foot brake on jack shaft back of transmission is free from oil and radiates heat perfectly. Raybestos lined. No cotton lint to foul spark plug or clog oil tubes.

Design allows for installation of electric starter on old cars in same manner at 1920 cars.

This transmission is a rugged job—oversized nickel steel gears. Can be installed and forgotten so far as future trouble is concerned.

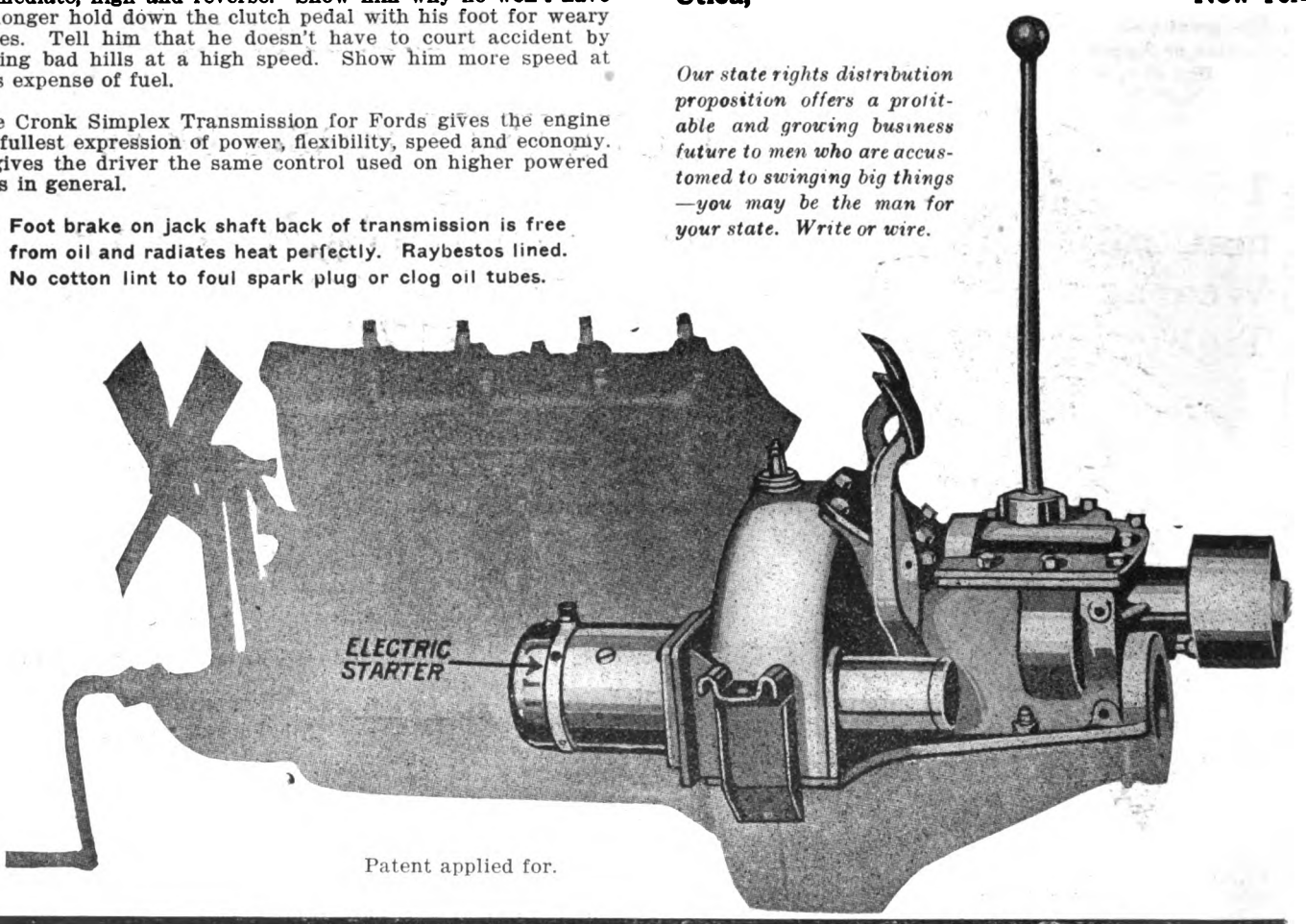
Saves rear axles by eliminating jerks they receive in dropping from low to high. Installation easy—no cutting or machining—just an assembly job.

DEALERS—When you get the full story on this transmission the selling possibilities in your territory will become large. Our arrangements with you are made direct and your additional profit on original Ford parts removed is also a big item. Write or wire.

Write for our exclusive State rights distribution proposition. We are looking for men of vision and action.

E. D. & A. F. CRONK, Inc.
Utica, New York

Our state rights distribution proposition offers a profitable and growing business future to men who are accustomed to swinging big things—you may be the man for your state. Write or wire.



Patent applied for.

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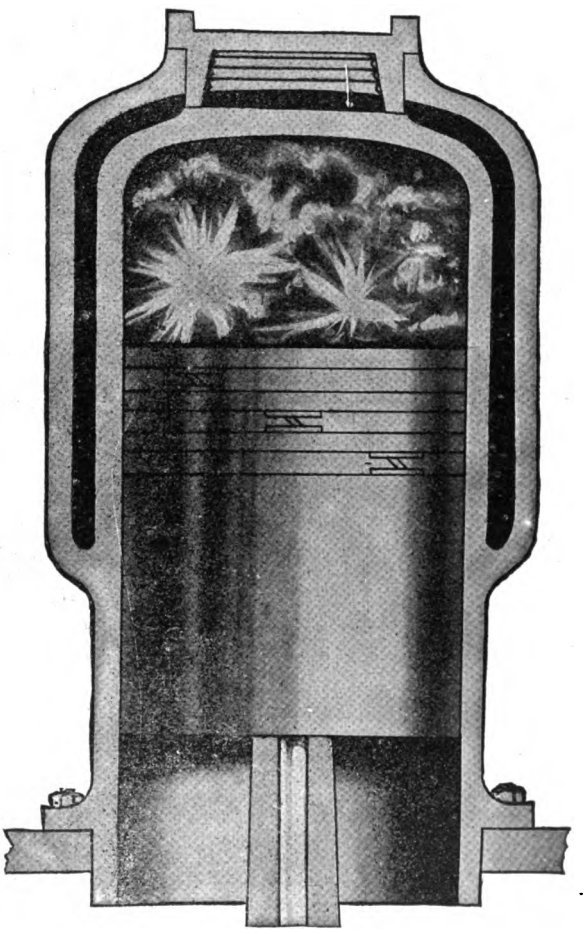
BURD

High Compression

PISTON RINGS

Absolutely Cannot Leak

Prevent Carbon Trouble, and Stop the Waste of Fuel, Oil and Power



The Patented Guard Automatically Compensates for Wear and Insures Oil and Gas Tight, High Compression.

Ask Your Jobber or Write

For Directory of Piston Ring Sizes, Price List, etc.

Burd High Compression Ring Co.
Rockford, Ill., U. S. A.

(When Writing to Advertisers, Please Mention the Accessory and Garage Journal.)

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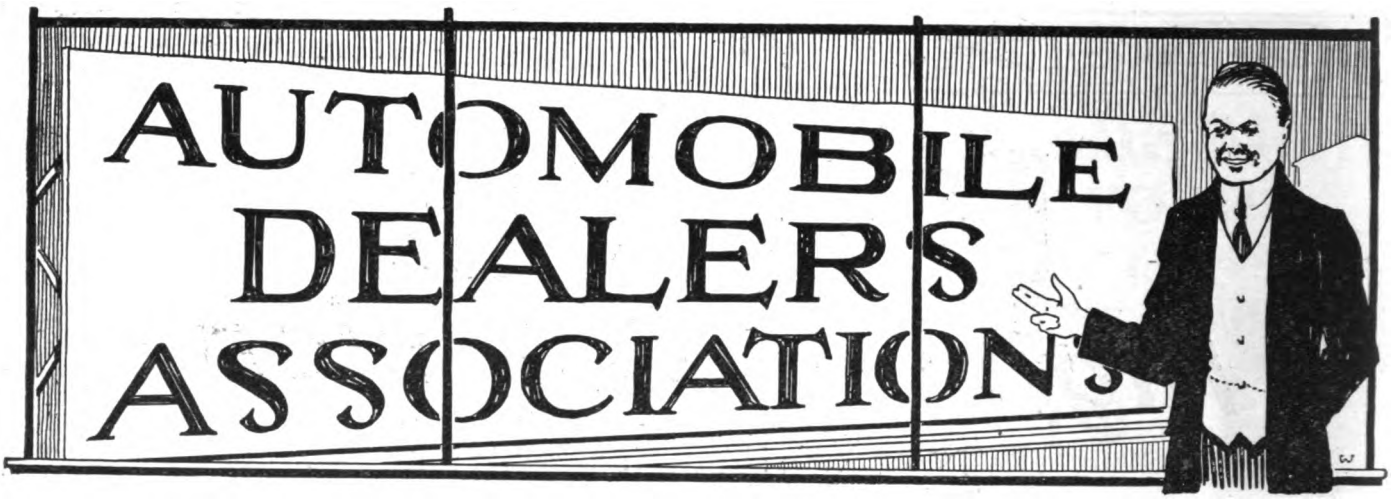

Ohio Auto Trades Adopt Resolutions

The Ohio Automobile Trades' association at the recent convention at Cleveland, O., passed resolutions in favor of the Motor Vehicle Tax Bill pending in the Ohio General Assembly and urging that automotive interests give it sanction and support, provided the funds derived therefrom are properly safeguarded and are used for the mandatory maintenance of state and county improved roads; indorsing the Pittman bill as fostered by the National Automobile Dealers' association also as follows:

"Whereas, our state and nation are today facing a general unrest in the labor situation, and, whereas, there is a serious shortage of production in almost every line of activity, and, whereas, America today is facing a famine of needed production of food, clothing, fuel and other commodities, now, therefore, be it resolved, that the Ohio Automobile Trade association, in convention assembled, do protest against the tendency of shortening the work day and that we favor working more hours per day."

The following officers were elected: President, Andrew Auble, Akron; vice presidents, Frank J. Girard, Columbus, and Warren E. Griffith of Toledo; treasurer, F. E. Avery; manager, Victor Moon, Columbus.

The Lehigh Automobile Trade Association was recently formed at an enthusiastic meeting at Easton, Pa. Plans for progress were made on a somewhat elaborate scale. The purchase of property at Rittersville was approved and a contract awarded for the erection of an auditorium. The association was incorporated Oct. 2 with $50,000 capitalization. Its purpose is to hold exhibitions of motor vehicles, supplies and accessories, to buy, sell and manufacture the same, to hold real estate for these purposes and to afford mutual protection to the members and the public. Land for the auditorium was purchased for $15,000. The building will cost $75,000. The following officers were elected to serve until April: President, E. T. Satchell; vice president, E. A. Krause; treasurer, W. F. Wink; recording secretary, A. P. W. Brooks; financial secretary, W. O. Messinger.

ACCESSORY ASSOCIATION ELECTS.

The Automobile Accessories Business association of Philadelphia has elected the following officers: President, W. H. Metcalf; vice president, George L. Fischer; treasurer, N. A. Petry; secretary, A. W. Stellwag; two-year directors, H. E. Alimang; George B. Shearer, Jr.; one-year directors, W. T. Bosworth, T. S. Eavenson, C. B. Vogt, W. R. Walton, C. H. Waltz.

There are now more than 200 members on the membership rolls, this being double what it was a year ago

At the December smoker there were about 350 accessory men present and it was reported that 49 new applications for membership had been secured. The total membership is now nearly 300, about three times what it was a year ago, and is made up of manufacturers and jobbers of automobile accessories, dealers and their salesmen.

Mr. Metcalf, who is connected with the service department of the Wire Wheel Corporation of America, successor to the George W. Houk Co., is serving as president for the third term. The affairs of the association are controlled by a board of governors consisting of the four officers and seven directors.

W. H. Metcalf, President Philadelphia Automobile Business Association.

Portland Association's New Plan

At the annual meeting of the Portland Garage and Repairmen's association the new plan of organization was unanimously approved and put into effect. This is, briefly, as follows:

In place of the former board of managers composed of the five officers of the association (president, two vice presidents, secretary and treasurer), there has been substituted a board of trustees composed of the above officers, and in addition four trustees, all elected by members at the annual meeting. The trustees will hereafter be elected for two-year terms and the officers for one year. This board of trustees will be the governing body of the association. In addition to these officials there have been created and elected under the new plan six vice presidents, representing as many different crafts or departments included in the association membership, these being divided as follows: Battery and electrical shops, garages, machine and repair shops, tire repairing shops, paint and trimming shops and auto sheet metal and wheel shops.

But perhaps the most important part of the plan is the creation of the new office of business manager, who will be in effect an assistant secretary, to be appointed by and work directly under the board of trustees, subject to its advice and approval. This business manager will devote his entire time to conducting the affairs of the association and will be paid a salary. Among his important duties will be the management and editing of the Association News, the monthly publication issued in its interests.

Eighteen new members were admitted at the last meeting.

MONTANA DISTRIBUTORS' SHOW.

The Montana Automobile Distributors' association will hold its fifth annual automobile show at Great Falls, Montana, March 15-20.

A Motor Style show, the first to be held in the northwest, will be held in conjunction with this automobile show, and promises to be a novel and interesting feature.

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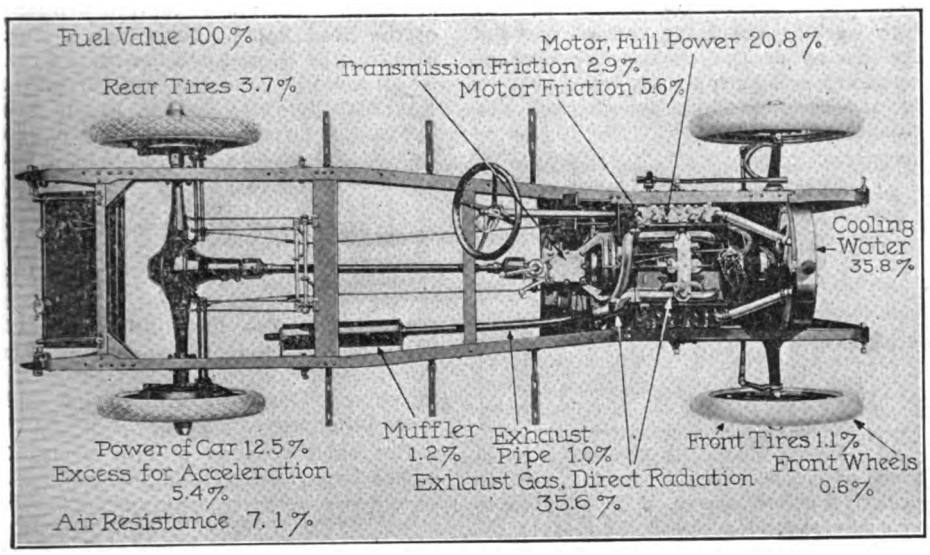
What Becomes of Fuel and What Reserve is Left for Unusual Demands



Illustrating Percentage of Useful Work Realized from Given Volume of Fuel Expressed in Thermal Units.

MOST owners of automobile vehicles are interested in the fuel they buy and with rare exceptions they assume to know what is referred to as average consumption. That is, they will state positively that they can drive a specific number of miles with a single gallon of gasoline. Some will boast of assumed small consumption, just as others will complain of what is regarded as extremely small mileage.

As a matter of fact there is no standard by which consumption can be measured other than comparison of what is obtained by owners of cars of the same make and capacity, and even then much depends upon the owner or driver. One man may be very well experienced, driving with the least fuel necessary, and another may drive with no knowledge of fuel conservation. The judgment of the drivers is not the ordinary basis for determination—the one using the largest volume of fuel criticises the vehicle and believes himself right from every point of view.

The internal explosion engine is not generally more efficient than the steam engine so far as the realization of power from fuel consumed is concerned. Tests of engines in laboratory determinations have proven that operated by experts they will be more efficient from some angles, but this efficiency will reduce gradually until restoration by adjustment or overhauling is necessary, and taking the average, and considering the experience and judgment of those operating them, there can be no reason to claim material economy in fuel value.

Thermal Value of Fuel.

The thermal value realized from coal in the steam boiler depends upon the design of the boiler, the quality of the coal and the judgment of the engineer or fireman. The thermal value realized from gasoline depends upon the quality of fuel, the degree of carburetion and the condition of the engine.

The most economical use of fuel is when it is so carbureted that it will be entirely consumed. There is a wide range of proportions of gasoline vapor and air that are combustible, but unless these two elements are mixed so they burn practically without residue, the full value of the fuel is not obtained, and this is reflected by reduced power or large consumption or both. As the gasoline is supplied through a carburetor the instrument must be set or adjusted, and this setting depends upon the quality of fuel, the temperature, the lubrication and condition of the engine and the efficiency of the electrical ignition apparatus.

Carburetor Adjustment Important.

The adjustment of the carburetor is a very delicate operation—in fact, far more delicate than is believed. This work is practically a matter of judgment, for the worker must determine just the point when the engine is doing its best, and this must be done when the machine is standing either in the garage or on the road. As the efficiency of the cooling system will improve with the movement of the vehicle the determination while standing may not be specially efficient when moving, for the temperature may be considerably reduced, and any stop will cause the engine to heat and the precise setting that will be best while driving is rarely obtained.

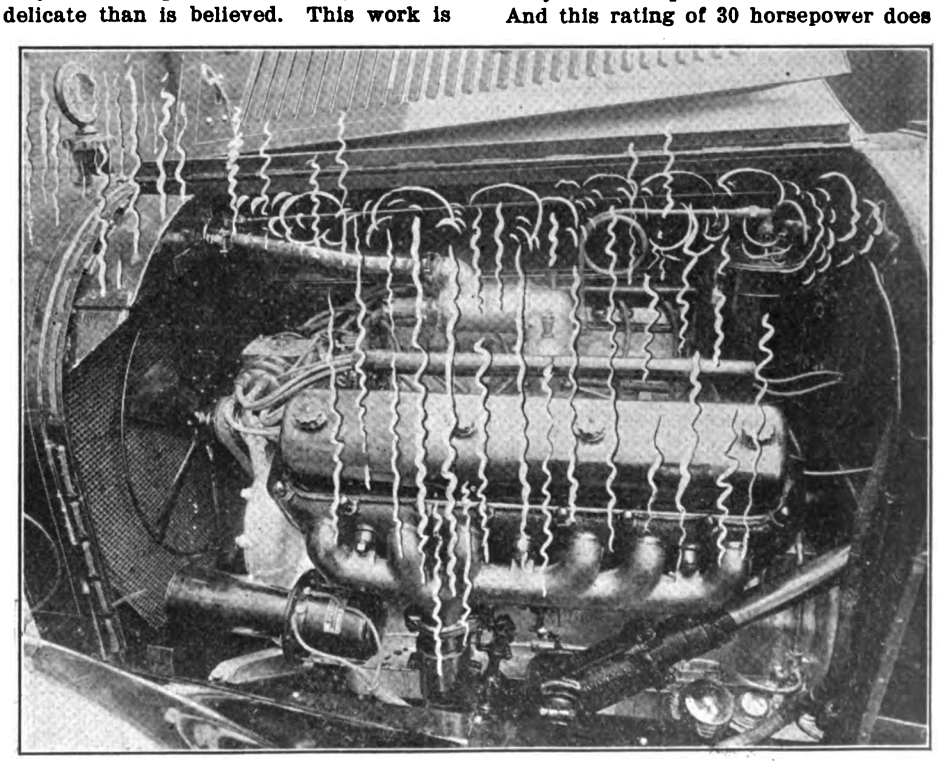
The ignition system will be a potent factor, and this will include every element from magneto or timer or distributor to the spark plugs. Each of these must be operative to the standard of efficiency. The engine has been assumed to be in normal condition, but the lubricant will be more effectively distributed if the machine has been heated, and this in turn is influenced by the cooling system. If the valves leak, air is admitted through the manifolds, the spark plugs, the valve caps, or the fuel is diluted in any way; if the lubricating system is defective, if the engine is worn and there is lost motion and excessive friction, the power output is more or less reduced.

How Engine Power is Determined.

The owner or driver may be impressed with the efficiency of an engine which, for the purpose of illustration, may be assumed to develop 30 horsepower at maximum by brake test, which is the best indication obtainable. He does not understand that the test is made with the engine out of the chassis. The power appears much in excess of any ordinary requirement.

Yet to obtain this 30 horsepower fuel is consumed that, were its entire thermal value realized, would develop approximately 150 horsepower.

And this rating of 30 horsepower does



Showing Power Plant (Direct Radiation) Cooling System (Indirect Radiation.)

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not mean 30 horsepower available for useful work; that is, delivered in actual tractive effort at the road wheels. The power actually delivered is approximately one-eighth of the thermal value of the fuel consumed.

This leaves as available for useful work at the road wheels but 12.5 per cent. of the thermal value of the fuel. This is approximately 18.75 horsepower. The resistance of the air against which the vehicle must be driven requires no less than 7.1 per cent. of the total fuel value, or really 56.8 of the actual car power, and this leaves 5.4 per cent. of the total fuel value, or 43.2 of the actual car power for acceleration, climbing hills, driving through soft surfaces, etc.

The Various Causes of Power Loss.

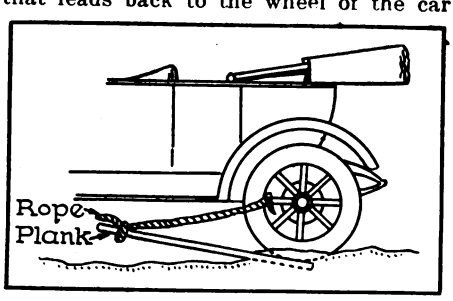
Assuming a thermal value of a gallon of fuel as 100 the losses, as determined by extremely careful experiments, are the following, expressed in terms of percentage:

Engine friction	5.6	
Cooling system (indirect radiation)	35.8	
Direct radiation, exhaust, etc.	35.6	
Exhaust pipe	1.0	
Muffler	1.2	
Loss in the engine	79.2	79.2
Power transmission system friction	2.9	
Rear tire adhesion or friction	3.7	
Front tire friction	1.1	
Front wheel friction	0.6	
Loss in transmission to road wheels	8.3	8.3
Total loss in engine and transmission		87.5

By this one realizes that of the gallon of gasoline consumed in the engine a very small part is converted into useful work. But even this value may be materially lessened by neglect that will reduce engine efficiency.

PULLING CAR OUT OF MUD.

A motorist called attention recently to a kink for getting a stalled car out of mud. A plank several feet long and six or eight inches wide is shoved under the wheel as far as possible. To the outside end of the plank is fastened a rope that leads back to the wheel of the car



and is secured around one of the spokes of the wheel. When the car is started the rope will hold the plank in place and pull the car on to it as the wheel moves forward. With a very long plank the outer end might need to be steadied to prevent the wheel running off into the mud again. The operation can be repeated as often as necessary till the car reaches solid ground, the rope being untied and the plank being placed in a new position each time.

Brief Mechanical Hints and Suggestions

SCREW DRIVER KINKS..

In working about the various parts of the engine or the chassis the average repairer needs such suggestions as shown for the easy manipulation of small machine screws.

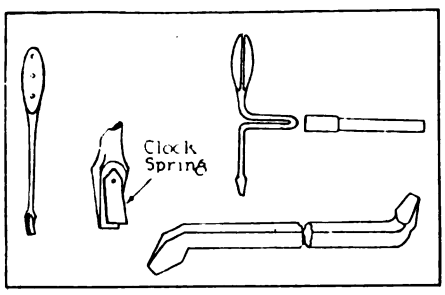


Fig. 1 shows how by riveting a short piece of clock spring to the blade of an ordinary screw driver, it is adapted to grip the slotted screw holding it to the end of the driver and enabling the repairer to reach into inaccessible places and to start a screw that would be troublesome to remove otherwise.

Fig. 2 illustrates a very practical way of applying additional leverage to a screw driver. A long handled screw driver is used for the purpose, the handle being bent to the shape of a short crank, and on the arm thus formed a piece of piping is used to supply the leverage for starting stiff screws.

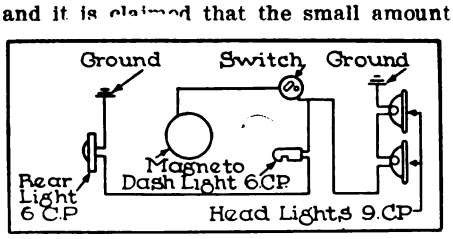
Fig. 3 shows a very useful angle screw driver by which screws may be reached in close quarters where a long handle straight screw driver could not be used.

MUD AND BRAKES.

Many times the motorist after driving over rough, muddy roads, finds that his brakes are stiff and refuse to work properly. This is because the mud has worked into the joints of the brake mechanism and on to the brake lining, affecting their operation. These parts cannot be properly cleaned by wiping with a cloth or washing off with a hose. The operator will get the best results by dismantling the brake mechanism and thoroughly cleaning it, then thoroughly lubricating the joints and removing all loose dirt from the brake bands with a stiff brush or by washing. This will prevent rusting of the parts.

WIRING SYSTEM FOR FORD DASH AND TAIL LIGHT.

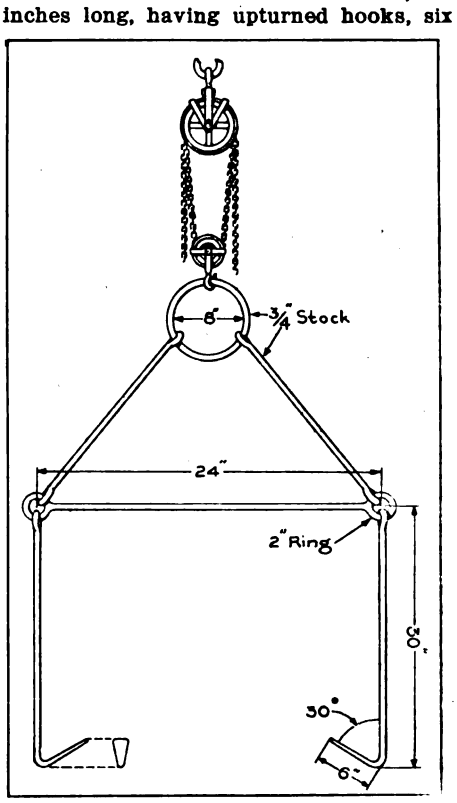
The accompanying illustration clearly shows the method of wiring a dash and tail light to the Ford car, without interfering with the regular lighting system. Six-volt, two candlepower lamps are used and it is claimed that the small amount of power taken from the regular supply of current will not affect the brilliancy of the head lights. Note that a single point switch is used and the extra circuit is attached beyond the switch, on the main lighting wire leading to the head lights, the circuit being grounded after leaving the rear or tail light, with both lights in series as with the head lights.



FORD CAR HOIST HOOKS.

A handy car hoist for the Ford service station can be made by the shop mechanic in a few hours time that will prove invaluable in lifting engines from the chassis, the front end of cars when replacing springs or can be used in numerous other ways.

The hoist consists of two arms, 30 inches long, having upturned hooks, six



inches long, flattened at the end, attached to a cross bar at the upper ends by welded eyes, the cross bar being 24 inches in length and attached by iron rods about 20 inches long to an eight-inch ring by welded eyes. All stock should be ¾ inch round iron and the eyes two inches in diameter. Hooks at the bottom of the side rods are set in at a 30-degree angle, insuring a firm hold on the engine or car frame. The side rods may be offset so as to pass around the fenders of the car and still give a direct lift. The device is to be used with a chain fall in the regular way and is light enough to be easily handled by one man.

WHEN NOT TO USE A REAMER.

Never use a reamer on the inside of a pipe. The scale inside a pipe, caused by the flux used in welding or brazing, is as hard as glass and will turn the edge of any reamer.

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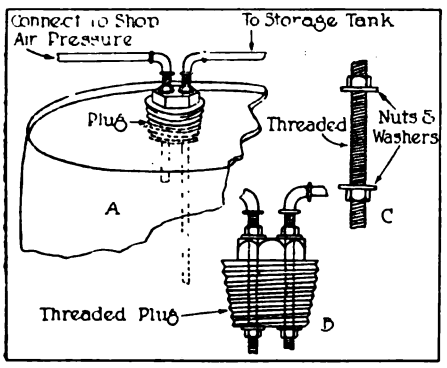
For the Repair Shop and Garageman

TRANSFERRING OIL TO STORAGE TANK.

A convenient method for transferring oil from barrels to the shop storage tank is by making use of air pressure. All that is required is a special bung and

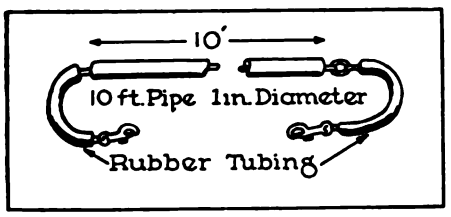


two lengths of pipe ¼ inch in diameter, threaded where they pass through the bung and fastened to it with a nut and washer at the top and bottom. The bung should be of good size, large enough to admit the piping and allow for tightening the nuts against the washers.

Stand the barrel on end, bore a hole in the head to receive the bung which, by the way should have a coarse thread, and screw the bung into the head of the barrel. Connect the air pressure to the shortest pipes. The other pipe should be of sufficient length to reach the bottom of the barrel and should be joined to the oil storage tank. Turn on the air, using only sufficient pressure to force the oil into the storage tank in a solid stream. This device will empty a barrel of oil in a few minutes time.

HANDY TOWING DEVICE.

A handy towing device for the shop is made from a 10-foot length of iron pipe either ¾ inch or one inch in diameter, through which a chain is drawn. The



ends of the chain are covered with rubber tubing, pieces of old hose will do. Snaps are fastened to the ends of the chain and the towing device is ready for service. When using the device, place one end of the chain around the hook end of the frame and the spring on the towed car so that the rubber tubing will press against the painted surface, and fasten the spring snap into a link of the chain near the end of the iron pipe. Pass the other end around the axle of the towing car in the same manner. The object of the iron pipe is to space the distance between the cars, so that accidents cannot occur from the towed car running up too close to the towing car.

USE OF THE SPARK LEVER.

In the pioneer days of motoring drivers prided themselves on their skill in manipulating the spark lever, but the tendency today is to give it too little attention.

The driver who leaves the spark lever fully advanced irrespective of grades, road conditions and speeds, imposes unnecessary strain on the engine and does not get the efficiency he should in car performance. It pays to regulate the spark to suit the load and speed of the engine, so that the ignition does not take place either too early or too late for smooth running and steady flow of power.

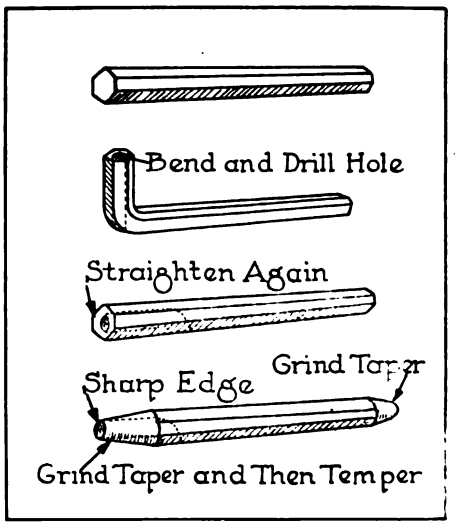
The best method for the beginner to pursue is to keep the spark lever retarded sufficiently to avoid the slight knock in the engine, which is sure to develop if the spark is too far advanced when accelerating from slow car speed in high gear; then advance the spark gradually as speed increases. A few experiments will soon develop the best position.

TO FILL BLOW HOLES.

To fill blow holes in cast iron, take one part of red lead and 1½ parts red litharge and mix with glycerine to the consistency desired.

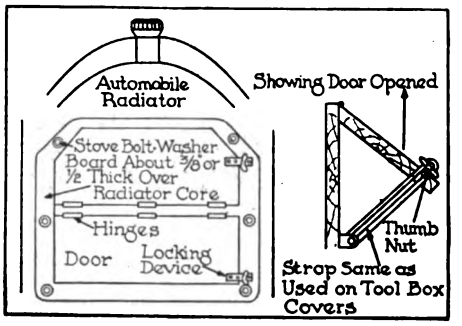
MAKING A SMALL LEATHER PUNCH.

The repairer will want to make his own tools from time to time and the following directions for making a small leather punch may be utilized, as well for making punches of larger sizes. Take a piece of steel about six inches in length, hexagonally shaped if possible, as that is the easiest form to hold when working. Heat one end in a forge and bend at a right angle. Drill a small hole, the size required, as shown in the dotted line, from the end of the rod down and through the bend. Straighten the rod again in the forge and grind the end to a tapered cutting edge and temper. Taper and flatten the upper end. Larger punches may be made by using stock of a larger size.



RADIATOR SHIELD.

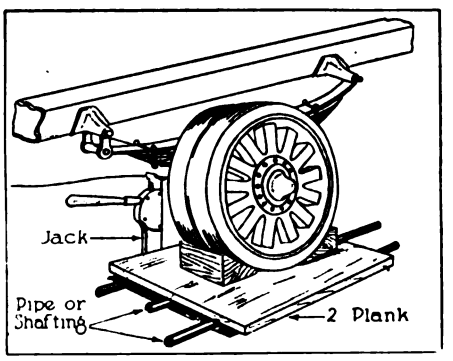
A radiator shield that will answer every purpose during cold weather may be made by the motorist who is handy with tools, from thin boards, as follows: Procure from the hardware store six



stove bolts of the correct length to pass through the radiator core and the board or frame work, or curtain material may be used instead of the board if desired, in which case a frame of wood fitting the radiator is required. Make the frame as shown in the illustration, leaving space for the doors, to be hinged at the center, using three hinges for each door. The doors are held in the open position by slotted arms and bolts having wing nuts, similar to those used on carpenter tool boxes to hold the cover up. The shield is fastened to the radiator frame by boring holes through the cover frame and fastening with the stove bolts. Doors may be made of wood or a frame covered with curtain material as desired.

REMOVING MOTOR TRUCK WHEELS.

A simple device for removing motor truck wheels of the dual type and especially serviceable where one man has to do the work, is made from a two-inch plank, cut to the desired length and width. Jack up the wheel several inches from the floor, lay four rollers, made from either iron pipe or old shafting, on



the floor beneath the wheel, place the plank on top of them and chock the wheel at each side. After the wheel has been loosened on its axle it can be easily adjusted on the movable platform for further work.

The amateur mechanic is often puzzled in removing a dent from a tank. Solder a tire valve to the filler cap and pump air into the tank, meanwhile tapping lightly around the edges of the dent with a leather mallet. The pressure of the air in the tank will push the dent out even with the rest of the surface.

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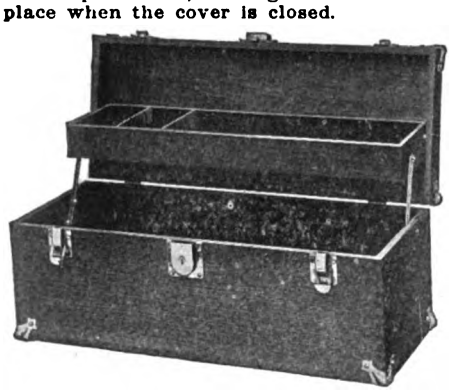
ACCESSORIES, EQUIPMENT AND TOOLS FOR THE GARAGE AND REPAIR SHOP

Union Tool Chests are made for a discriminating service station trade that requires the best. The frame is made from thoroughly kiln-dried oak, all joints lock-cornered, with the top of cover and bottom of chest rabbited in, glued and nailed. The trays are automatically raised or lowered by special hinged fittings, are provided with removable partitions and are constructed with all joints rabbited and glued. When closed the tray fits flush with top of chest, holding the contents in place when the cover is closed.



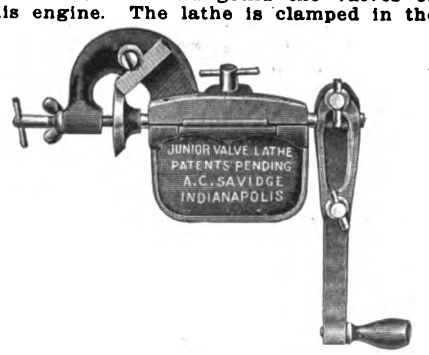
The chest is provided with a genuine leathered covered handle, over a steel core, attached to nickel-steel loops by cotter pins, the loops being riveted to the cover of the chest. All trimmings are heavy, nickeled and polished, including top loop fasteners and specially built 12-key change lock supplied with two flat, milled slot keys.

The tool chest is finished inside with a dark oak stain and outside in golden oak, filled, stained, primed and varnished with a high grade, waterproof varnish, dull finish.

The chests may also be supplied with leather covers, the construction being the same as the plain wooden chest, being covered with the best grade of imitation leather, which is water proof.

Manufactured by the Union Tool Chest Co., Rochester, N. Y. Prices on request.

The Junior Valve Lathe for Ford Engine Valves is designed for the motorist who wishes to true and grind the valves of his engine. The lathe is clamped in the vise and operated with the turning handle, or may be held with one hand while being turned by the other.



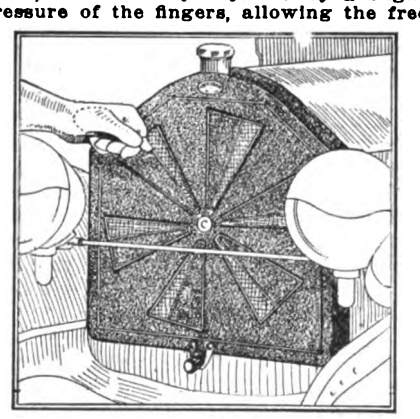
The Junior lathe is constructed from the best of iron and steel and is finished in gray, nickel plated. It is equipped with an adjusting screw and wing nut gauging the pressure exerted on the head of the valve and holding it against the cutting tool. It is designed especially for cast iron head valves up to 1¾ inches in diameter and with 5/16-inch stems.

The Junior valve lathe makes an ideal equipment for Ford repair shops and service stations.

Manufactured by A. C. Savidge Co., Indianapolis, Ind. Price, $5. Extra cutter, $1.

"Antidam" Heat Retaining Radiator Cover is a heavily padded radiator cover having a patented adjustable feature that makes it a desirable radiator for the motorist who is obliged to use his car during the winter months.

The adjusting feature is formed similar to a cooling fan, fitting in the front of the cover, and is easily adjusted by a slight pressure of the fingers, allowing the free



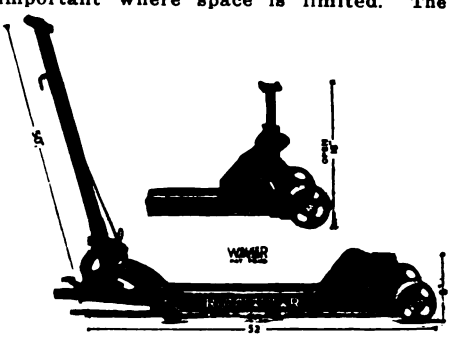
circulation of air through the sections of the radiator core during warm days and may be partially closed during extreme cold weather.

Antidam Radiator Covers are made of the best of material obtainable and heavily padded to keep out the cold and keep in the heat of the engine. Made in sizes to fit any model radiator.

Manufactured by the Glover Equipment Co., 412 Capitol Boulevard, Indianapolis, Ind. Prices, $6 to $8. Sold by dealers everywhere.

The Walker Roll-A-Car Jack consists of a lift jack mounted on a steel frame, having fixed rollers at the jack end and castor rollers at the rear. A long upright handle is fastened at the rear by which the jack is moved, raised or lowered. A slight pressure on the handle tilts the jack back on to the rear castors, raising the front wheels from the floor and allowing the jack to be guided into any position. The raising or lowering of the jack or the locking of the handle is controlled by a small lever on top of handle. A foot pedal is provided to quickly raise the jack bar to proper height under the axle of car; the same pedal drops the rack after the jack is removed from under the car.

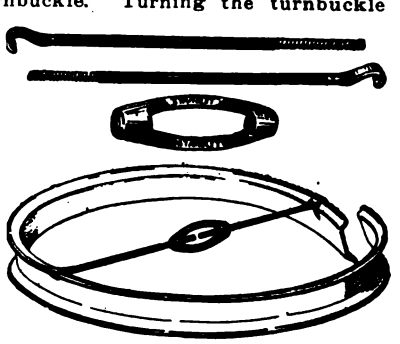
Six strokes of the handle raises the jack six inches in a few seconds, it is stated, the jack being lowered in same manner by reversing the lever. After the car is raised the handle on the Roll-A-Car can be placed in an upright position without lowering the car. This feature is very important where space is limited. The



pressure required to operate the device is claimed to be very small; the average car can be raised by the operator with one hand.

Manufactured by the Walker Manufacturing Co., Racine, Wis. Price, $50. Capacity lift in pounds, 5000; weight, 120 pounds.

The Standley Rim Tool is a device for facilitating the removal of tires from demountable rims. It is made in three sections, two rods and a turnbuckle, the rods having right and left hand threads respectively so that they may be tightened by the turnbuckle. One end of the rod is hook shaped so it may be slipped over the edge of the rim. When using the tool the operator places the hooks over the rim, first starting the threaded ends into the turnbuckle. Turning the turnbuckle to



the right opens the rim, allowing the tire to be slipped over the edge. To replace the tire the operation is reversed.

Manufactured by the Standley Skid Chain Co., Boone, Ia. Price, East of the Rockies, $6; West of the Rockies, $6.50.

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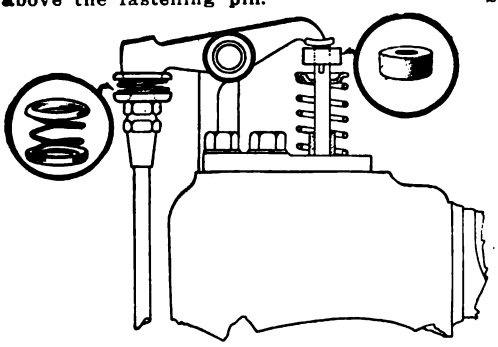
Automatic Take-Up for Valve Mechanism of Buick and Oakland Engines consists of a spring exerting three pounds pressure between the ball and socket of the rocker arm push rod joint, two caps holding the spring in place and a felt washer that is placed on the valve stem above the fastening pin.



The object of the spring is to exert sufficient pressure between the ball and socket joint to keep the push rod pressing firmly against its cam and the rocker arm bearing firmly on the top of the valve stem. It is stated that the use of this spring device helps to reduce wear at the ball and socket joints by stopping the sudden knock of the push rod ball when it comes in contact with the socket of the joint, silencing the contact and causing the parts connected with each to wear longer and to operate more quietly. The felt washer on the valve stem is filled with engine oil every 300 to 500 miles and keeps the valve stems lubricated, preventing excessive wear and compression leaks.

Sold by H. L. Frey Sales Co., 418 Beard Avenue, Buffalo, N. Y. Prices, Buick Six, $3.50; Buick Four, $2.50; Oakland, $3.

The Simplex Rim Remover is a tool for opening and closing split rims of the demountable type. This device works on the principle of a turnbuckle, the turnbuckle being operated by a hand wheel, that is easily turned by the hand of the operator. Clamps are fastened to the rim at each side of the split, while turning the hand wheel in one direction contracts the rim for removal, turning the wheel in the opposite direction expands the rim, when replacing it in the tire.

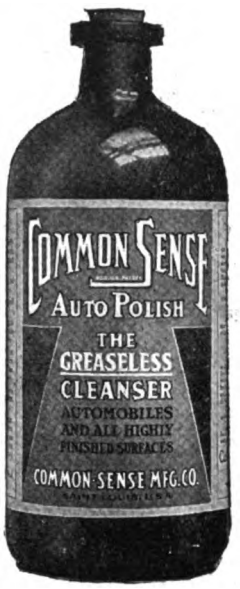
The device is made unusually strong, the jaws, hinges and bolts are steel, while the turnbuckle and wheel are castings.

The Simplex rim remover is manufactured in two sizes. No. 1 for use of the motorist and is of a size that is readily folded and carried in the tool box; No. 2 is larger and designed for service station and garage use, but is made similar to No. 1, but considerably heavier and longer.

The clamps are adjustable, so that they may be fitted to individual rims by simply opening the jaws of the clamps with a screw driver.

Manufactured by the Simplex Steel Stamping & Manufacturing Co., 1926-28 Gravois Avenue, St. Louis, Mo. Prices on request.

Common Sense Auto Polish is a liquid to be used by the motorist for cleaning dust and oil from the painted surface of the automobile. This polish is a laboratory product that has stood the test for about six years and is claimed to be beyond the experimental stage. Common Sense Polish is said to be made from ma-

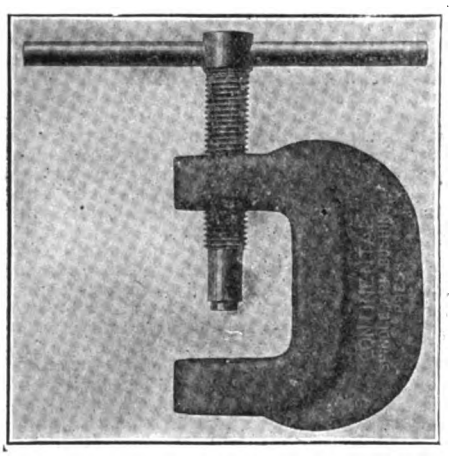


terials best adapted for this type of cleaning and when used according to directions is claimed not to injure the finish of the car in any respect.

Common Sense Polish is equally as well adapted to polishing such surfaces as rare china, porcelain, mirrors, enameled ware, etc., the blending of the different materials used in the formula being so perfect that it may be used for the purposes mentioned with perfect safety, it is stated.

Manufactured by the Common Sense Manufacturing Co., 500 North Whittier Street, St. Louis, Mo. Prices on request.

The Continental Spindle Arm Bushing Press was designed to remove and replace the worn bushings in the Ford spin-

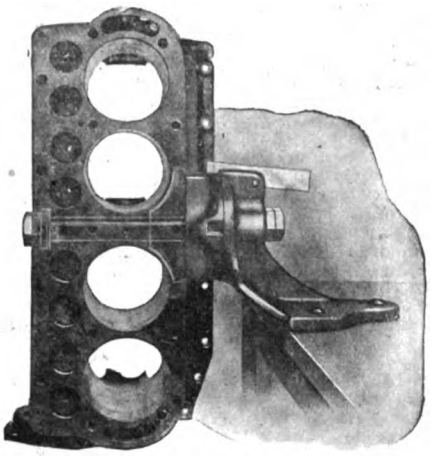


dle arm. The device much resembles a "C" clamp, but is built stronger and heavier. The device will remove bushings that are worn out on one side, as the screw is constructed to fit the shoulder of the bushing exactly, while the boss on the end of the screw exactly fits the inside of the bushing. The device is made of the best of materials, heavy cast iron being used for the clamp, while the screw is made of the best of tool steel.

The use of this tool greatly facilitates the removal of worn bushings and the replacing of new parts.

Manufactured by the Continental Auto Parts Co., Knightstown, Ind. Price, $5.

The A. B. Motor Repair Stand is designed to hold either the Ford engine block or the complete engine assembly breast high in any of the four positions, top, bottom or either end, allowing the work to be performed with ease and rapidity when repairing, assembling or disassembling the engine. The stand is fast-

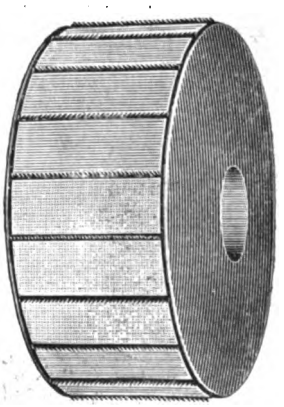


ened at the edge of the bench, allowing the work to swing clear and yet holding it in a firm grip, while the bench itself is left clean for tools and parts. The bolt is cast in the revolving part, hence it does not interfere with work on the center bearing bolts and nuts. As the A. B. stand is firmly bolted to the bench, it is never necessary to hold it with the hand.

The A. B. stand is strongly made of the best of materials and is tested to 1000 pounds, giving a large margin of safety.

Manufactured by the G. H. Dyer Co., 155 Brookline Street, Cambridge, Mass. Price, $10.

The Taber Tire Dressing Wheel is a device for tire repairing stations and is designed to enable the repairer to accomplish his work in shorter time and in a more scientific manner. The device is used either in an emery wheel or buffing stand and it is claimed may be speeded to 10,000 revolutions a minute without injury. Its special function is to remove surplus rubber from the casing prior to vulcanizing, or when applying re-treads, half-soles or other covers. The wheel consists of a carrier, or aluminum alloy center block, which has transverse slots into which the cutting blades fit. These blades are removable and can quickly be replaced with new ones at little cost. They are held in place by rings which intersect a notch in the end of each blade and the rings are held to their seats in the sides of the wheel by two spring steel discs which constantly exert pressure on the blades.



The size of the wheel is five inches in diameter, two-inch face and 1¼-inch opening in the center, which can be bushed to fit any arbor.

Manufactured by the T and T Tire Dresser Co., San Francisco, Cal. Price of the wheel complete, $20, and the blades are $6 a set.

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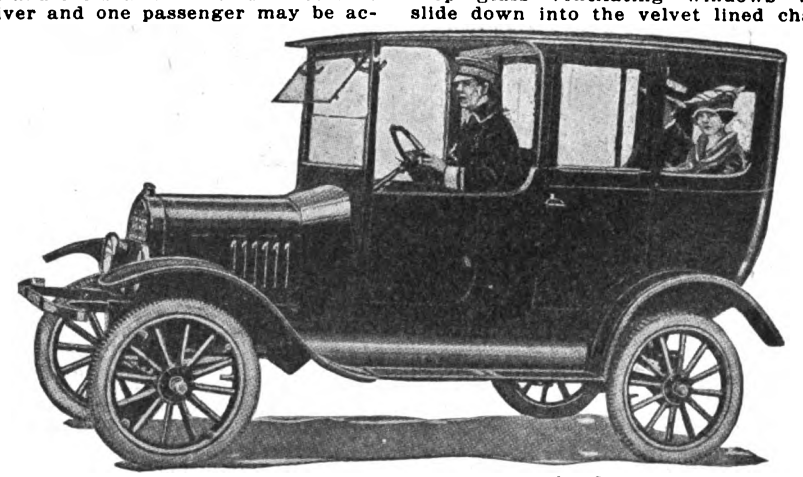
"Geneo" No. 111 Freesometer consists of an instrument, similar to a thermometer, to be used in testing the cooling medium

of the engine radiator, especially during winter months when some form of non-freezing solution is used in the cooling system. The instrument is guaranteed for one year.

Manufactured by the General Scientific Equipment Co., 2718 West Lehigh Avenue, Philadelphia. Prices and literature on request.

The New Taxicab or Limousine Body for the Ford Chassis is a new body that has recently been introduced to the trade. The body is made somewhat different for taxicab work than for private use as a limousine, especially in the front compartment of the driver.

For taxicab work the left hand door is left off, the floor is slatted and only one seat is provided. For private use the door is used and the seat is continuous so that the driver and one passenger may be accommodated. The rear compartment is provided with the regulation three-passenger seat and two extra folding seats for emergency use.

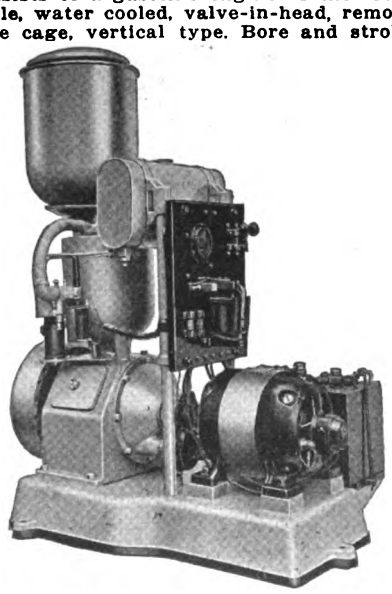


Still another type of body is made and this is known as the landaulet limousine, this body having the added feature of being an all-year body for either private use or taxicab work. The top in this body folds down over the rear compartment for summer use and for winter is in an upright position, as a limousine or closed car.

A special windshield is provided, having upper and lower sections, with the upper section hinged in such a manner that it swings forward. The regular equipment includes the windshield cleaner. The partition between the front and rear compartments is of glass, in two sections, that may be lowered. Doors are equipped with drop glass ventilating windows which slide down into the velvet lined channel in door panel. Interior trimming is of Spanish leather, and the roof and sides are trimmed to match. A roll-up curtain is provided for rear window and a set of side curtains for the driver's compartment. Electric dome light furnishes illumination in the passenger's compartment.

Manufactured by the Anchor Top & Body Co., Cincinnati, O. Price and literature on application.

The Holt Electric Power Light Plant is for the service station where city power is not available and the farm home. The Holt plant does not require a set of storage batteries from which current may be drawn when the plant is not working, but operates automatically whenever a light is turned on or a piece of electrical apparatus is used, such as a motor, toaster, percolator or other apparatus. The plant consists of a gasoline engine of the four-cycle, water cooled, valve-in-head, removable cage, vertical type. Bore and stroke 2⅜x3 inches, normal 1600 revolutions per minute. An electrical starter is made a part of the generator.

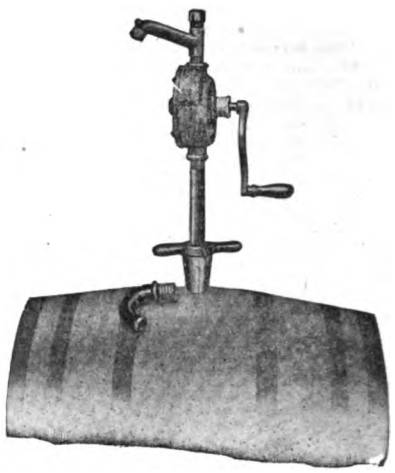


One end of the generator is wound for a six-volt current, supplied by a single six-volt storage battery, and is used solely for starting the engine. The opposite end of the generator is wound for a 110-volt current and is used for lighting and power purposes. The capacity of the generator is 25-30 watt lamps or several pieces of electrical apparatus at the same time. The lights do not flicker, but glow with a steady white light.

The capacity of the water supply tank and condenser is 4½ gallons; starting and ignition battery six-volt, 86-ampere capacity; ignition, Atwater Kent; carburetor, float feed type with hot air connection to cylinder; oiling system, automatic, with one place provided to oil entire system; governor, electric solonoid type, assembled as a unit with the carburetor; special generator, compound, wound, multipolar type with double commutator, six-volt at one end and 110-volt at other, built by the General Electric Co. A simple control switchboard is mounted on two vertical standards. The complete plant is assembled on a strong iron base.

The Holt plant is economical in operation, as it develops power according to the demands required of the current developed by it. When burning one light the power is in proportion to the current consumed and when operating at full capacity the power developed is in proportion to the work required of its current.

Manufactured by the Automatic Light Co., Inc., Ludington, Mich. Price, $450 f. o. b. factory.

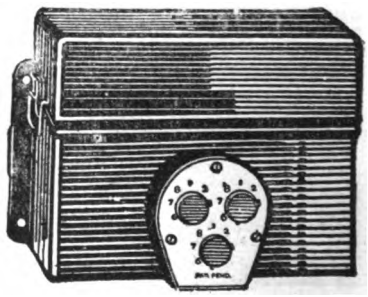


The No. 9 Hand Transfer Oil Pump is of the rotary type to be used by garage and service stations for the transfer of oil from shipping barrels or tanks to the garage or service station oil containers. The outfit includes the pump and a taper bung attachment for use with wooden barrels, or a special holder for use where steel shipping drums are used, which protects the threaded hole and holds the pump rigid. The crank is made of malleable iron and is fitted with a wooden hand grip. A non-drip spout is furnished having a tubular hook for end of hose to hook into barrels. A malleable iron spout may be purchased in place of the regular spout to reach from the center of drum to the center of the can being filled.

The pump has the "take-up-for-wear" feature that is typical of all Blackmar pumps. The weight is only 30 pounds complete with all attachments. The pump has a capacity of one-eighth of a gallon per revolution and one-inch connections. A suction pipe 36 inches long is furnished with each pump. The pump is guaranteed against rust or corrosion when fitted with bronze buckets.

Manufactured by the Blackmar Rotary Co., 1347 Book building, Detroit. Prices on request.

The Christie Auto Lock for Ford Cars consists of a combination lock attached to the regular Ford coil box in place of the regular ignition switch. There are three combination dials with the numerals running from one to eight. It is claimed that the lock is thief proof, as there are no tumblers in the lock and all wires are so enclosed that they cannot be reached. When the lock is on the coils are also



locked so that their removal is said to be impossible.

In attaching the Christie lock the heads of the bolts are covered by the top of the lock and cannot be removed. The cover cannot be removed when the lock is on. The Christie can be locked and unlocked rapidly. The combination may be changed to suit the owner and as many times as desired in about 90 seconds. Every time a new combination is tried it is necessary to get out and crank the car to see if it is unlocked, as tumblers are not used in the lock.

Manufactured by the Christie Auto Lock Co., 6607 Dorchester Avenue, Chicago. Price, $6.

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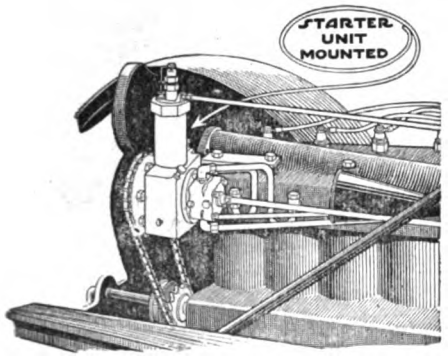
The Ten Eyck Air Starting System for the Ford consists of a storage tank supported from the frame of the car under the seat, connected to an air pump, and located at one side of the engine at the front, the pump driven by a chain from a sprocket on the crankshaft and a control valve located on the steering wheel. The operation of the pump for starting is by means of the air control on the steering wheel. Three positions are shown here, neutral, start and pressure.

Placing the lever to the right allows the air to pass from the distributor of the pump to the cylinders of the engine, the air being taken from the tank. After the engine is started the pump operates and, by turning the lever by neutral to the left position, air is forced into the pressure tank to bring up the pressure again. It is claimed that pressure enough is carried



in the tank for from 12 to 20 starts. With the control lever in the neutral position the air is allowed to escape.

About one-quarter horsepower is required to operate the pump when pumping against the pressure of the tank, but when pumping into the air the power required is a negligible quantity. A primer button is provided for cold weather starting and is located on the floor of the car within easy reach of the driver.

The manufacturer claims that the use of air under high pressure will have a tendency to force out any accumulation of carbon from the cylinders before it has the chance to harden. The device is guaranteed for one year against defective material, which should be returned to the factory, express paid.

Manufactured by the Air Device Co., 2975-77 Cottage Grove Ave., Chicago. Prices on application.

The Kriesel Multi-Purpose Machine is a combination of three machines in one for the machine shop of the service station and garage. It will handle an unlimited range of boring, milling and drilling jobs accurate and economically. The frame and base are cast in one unit, assuring perfect alignment of parts.

It is possible to purchase the machine for boring and reboring work only, adding the milling and drilling features later as desired. The machine may be bought on a plan enabling the purchaser to pay for it from the profits of work done on it.

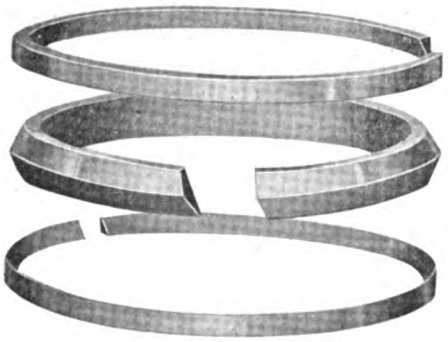
Such work as reboring, drilling, cutting gears, squaring a shaft, cutting keyways

for both straight and Woodruff keys, drilling wrist pin holes and practically all classes of machine work in automotive repairing may be done on this machine.

The maker announces that the machine is built throughout from the best material obtainable and that all cutting tools are of the highest grade steel for the purpose. Four roughing tools, four finishing tools and many other attachments accompany the complete machine.

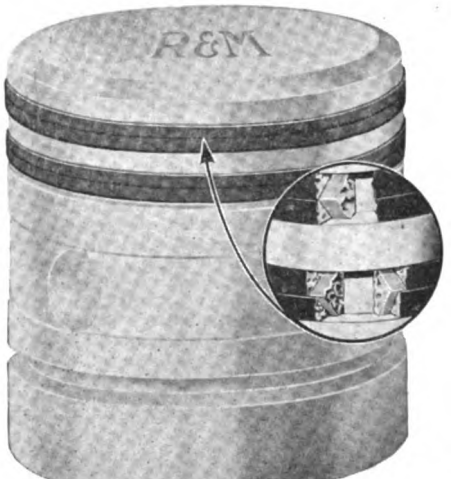
Manufactured by the Mill City Co., 800-823 Plymouth Building, Minneapolis, Minn. Prices and literature on application.

The R & M Conform Piston Rings are formed of three sections, the inner or "bull ring" and an upper and lower section. Wear does not affect the inner or bull ring and all wear is taken by the outer rings or sections. The manufacturer claims



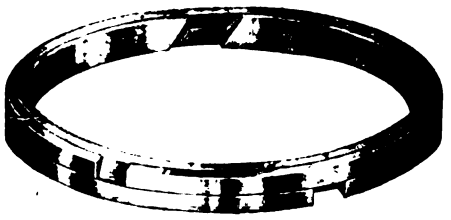
that this type of ring is absolutely gas tight and that two rings will prove as satisfactory on a piston as three. As the spacing between the rings is at different points there is no chance of the gas leaking past.

The R & M Conform Ring is not an experiment, but has been used successfully by the inventor on all types of cars and trucks and has been proved out in the hardest fields and under conditions that the average car owner would never meet,



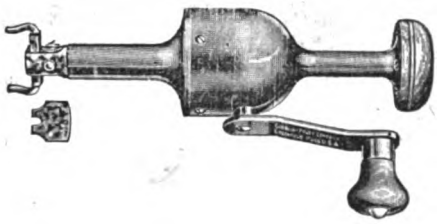
it is claimed. Long life and economy are guaranteed by the maker, who states that the points where wear may occur are easily removed.

The rings are sold direct from the factory to the service station and garage trade or through the jobbing trade. A money back guarantee goes with the sale of all R & M Conform Rings.



Manufactured by the Modern Electric and Machine Co., Indianapolis, Ind. Prices on application.

Goodell Pratt Valve Grinder No. 288 is a hand tool used by the automobile and truck repairer for grinding valves in gas engines. By means of a simple operating mechanism the spindle is caused to rotate back and forth when the crank is turned continuously in one direction. The cast iron casing, in which the working parts are enclosed for protection, gives the tool



sufficient weight so that additional pressure need not be applied to the valve seat.

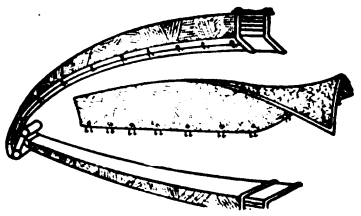
Each tool has a polished hard wood crank handle and a Lignum-Vitae head. The frame is finished in red and black enamel. Both an adjustable spanner and a blade are provided in order that the tool may be used universally. The length over all is 10¼ inches and the net weight 3¼ pounds.

Manufactured by the Goodell Pratt Co., Greenfield, Mass. Price, $4.20.

Woodworth Lubricating Spring Cover is a new spring covering manufactured for the trade for the 1920 season. It consists of a cover of leather or imitation leather, lined wth wool felt and saturated with oil. It is placed on the spring and the edges hooked in a suitable manner, making a covering that is oil, dust and water tight.

The manufacturer claims that springs oiled in this manner will not require oiling more than once in one or two years.

The covers are easily fitted to any make of car, full instructions being sent with each, and they are very convenient for dealers to handle, as there are only seven standard sizes besides the Ford sets to fit



all cars. They are made of two grades, one having an outer covering made of oil and water proof leather and the other having the outer covering of imitation leather, which is also proof against oil and water. Dealers and jobbers are asked to correspond with the manufacturer regarding these covers, as an interesting proposition is offered.

Manufactured by the Woodworth Manufacturing Corporation, Niagara Falls, N. Y. Prices and literature on application.

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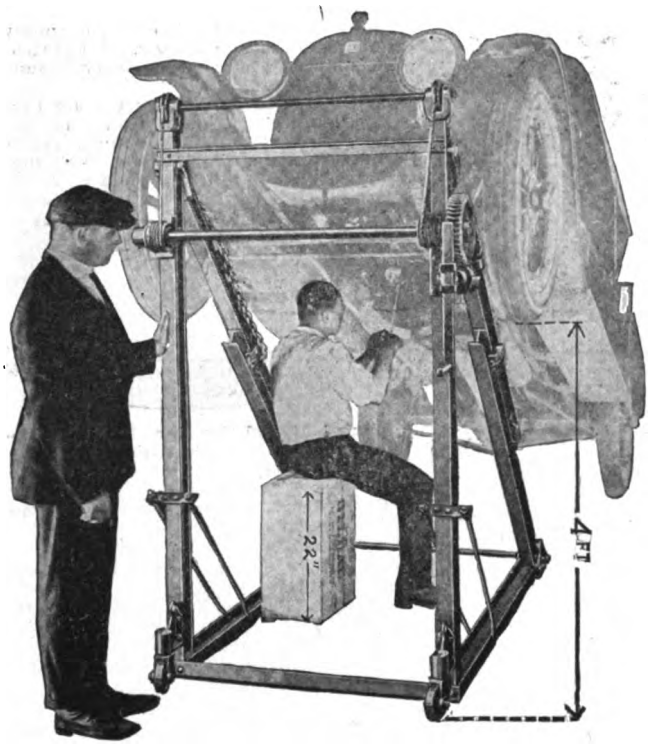
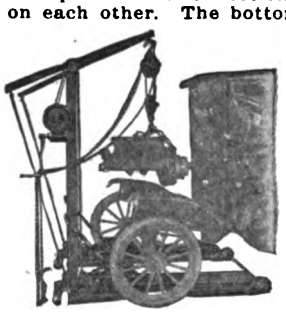


The Kiemame Auto Hoist and Crane is a combination device for garage and service stations, designed to obviate many of the disagreeable features of service station work. The frame is made of girder shaped steel bars, fastened at the joints with hot rivets and well braced with steel rods and clips. The girders forming the lifting device are composed of two sections each, slidable on each other. The bottom girders are hinged at the bottom while the upper girders slide on guides attached to the lower bars and are pulled by steel chains attached to wire cables running over pulleys attached at the top, the cables being fastened to steel drums mounted on a cross shaft and operated by a worm gear, worm and crank at the side of frame. Forked slides at the ends of the slidable girders allow the arms to rise against the main frame when the front or rear end of car is lifted.



The crane attachment is easily fitted to the hoist in a few minutes time and with it it is possible to easily remove units from the chassis of the car with the least effort by means of the worm, worm gear and crank. The hoist and crane is mounted on rolls so that it may be easily moved.

Sold by Bailey-Drake Co., Inc., Chicago, Ill. Price complete. $175, chain block not included. Weight 600 pounds.

The Steiner Hydrokit consists of a convenient container for distilled water and a very accurate, non-breakable hydrometer carried in the same container. To test battery, the hydrometer is removed from the container, the water is squeezed from the glass bulb and the small rubber tube inserted in the cell to be tested. After noting the reading the electrolyte is replaced in the battery cell and the next cell tested in like manner. When through testing, squeeze the electrolyte from the glass bulb and supply fresh distilled water from the container if necessary. It is stated that the Hydrokit may be safely carried in the tool box of the car and will stand rough usage without breaking. The container is guaranteed to be acid proof and water tight.

Manufactured by the Steiner Manufacturing Co., 530-532 Jackson Avenue, Long Island City, N. Y. Price on request.

The Continental Ford Engine Stand is a modification of the regular Continental motor stand, but designed to handle the Ford engine only This device is similar in construction to the original stand and is built throughout of the best of materials by skilled workmen.

The Continental Ford stand makes it possible to perform every operation necessary in overhauling the Ford engine while setting in the stand. Self-locking features make it possible to turn the engine to any angle and lock the engine securely, the engine being held absolutely rigid while in the various positions.

The stand is of heavy construction, many of the parts being built of steel. Every stand is portable and may be used or moved to any part of the service station while work is progressing.

The chief feature of the Continental Ford engine stand is that the complete engine may be placed in the stand, and it is not necessary to remove the engine till all of the overhauling work is completed.

Manufactured by the Continental Auto Parts Co., Columbus, Ind. Price, $30 f. o. b.

The Canedy-Otto Universal Piston Clamp is a device for holding pistons during the process of disassembling or reassembling connecting rods. Also for holding pistons while reaming or bushing for wristpins. The clamp is lined with babbitt, therefore it will not mar the piston or rings. The device is fastened to the work bench at any convenient point by three screws or bolts, while the clamp is operated by a knurled hand wheel fastened to a large threaded screw fitting a ball and socket

recess in the slidable clamp. The Universal Piston Clamp is made from the best grade of cast iron. Net weight, nine pounds.

Manufactured by the Canedy-Otto Manufacturing Co., Chicago Heights, Ill. Price, $7.50.

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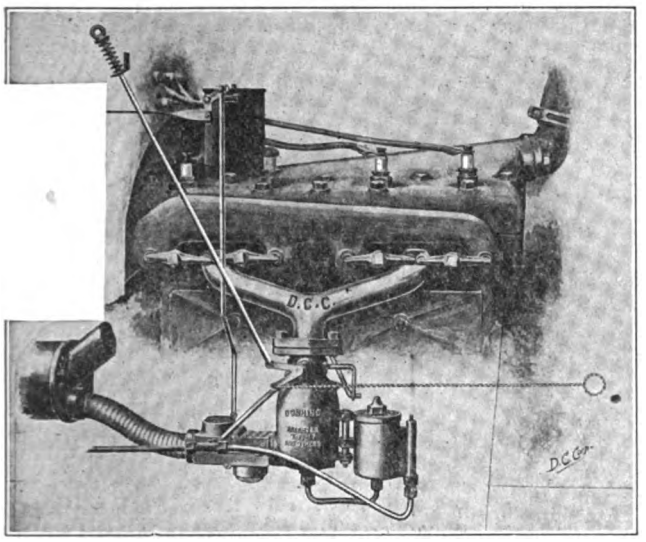


The Donning Vaporizing and Gasifying Carburetor for Ford Cars combines a priming device, heating unit and thermostatic control in one unit, that is easily operated by the driver either from the dash or in front when starting the car.

The carburetor differs from the regular Ford type in that the float chamber is located at one side instead of being a unit with the carburetor. Gas is drawn in by the suction of the engine from the bowl through metal tubing to the bottom of the mixing chamber, passing through a venturi tube and mixing with the warm air drawn in through the air inlet from the special stove surrounding the exhaust pipe and joined to the carburetor by flexible tubing. A special priming device is tapped into the fuel line, allowing gasoline to be forced into the manifold for priming purposes. This device is connected by a rod to the dash and by a pull wire through the radiator coil to the front of the radiator. A special thermostat placed on the top of the number four cylinder, is fastened to the dash and connected to the air inlet by a rod, controlling the flow of warm air from the stove. Throttle control is accomplished in usual way by a rod passing between the second and third cylinders, connecting with a butterfly valve in the intake manifold. Provision is also made for heating the carburetor with hot water during cold weather and it is stated that this device works equally well in the hottest days of summer or the coldest days of winter.

Manufactured by the Donning Carburetor Corporation, Sanford Street to Unquowa Road, Fairfield, Conn. Price complete ready to install, $16. Installation from $1 to $2.

Ford Reamer Sets, comprising eight reamers, covering 15 bushings, are put up in neat hard wood boxes for the Ford service station and repair shop trade as follows: 2713-14, spindle arm and body bushing; 2559 X, hub camshaft bushing

(extra long reamer); 3022½, piston pin bushing; 3042, camshaft front bearing bushing; 3043, camshaft center bearing bushing; 3044, camshaft rear bearing bushing; 3545, steering post bearing bushing; 3052 B, valve stem bearing; 1916, 1/64 oversize; 3320 B C, transmission driven sleeve bushing; 3311, transmission sleeve bushing; 3820, front spring perch bushing; 3844, rear spring perch bushing; 3314½, transmission triple gear flanged bushing. Reamers are made from the highest grade tool steel by experienced workmen and under a system that insures the highest efficiency and accuracy. It is stated that the Keystone reamers are used in large quantities by a majority of the builders of the best known standard cars.

Manufactured by Keystone Reamer & Tool Co., Millersburg, Pa. Prices on request.

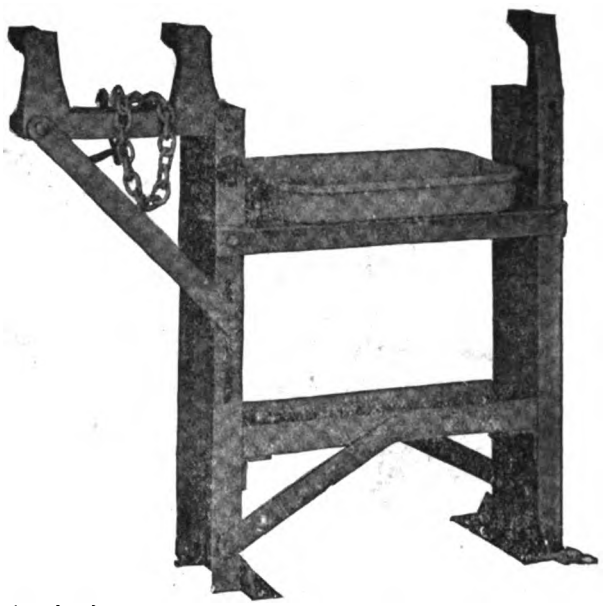
The Roedding Signal Tail Light is especially adapted to enclosed cars where it is impossible to signal by hand, and is equally applicable to open cars.

The device, as its name implies, is attached to the rear light bracket in place of the regular light and is connected to a 2½-inch disc attached to the steering

wheel, operated by the driver without removing hands from the wheel. The signals are communicated to the rear light, showing in easily discernible letters the driver's intention, whether of proceeding to the right or left, to stop or back up.

The Roedding signal operates by electricity from a battery or dry cells, is water proof, dust proof and is quickly installed in any make of car. When the car is moving ahead the rear light only shows. It complies with the law of all states where some form of signaling device is specified.

Manufactured by the Grand Rapids Brass Co., Grand Rapids, Mich. Prices on request.



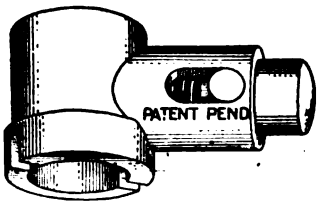
The Continental Engine Stand is designed to overcome the difficulties usually found in service stations when disassembling and assembling rear axle systems. In service work the axle is removed from the car or truck, placed on the Continental axle stand and clamped firmly in position on the adjustable vise. The taper of the housing is taken care of by this adjustment. The axle is at a convenient height to work on and the mechanic has every part at hand. The axle may be torn down, whether semi-floating, three-quarter floating or full-floating construction, without unclamping the axle from the stand. The semi-floating axle may be split open exposing the gears and integral parts without lost effort. A grease pan takes care of the old grease and oil as fast as it flows from the differential housing, while the tool tray is very convenient for the repairer as it may contain whatever tools are necessary for the work in hand.

The Continental axle stand is universal and is large and strong enough to handle any and all types of axles both front and rear and has proved itself indispensable to the garage and service station doing a large amount of axle overhauling work.

The stand is heavily constructed of cast iron and steel, is 34 inches high and takes up a floor space of 12x22 inches.

Manufactured by the Continental Auto Parts Co., Columbus, O. Price, $46, f. o. b. Shipping weight, 145 pounds.

The "Master" Timer Brush is designed to take the place of the regular roller timer employed in the Ford timer case and consists of an aluminum hub fitting the end of camshaft, and an arm carrying the slidable brush which makes contact with the contacts of the timer case. The slidable brush is of copper alloy, held in place by a spring tension in the arm. It is stated that this type of contact im-



proves the starting qualities of the Ford engine during cold weather, as it provides a much larger contact for the current then the regular roller type. The manufacturers guarantee this timer brush for 5000 miles.

Manufactured by the Master Products Co., Detroit, Mich. Price, brush, each, 75 cents; commutator case, including brush, $1.25.

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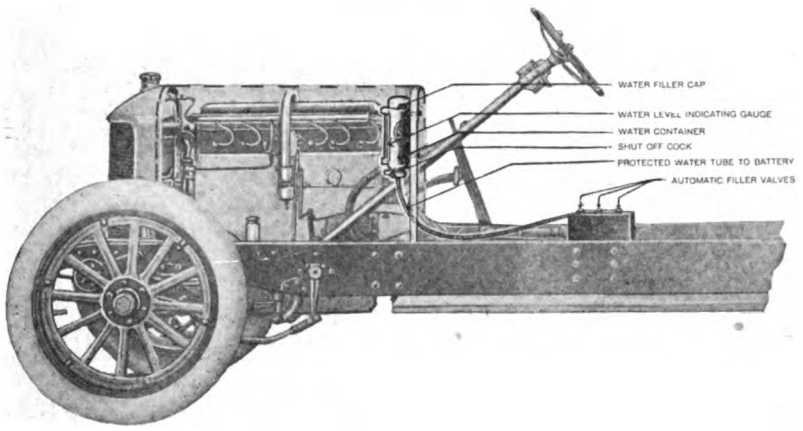
The 20th Century Automatic Water Filler for Storage Batteries consists of an aluminum water container of about one pint capacity, screwed to the dash board under the hood. A gauge at the side of



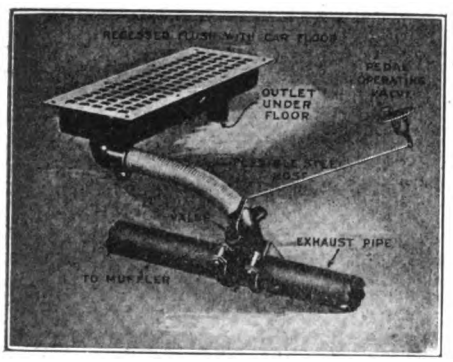
container shows the water level at all times, the water flowing to the battery through a flexible metal covered rubber tube to the caps of the battery. Special hard rubber filler caps containing a float valve are furnished with each outfit to be substituted for the regular caps of the battery. As the level of the electrolyte goes down the valve opens and allows just enough water to drop into the battery cells to bring the electrolyte to the proper level and the valve then closes. A petcock just below the container allows the water to be shut off at that point if desired.

Sold by Forrest Co., Inc., distributors of West Gasaver and 20th Century automatic battery water filler, 1974 Broadway, New York City. Price, $10. When ordering give make and model of car, location of battery and name and type of battery.

The Eureka Automobile Heater is a device heated by exhaust gases and is placed in the rear compartment of the car, fitting flush with the floor boards and opened or closed by a small lever at the side that may be operated by the foot.

The radiator is made of aluminum, the exhaust gases enter at the side through a pipe having a flexible connection with the exhaust pipe, heating by transfusion the pure air which enters the car body through openings in the floor plate, while the gases escape through a pipe outlet at the side of the car.

The Eureka heater is constructed on scientific principles, by which all operating expense is eliminated, as the waste



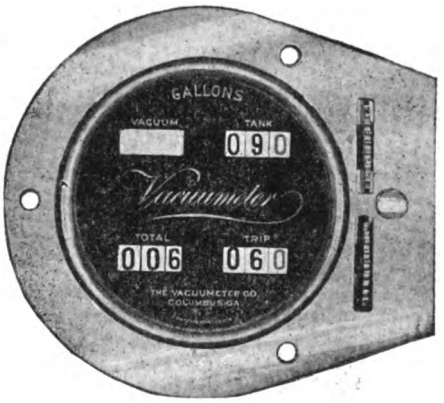
gas from the exhaust is utilized. The heater is made of aluminum and pressed steel, finished in nickel, and is claimed to combine the essential points of lightness, strength, appearance, radiation and economy.

It is stated that this system can be installed in one hour's time by any good mechanic.

Manufactured by the Eureka Accessory Company, 404-405 Dollar Bank Building, Youngstown, O. Price, $20, complete.

The Vacuumeter is a neat dash board instrument of the speedometer type that tells the amount of gasoline in the fuel tank, total gallons used to date, gallons used per trip and also indicating in a special window whether the vacuum is in working order or not by a shutter changing from white to red.

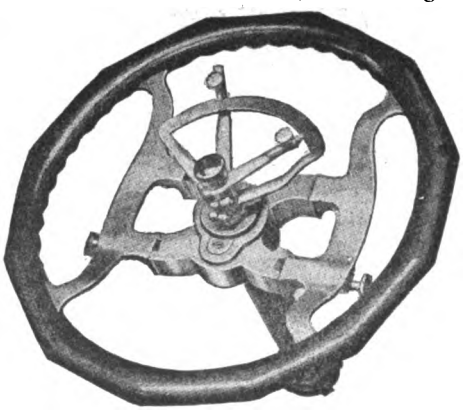
The Vacuumeter is connected to the top of the Stewart vacuum tank by a short length of copper tubing, which is the only connection necessary for its successful operation. The gasoline does not pass through the Vacuumeter on its way to the vacuum tank, but the device is operated by the vacuum in the tank.



It is stated that the readings of the Vacuumeter are absolutely accurate and that by its use owners of cars equipped with this device are enabled to tell how much gasoline is consumed for a trip or for the season, besides acting as a check on the adjustment of the carburetor.

Sold by the Vacuumeter Selling Co., 1410 Girard Avenue, Philadelphia, Pa. Price, $18.50.

The Tilting Lockable Steering Wheel is manufactured in three styles of rim. The first, known as the Liberty model, is equipped with either a 17 or 18-inch wheel as desired, and is fitted with interchangeable bushings in the hub of the wheel to fit all types of automobiles and steering shafts. The wheel consists of a polygon corrugated walnut rim, with aluminum spider arms, buffed, polished and inserted in the wheel rim, the spider head being constructed of malleable iron and the center bushing of steel, sherardized to match the aluminum finish.



The second style is similar in construction to the first, but differs from it in that the wheel is corrugated on the inner side and smooth on the outside. Either style may be tilted up or down to suit the convenience of the driver, by means of pull pins in the spider arms. When pulled out the wheel passes by projecting arms at each side of the center or hub and is hinged at the front of the hub by two similar projecting arms. A Yale lock is provided in the hub of the wheel by which it is locked in such a manner that the wheel turns freely on the steering column without operating the steering mechanism. It is stated by the manufacturer to be proof against theft.

A tilting lockable steering wheel is adapted to all cars larger than the Ford, a smaller style being made for the latter working on the same principle, the wheel and spider being similar to the regular Ford equipment, but differing from it in that the locking and tilting features are combined in one unit, as in the larger sizes.

Manufactured by the Detroit Steering Wheel Corporation, 1231-35 Woodward Avenue, Detroit, Mich. Prices, No. 1 and No. 2, Liberty model, 17 and 18-inch, $29; No. 3 and No. 4, Liberty model corrugated, 17 and 18-inch, $24.50; Ford model, 16-inch corrugated, $18. Specify make and model of car when ordering to secure bushing required in the hub of wheel.

The "Shuro" Cell Tester is designed for storage battery service station testing and shows, by short-circuiting each individual cell, the condition of the charge of that cell. This instrument is specially designed to meet the constant demand of the battery expert and the automobile owner. The simultaneous voltammeter is

mounted in a position by which it can be easily read and is amply protected. The light above the voltammeter will quickly indicate the condition of the cell being tested.

The simultaneous voltammeter has a double scale, the upper reading volts 0-2, the lower amperes 0-250, which gives accurately the voltage of each cell under a discharge test. Full instructions accompany each tester.

Manufactured by H. B. Shonts Co., 157 West 54th Street, New York City. Price with meter, $17; without meter, $8.50.

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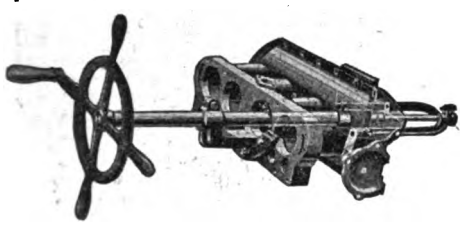
Heiser's Improved Cylinder Reboring Machine for the Ford Engine is a tool for the Ford service station repair shop and comprises many unusual features that recommend it especially for cylinder reboring work.

This tool rebores between centers, insuring a finished cylinder that is square with the crank shaft, as well as being straight, round and true. The cutters leave a finish closely resembling a ground finish. This is the only tool, except expensive grinders, it is claimed, that will not leave the finished cylinder slightly tapered towards the bottom.

The left side of the Ford cylinder always suffers the most wear. For this reason it is impossible to hold the compression with new or over-size piston rings, without first trueing out the cylinder. The cylinder must be as true as the rings for perfect work.

Reboring and fitting over-size pistons is the most important repair that can be given an engine, for by fitting these parts properly, they are made as tight, true and new as the day the car was first delivered.

The time required to rebore all four cylinders with the Heiser's improved reboring machine is from 60 to 90 minutes. The machine is self-centering, as it centers itself from the unworn portion of the engine cylinder. The reboring tool is fastened at the top of the cylinder by a special bracket that holds the shaft of the



tool in a rigid position, while the base end is fastened by a plate extending across the base of the cylinders and fastened to the base by screws, thus holding the lower end of the shaft rigid.

The cutting bit is sharpened and given the correct amount of clearance without an emery wheel, or the necessity of sending it to the factory, or to a machine shop, as it may be sharpened by any one handy with sharpening tools.

The Heiser reboring tool is operated by a hand wheel having an increased leverage so that the operation of the cutting tool is very easy. The cutter is adjustable so that cylinders may be bored to any size desired, from those that have only seen a few months service to those that have been in service for many years.

The maker states that centering of the cutter is easily accomplished after a trial and once properly set does not have to be changed to rebore the other cylinders of the set.

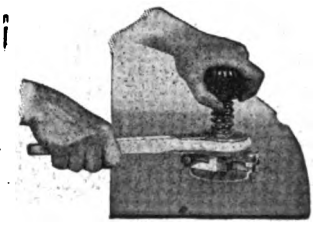
Manufactured by the Heiser Special Tool Co., Kingston, Mo. Prices, $42, cash with order. Over-size pistons, complete with rings, pins and bushings, .015, .031, $1.60; .045, $1.90.

The "Jiffy" Adjustable Cutter is a small portable tool designed to cut holes varying from 1¼ inches to six inches in diameter. The Standard knives, supplied with the device, will cut through steel 3/16 of an inch in thickness. Special knives can be supplied for cutting through ⅜-inch metal and also knives for cutting holes in one-inch material, such as slate, marble, fiber, etc.

The device is made in three sizes. No. 1 outfit cuts holes from 1¼ inches to three inches in diameter, and the No. 2 outfit from 1⅜ inches to six inches in diameter. The No. 12 outfit is a combination of both of these sizes.

In addition to the holder and ratchet wrench the outfit consists of a small knife holder wrench for adjusting the knives. New knives or cutters can be secured as they are needed. The appliance is especially desirable to electrical men and service station repairers.

The tool consists of a swing chuck with two knives adjustable to various centers. The swing chuck is a steel casting. Pressure is put on the knives by means of a heavy spring. Rotation of the knives is secured by applying to the swing chuck a special ratchet wrench, made of malleable iron.

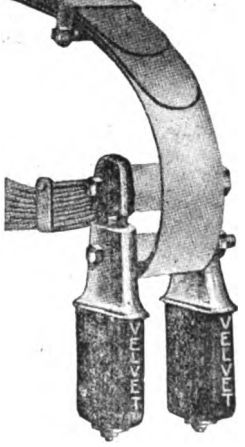


A ⅜ inch pilot hole is first drilled, and in the case of thin material a flange nut is put on the opposite side of the sheet so that the stud may be placed through the pilot hole and screwed into the flange nut. For cutting heavy material the pilot hole could be tapped with standard thread for receiving the stud, thus eliminating the use of the flange nut where it might be difficult to get back of the material to place the flange nut in position.

Outside of the many ordinary applications, such as cutting holes in service and distribution cabinets, boiler tanks, dash iron, steel plates and sheets, etc., there are many special applications, such as cutting holes in heavy structural steel members, and where awkward shaped castings, which cannot readily be drilled by machine process, are encountered. This tool should prove of value in cutting through plates where it is not practical to set up gas flame cutting outfits. Special washers can be quickly cut by setting one of the knives at the inner diameter of the washer and the other at the outer diameter. The tool cuts holes in a neat and clean manner, and work can be done much better and much faster with it than by the old method of cutting holes with a hammer, cold chisel and punch.

Manufactured by Paul W. Koch & Co., 19 South Wells Street, Chicago, Ill. Prices and literature on request.

Velvet Shock Absorbers, Model E and Model F for cars with half-elliptic springs are attached by special shackles to the rear of the spring ends. A feature of the Velvet shock absorber, that especially appeals to the motorist, is the fact that in changing them from one car to another it is unnecessary to discard them and pur-



chase new shock absorbers as the springs may be removed and replaced with heavier or lighter springs according to the weight of the car to which they are to be attached.

Velvet shock absorbers have an adjustable feature, by which they may be made either stiff or light, according to the load carried by the individual car.

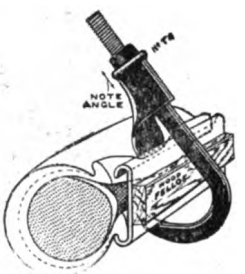
The absorbers are simple in construction, are made throughout of the best of material by skilled workmen, and are made in different sizes for cars weighing from 2200 pounds up to 4800 pounds. In ordering, give make, model and year of car, also weight of car, width of the rear springs and diameter of rear spring bolts. Also mention whether the car is a touring car, runabout or closed car.

Manufactured by John W. Blackledge Manufacturing Co., Chicago, Ill. Prices on request.

Essenkay Tire Filler for passenger car and light truck owners using pneumatic casings consists of a prepared filler, put up in a convenient form for handling, and connected in lengths according to the size of casing in which they are to be used.

The filler is placed in the casing and forced on to the rim of the car wheel with a special tool provided for that purpose.

It is stated that with Essenkay tire filler the casings wear down to the last layer of fabric when the filler is removed and placed in another casing and are used



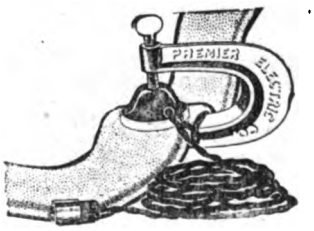
indefinitely, this operation being repeated as often as the casings wear down. It is pointed out that Essenkay tire filler contains no rubber, therefore it cannot harden, oxidize or bloom.

The manufacturer has a free trial offer to owners of passenger cars and trucks that is very liberal. It is stated that Essenkay is the ideal solution of tire problems for the owner of any vehicle which requires easy riding, shock absorbing tires which at the same time are not subject to deflation by means of punctures or blow-outs.

Manufactured by the Essenkay Products Co., Grand Avenue and Orleans Street, Chicago, Ill. Prices on request.

It's-It Electric Vulcanizer for the motorist's tool kit is an emergency outfit for vulcanizing tubes by the electrical current taken from the storage battery of the car in case of emergency.

The vulcanizer is small and easily placed in the tool box. When using the patch is placed on the roughened tube in the usual manner, the clamp screwed down tight and the plug on the end of the cord placed in a socket provided for it on



the dash or other convenient place on the car and the current from the battery turned on. It is stated that about 10 minutes are required to vulcanize a patch with this device, that the amount of current drawn from the battery is small and that the patch is vulcanized as thoroughly as though done with a larger outfit.

Made either for six or 12-volt batteries and furnished complete as shown with patches ready for use. When ordering mention voltage and style plug desired.

Manufactured by the Premier Electric Co., Grace and Ravenswood Avenue, Chicago, Ill. Price, $1.

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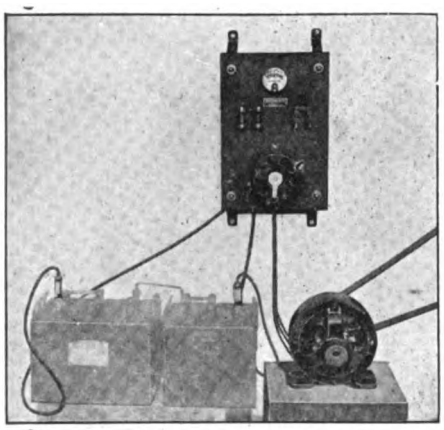
Main Battery Charging Set No. 1 consists of a belt driven outfit to be operated from the power shaft of the service station. The outfit consists of a charging dynamo of superior design, having oil ring bearings, a high grade armature and field coils. The capacity of the generator is 300 watts and can supply 14 amperes when charging one six-volt battery or eight amperes when charging five six-volt batteries at one time. A slate charging panel is included in the outfit, equipped with ammeter, rheostat, necessary fuses, switch, an iron frame for mounting on the wall and a set of long flexible leads with universal snaps for making connections to batteries when charging.

It is stated that the probable cost to operate the main battery charging set from any source of belt driven power will run from 1½ to three cents a kilowatt-hour.

A larger outfit is manufactured by this company, which has a charging rate about three times that of the No. 1, which is de-



signed primarily for service and battery charging stations, and is capable of charging several sets of five six-volt batteries in multiple at a time; that is five six-volt batteries or any combination, such as one six-volt and two 12-volt, etc., so long as the voltage does not exceed 30, and two or three such combinations in multiple at the same time. The dynamo of the No. 3 set is similar in design to that of No. 1, but is much larger, is equipped with a flywheel pulley and furnished with sliding base for taking up the slack of the belt.

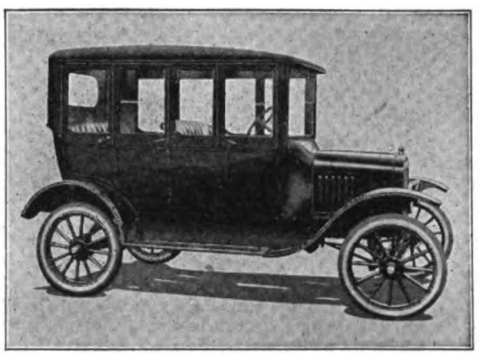
The switchboard is similar in design, but is much larger, has larger instruments, heavier switches, fuses, etc.

Manufactured by the Main Electric Co., Cleveland, O. Price, No. 1 set, $105 f. o. b. Cleveland; No. 3 set, $205 f. o. b. Cleveland.

The Miller Ideal Enclosed Auto Top for Ford Cars is combined with patent Miller windshield standard, which allows the windshield to be opened for ventilation and affords complete adjustment to the

variations in length of Ford cars. The windshield rests against a heavy felt pad, preventing rain or snow from entering when closed.

The enclosed auto top is constructed of selected seasoned hard wood, having 16 bows, 18 slats and a solid back. All joints and slats are separately glued, nailed and screwed, while all sash is dovetailed at the joints, glued and nailed. Over 1000 nails and screws enter into the construc-

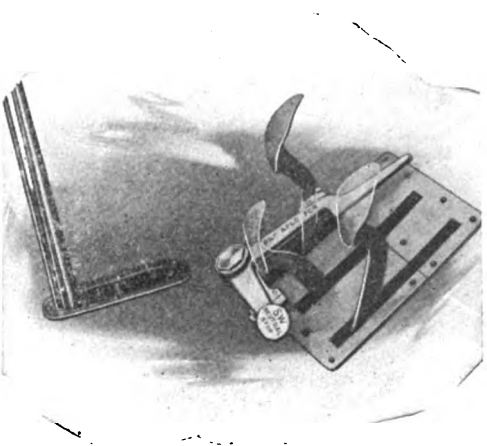


tion of a Miller Ideal auto top. The curves in the back and top are of steel and the front standards are of 20-gauge steel, adjustable. The top covering is the best grade Neverleak, lined with fine black and white whipcord. A neat metal moulding prevents rain from dripping on the windows, and the glass used in the windows is extra heavy clear vision "Crystal."

The doors and left front panel are equipped with a divided or ventilating glass. The doors open at the same time with the body door.

Manufactured by the Miller Top & Body Manufacturing Co., Caro, Mich. Prices on request.

The S-W Neutral Stop for the Ford Foot Pedals consists of a device that is fastened to the floor board of the car at the rear of the high and low pedal. The device is in two parts; one part passes forward and carries a trip arrangement that catches back of the pedal when the pedal



is in the neutral position, while the second part projects to the right out at one side, acting as a release to loosen the catch when the operator desires to push the pedal into first.

This device is small, is easily attached to the floor board and is inconspicuous and in case of an emergency catches the pedal in neutral as the foot is pushed forward, preventing the operator from moving the pedal still further forward into first and causing a possible accident.

The neutral stop does not interfere with the regular operation of the car, but does act in case of emergency. The stop is made of high-grade material and will outlast the car upon which it is attached.

Manufactured by the S-W Manufacturing Co., Lynn, Mass. Price, $5, parcel post prepaid.

The Campbell Storage Battery is a new model, which the manufacturer has named the "Battery of No Regrets." After experiment and exacting research covering a number of years a battery has been designed which is claimed to overcome many faults of storage batteries in the past.

The grids are of a design possessing great strength and flexibility capable of taking and holding the proper charge and giving the correct discharge without undue harm to the battery. Grids are pasted by hand, pass under a rigid inspection; none but perfect plates being used in the construction of the finished batteries.

The jars are guaranteed to withstand a strain of 3600 pounds a square inch, much heavier than they will ever be called upon to receive, while the result is greater durability in service. Each jar is tested with an electric current of 36,000 volts, so that any leak or defective spot becomes apparent before the battery is assembled.

The separators are resawed Port Orford white cedar, each separator being rigidly inspected before being used. This wood has been proved to be the best for battery separator use, it is stated. Battery cases are made of select kiln dried oak, dove tailed, no nails or screws being used.

Treated and painted with acid proof paint.

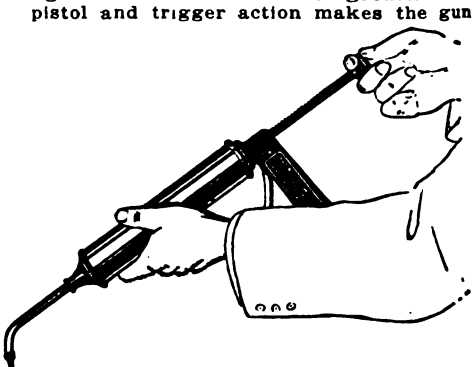
The battery post construction is such that it is stated it is impossible for them to become broken or to leak. Large vents are provided in the top of each cell through which distilled water may be added to the electrolyte or the electrolyte tested.

Campbell batteries are covered by a 12 months written guarantee, given the purchaser on the date of sale.

Manufactured by Campbell Electric Co., Inc., 1529-31 Wyandotte Street, Kansas City, Mo. Prices on request.

The Vital Automatic Grease Gun combines two devices in one, a pressure gun for heavy grease and oil operated by a trigger and pistol grip and a pump for light oils or gasoline actuated by pushing the plunger by hand.

The cylinder is made of the best of material and the caps, top and bottom are made of cast metal smoothed and polished. Two nozzles are furnished, one for light oil and the second for grease. The pistol and trigger action makes the gun



very easy to operate even with one hand. The cap on one end unscrews, so that the gun is easily loaded with grease, while the offset nozzle permits inaccessible places to be reached.

Manufactured by the Vital Manufacturing Co., Cleveland, O. Price $5.

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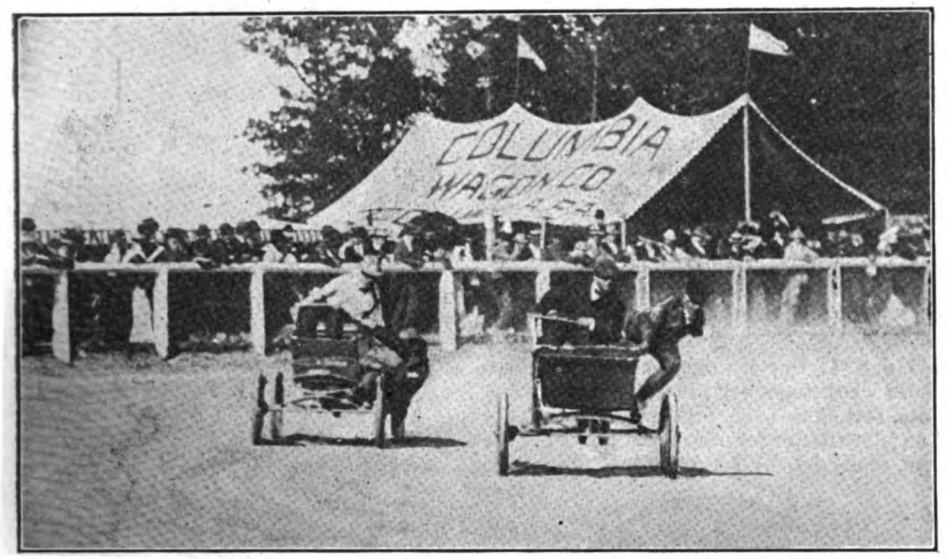
News of Racing Events and Recent Endurance Tests

THE accompanying illustration affords a glimpse of the racing game as it was in the earlier days of the automobile. In the right hand car is Percy Owen, now president of the Liberty Motor Car Co., Detroit, but at that time branch manager for the Winton company in New York City.



Percy Owen, Now President of Liberty Motor Car Co., Making a Fast Turn in Racing Event in 1903.

Mr. Owen was then an internationally known racing driver, holding world records in 1901 and 1902 for all distances from one to 10 miles. The picture here shown was taken during one of his races on Long Island in 1903. The figure at his left is the mechanician who, it will be noted, had to serve also as counterweight when rounding the turns at high speed.

AUTOMOBILE RECORDS FOR THE YEAR 1919.

Following is a list of important records made in racing events during the year just finished:

February 12—Ralph De Palma, at Daytona Beach, Fla., set two world speed records: One mile in 24:02. 149.87 miles per hour or 215.65 feet per second; one kilometer in 15:86.

February 16—Ralph De Palma, driving a Packard special 12-cylinder aviation engine of 905 cubic inches piston displacement, set these world records at Daytona, Fla.: Two miles in 49:54; three miles in 1:15:04; four miles in 1:39:77; five miles in 2:04:58; 10 miles in 4:09:31, and 20 miles in 9:21:41.

February 17—Ralph De Palma set these world records at Daytona, Fla.: Fifteen miles straightaway in 6:48:75; 20 miles straightaway in 8:54:20, and one mile, standing start, in 0:38:83.

March 15—Santa Monica, Cal., road race, 250 miles, won by Cliff Durant in 3:04:45; average of 81.6; E. Hearne second in 3:11:95; Louis LeCock third in 3:15:28, and Eddie Pullen fourth in 3:20:40.

May 19—Victory sweepstakes, 112 miles, at Uniontown, Pa., won by Tommy Milton in 1:10:09:32, average of 96½; Louis Chevrolet second and Ralph Mulford third.

May 31—Five hundred miles, $50,000 national sweepstakes, at Indianapolis; won by H. Wilcox, Peugeot, in 5:44:21:75, average of 87.12; E. Hearne, Durant, second, in 5:46:16:05; Jules Goux, Peugeot, third in 5:50:29:90; A. Guyot, Ballot, fourth, in 5:53:33:50, and Tom Alley, Bender, fifth in 6:06:54:85.

June 14—Results at Sheepshead Bay: Fifty miles, won by R. De Palma, Packard, in 26:23 1/5, average of 114.5; Joe Boyer, Jr., Frontenac Special, second, and Dave Lewis, Meteor, third. Ten miles, won by Tom Milton, Duesenberg Special, in 5:20 1/5; R. Mulford, Frontenac Special, second, and R. Resta, Resta Special, third. Thirty miles, won by Mulford in 16:20 3/10 (world record); De Palma, second. Ten miles, won by Mulford in 5:24 1/5; Boyer second and De Palma third.

July 4—Ralph Mulford won a 40-mile race at Tacoma, Wash., in 24:02 2/5; Durant second, Chevrolet third, Hearne fourth and Resta fifth. Louis Chevrolet won a 60-mile race in 36:47 1/5; Mulford second, Hearne third, Durant fourth and Resta fifth.

July 4—Gaston Chevrolet won a 100-mile race at Sheepshead Bay, N. Y., in 54:17⅛ (world record); Wilcox second and Dave Lewis third.

July 19—Tom Milton won a 22½-mile speed race at Uniontown, Pa., in 101.17 miles average per hour. He drove a Duesenberg; D. Lewis, Meteor, second, and Fetterman, Fecrless, third.

July 22—R. J. Copes, Denver, in a Chevrolet, won the Denver-to-Cheyenne road race, under the auspices of the Denver Times, in 2:11:59; Red Myers, Hudson, second.

August 23—Tom Milton, Duesenberg, won 301-mile Elgin road race at Elgin, Ill., in 4:05:17, average of 73.5. Roscoe Sarles, Roamer Special, second, and Kurt Hitke, Roamer, third.

October 12—Auto sweepstakes, 250 miles, at Cincinnati, won by Joe Boyer, with an average of 101.69. Art Kline, second, and Kurt Hitke, third.

November 8—Eddie Hearne won 100-mile free-for-all at Phoenix, Ariz., in 1:29:09 (claimed to be world record on dirt track); R. Sarles, second, and R. C. Durant, third.

INAUGURAL FOR NEW SPEEDWAY.

The inaugural event on the new speedway being built for the Los Angeles Speedway association, near Beverly, Cal., will be held on Feb. 22.

SEVENTH 500-MILE RACE AT INDIANAPOLIS, IND.

Entry blanks are out for the seventh International 500-mile race on the Indianapolis speedway on Monday, May 31. This will be the first of these important international contests to be held under the new speedway rules limiting the competition to cars of 183 cubic inches displacement, and is, therefore, anticipated with unusual interest both in the United States and abroad. Some modifications have been made since the preliminary conditions for the race were announced some time ago. The weight limit has been lowered from 1700 to 1650 pounds, this making the Indianapolis racing rules conform with those of the Grand Prix de France, scheduled to take place at Le Mans next fall. The right hand drive has been made optional instead of compulsory, left hand steering now being permitted also.

The prize money will be as in former years, with a total of $50,000 divided among the first 10 cars to finish, of which $20,000 goes to the winner. In addition, as has been customary, a number of tire and accessory manufacturers are expected to add substantial bonuses, payment being conditional upon the winner's using the manufacturer's equipment, so that the first prize winner may be reasonably certain of securing not less than $25,000 to $30,000.

The first entry for next May was again registered this year by Clifford Durant, the millionaire son of W. C. Durant, head of the General Motors Co. Mr. Durant wired his entry from Oakland, Cal., where he is having a special 183 cubic inch racing car made in the Chevrolet factory. He was also the first to enter the race last year, and was well up among the leaders until at the 150-mile post his steering gear gave way and he was forced to retire. He bears the title of Pacific coast champion by virtue of his victories in the 1918 Montamarathon and Potlatch contests at Tacoma, Wash., and the 1919 Santa Monica road race.

CLEVELAND "SIERRA PIONEER."

An "altitude" record was recently given the Cleveland Light Six car, made by the Cleveland Automobile Co., Cleveland, O., by its San Francisco dealer, Peacock, Alexander & Hunter Co. A member of the San Francisco organization drove a stock car up the Placreville lake road in the California Sierras to the summit of the highway, which is 7630 feet above sea level. The car finished with a perfect score and has been christened the "Sierra Pioneer."

Harry G. Thomas, driving Franklin touring car, made by the H. H. Franklin Manufacturing Co., Syracuse, N. Y., made a new record for endurance runs recently, under adverse weather conditions, by covering 532 miles in 13 hours and nine minutes, at an average speed of 40.45 miles an hour.

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Officials of Hart-Parr Co., Makers of Farm Tractors

M. W. ELLIS, son of C. D. Ellis, president of the Hart-Parr Co., Charles City, Ia., has succeeded W. R. Dray, who for the past 2½ years has been vice president and general manager of that company, and a reorganization of the company has been effected. C. D. Ellis, who has been elected president and chairman of the board of directors, is president of the Security Trust & Savings Bank of Charles City; A. H. Witt, who has long been associated with the company, becomes secretary and assistant treasurer; W. S. Frederickson, general sales manager, came to the company five years ago as manager of local sales, and R. C. Rolfing, works manager, started in 1912 as assistant in the office of the superintendent.

C. D. Ellis, President and Chairman of Directors.

The Hart-Parr Co., which claims to be a pioner in the farm tractor industry, has a large plant at Charles City, now employing about 1000 men. Since the war the old type of tractor was abandoned and a new design has been developed, which has created a considerable demand.

W. S. Frederickson, General Sales Manager.

W. B. Jameson has been placed in charge of warehousing and buying for Bellanger Freres of Paris, France, with offices in the Bush Terminal, New York. All the buying for the Parisian concern has hitherto been done at the offices of Briscoe & Stahl, Detroit, and this new arrangement will relieve the Detroit office of the routine of this branch of its activities. Mr. Jameson has been connected with Mr. Briscoe in many of his enterprises in the past, was superintendent of the Maxwell plant at New Castle, Ind., and was later superintendent of the Chicago assembling plant of the Maxwell-Briscoe Co.

Hugh T. Porter, one of the foremost sales executives on New York's automobile row, has been appointed metropolitan distributor of the new La Fayette car, made by the La Fayette Motors Co., Indianapolis, Ind. Mr. Porter has had eight years experience in automobile merchandising, identified with high-grade cars, principally in the metropolitan district. He was first associated with the Locomobile Co. as New York sales manager, and about five years ago became sales manager for the Detroit-Cadillac Motor Car Co. Before entering the automobile business he was in the ordnance department of the United States government, stationed at the Sandy Hook proving ground. He was also associated with the Western Electric Co. both in New York City and Atlanta, Ga., studying electrical engineering at the Georgia Institute of Technology. He is a resident of Greenwich, Conn.

M. W. Ellis, Vice President and General Manager.

F. S. Bacon has been appointed southwestern district sales manager for the Acason Motor Truck Co., Detroit, with headquarters at Fort Worth, Tex.

Charles Drum, in charge of the Buick Motor Body Co., is to become factory manager of the Hayes Manufacturing Co., Detroit. Other changes in the Hayes personnel, effective Jan. 15, are as follows: Harry Deering to have charge of production in the sheet metal plant; A. T. Wieland, formerly in the body department of the Pierce-Arrow Motor Car Co., superintendent of body plant; L. B. Griffin, formerly in the sales department, secretary to the president; Godfrey Strellinger succeeds Mr. Griffin in sales department.

A. H. Witt, Secretary and Assistant Treasurer.

C. M. Wallace, formerly with the purchasing department, body division, of the Packard Motor Car Co., has joined the Standard Motor Truck Co. as purchasing agent. The automotive experience of Mr. Wallace began with the Buda Co. as purchasing agent, and later he joined the Mitchell Motors Co. as assistant purchasing agent.

W. C. Rolfing, Manager of Works.

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Names and Models of Passenger Cars for 1920 Classified According to Prices

$500 TO $1000.

Model	2 Pas. Price	5 Pas. Price	7 Pas. Price	Sedan Price
BRISCOE				
B4-24	$985	$985		
CHEVROLET				
490	715	735		
DORT				
11	985	985		
FORD				
T	500	525		$875
HARROUN				
A1		995		
MAXWELL				
25	985	985		
MOORE		995		
OVERLAND				
4	845	845		
SENECA		990		

$1000 TO $1500.

Model	2 Pas. Price	5 Pas. Price	7 Pas. Price	Sedan Price
ALLEN				
Series 43		1395		
BELL	†1395	1395		
BUICK				
K-6-44-47	1495	1495		
CHAMPION		1495		
CHEVROLET				
490				1185
FB	1100	1135		
CLEVELAND	1385	1385		
CROW-ELKHART				
CE-36	1295	1295	$†1355	
CE-46	1295		†1355	
DISPATCH				
G	‡1250	†1290		
DIXIE FLYER				
H-S-50		1365		
DODGE BROS.	1085	1085		
ELCAR				
D. F.		1225	†1225	
		1475	†1475	
ELGIN				
H		1485		
GRANT				
G	1495	1495		
HARROUN				
A-1	1095			
HUPMOBILE				
R	1450	1450		
MAIBOHM				
B		1395		
MONITOR	1475			
MONROE	1195	1195		
NASH				
681-6	†1490	†1490		
NORWALK		1165		
OAKLAND				
34-B	‡1075	1075		
OLDSMOBILE				
37-A		1395		
OLYMPIAN				
45	1240	1240		
OVERLAND				
4				1355
SAXON				
Y-18	†1295	1295		
SCRIPPS-BOOTH				
Six-39	‡1295	1295		

$1500 TO $2000.

Model	2 Pas. Price	5 Pas. Price	7 Pas. Price	Sedan Price
AMERICAN				
B	1895	1865	1965	
ANDERSON				
400-A-E	1675	1675	1750	
AUBURN				
6-39-H-K	†1695	1695		
BUICK				
K-6-49-50			1785	
CHALMERS				
6-30	1685	1685	1765	
CHAMPION		1695		
CHANDLER	†1795		1795	
CHEVROLET				
F B				1685
D		1585		
COLUMBIA				
D-C & CS	†1845	1695		
CROW-ELKHART				
CE-46		1545		
DAVIS				
51-54	†1795	1765		
DODGE BROS.				1750
DORT				
11				1535
ELCAR				
D. F.				1775
				1995
ELGIN				
H				1950
ESSEX				
A	1595	1595		
GRANT				
G				1645
HANSON		1685		
HOLLIER				
206-B		1985		
KLINE KAR				
6-55-J	1965	1990	†1990	
LEXINGTON				
R-19		1785	1785	
LIBERTY				
10-B	1695	†1785	1695	
MADISON		1550		
MAIBOHM				
B				1995
MAXWELL				
25				1655
MITCHELL				
E-40	‡1690	1690		
E-42			1875	
MONITOR			†1575	
MOON				
6		1885		
NASH				
682			1640	
681-6			†1640	
NELSON		1500		
OAKLAND				1740
OLDSMOBILE				
45-B		1895	1895	
37-A				1995
PAIGE				
6-40	‡1595	1595		
PATERSON				
6-46		1695	1725	
PILOT				
6-45	†1700	1650		
REO				
1920	1650	1650		
SAYERS				
Six-42		1745		
SCRIPPS-BOOTH				
Six-39				1985
STEPHENS				
Salient Six	1975	†1975		
STUDEBAKER				
EH-6-50	1685	1685	†1685	
VELIE				
48	1685	1685		
WILLYS-KNIGHT				
88-4		1725		

$2000 TO $2500.

Model	2 Pas. Price	5 Pas. Price	7 Pas. Price	Sedan Price
AMERICAN BEAUTY		2000		
AUBURN				
6-39-H-K				2475
BUICK				
K-6-44-47				2255
CASE				
V	2400		2400	
CHALMERS				
6-30				2370
CLEVELAND				2385
COMET				
C-53		2150		
CROW-ELKHART				
CE-46				2395
ESSEX				
A				2250
HUDSON				
Super-6		†2200	2100	
HUPMOBILE				
R				2185
JONES				
28	2250	2250	2250	†2250
KING				
G		2350	2150	
KISSEL KAR				
Cust. Built			2450	
MOLINE-KNIGHT				
L	†2000	2000		
NASH				
684				2250
PAIGE				
6-55		†2255	2150	
REO				
1920				2400
STEARNS				
SKL4	†2250	2250	2475	
STEPHENS				
Salient Six			*2050	
STUDEBAKER				
EG-60			2135	
VELIE				
48				2385
WESTCOTT				
B-38	2090	2090		

$2500 TO $3000.

Model	2 Pas. Price	5 Pas. Price	7 Pas. Price	Sedan Price
AMERICAN				
B				2950
ANDERSON				
400-A-E				2550
APPERSON				
8-20	2950	†2950	2950	
BIDDLE				
H		†2750	*2985	
BUICK				
K-6-49-50				2695
CHEVROLET				
490				2695
COLE				
870	2750	†2750	2750	
COLUMBIA				
D-C & CS				2850
DAVIS				
51-54				†2565
FRANKLIN				
9B	2700	2750	†2750	
HAYNES				
45	†2685		2685	
HOLMES			2900	
HUDSON				
Super-6				2900
JORDAN				
J-60		2675	2675	
KING				
G	2550			
KISSEL KAR				
Cust. Built	2875	2875		2975
KLINE KAR				
6-55-J				2790
LIBERTY				
10-B				2595
MOLINE-KNIGHT				
G	†2500		2500	
MOON				
6-66-19			2750	
PAIGE				
6-55				2950
PEERLESS				
56		†2900	2900	
PILOT				
6-45				2500
PREMIER				
6-C		†2585	2585	
ROAMER				
C-6-54	2650	†2575	2750	
SAYERS				
Six-42				2695
STUDEBAKER				
EH-6-50				2535
TEMPLAR				
A-445	†2685	2685		
WESTCOTT				
A-48		2590	2590	
B-38			‡2790	
WILLYS-KNIGHT				
88-4				2750

$3000 TO $4000.

Model	2 Pas. Price	5 Pas. Price	7 Pas. Price	Sedan Price
BIDDLE				
H	3150			
CADILLAC				
57	3400	†3490	3490	
CASE				
V				3300
COLE				
870				3995
FRANKLIN				
9B				3750
HAYNES				
45				3550
46		†3450	3450	
HOLMES				3900
JORDAN				
J-60				3700
KING				
G				3100
LEXINGTON				
R-19				3200

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Model	2 Pas. Price	5 Pas. Price	7 Pas. Price	Sedan Price
MARMON				
34	†3950	3900	3950	
MOON				
6-66-19				3650
MURRAY		3500		
NATIONAL SEX-TETT	3290	†3290	3290	
PEERLESS				
56				3700
REVERE	3850	†3850	3850	
ROAMER				
C-6-54				3450
STANDARD				
H	3000	3000	3000	
STANLEY				
Steamer			3889	
STEARNS				
SKL4				3300
STUTZ				
G	3250	†3350	*3350	
TEMPLAR				
A-445				3585
WESTCOTT				
B-38				3190
WINTON				
25	3600	3600	3600	
$4000 TO $5000.				
APPERSON				
8-20				4000
Anniversary	†4000		4000	
ARGONNE	4500	†4750	*4750	
BIDDLE				
H				4400
CADILLAC				
57				4450
DANIELS				
C	4250	4250	4250	
D	4500	4500	4500	
DORRIS				
6-80		4350	4350	
HAYNES				
46				4200
MACFARLAN	4300	†4500	4300	
MERCER				
Series 4	4500	†4500	*4500	
NATIONAL SEX-TETT				4250
STANDARD				
H				4100
WESTCOTT				
A-48				4190
WINTON				
24	4350	4350	4350	
25				4800
$5000 AND OVER.				
APPERSON				
Anniversary				5500
DANIELS				
C				5750
D				6000
DORRIS				
6-80				5720
LOCOMOBILE				
48	†8200		8100	
MARMON				
34				5750
MACFARLAN				5600
OWEN-MAGNETIC				
W-42			5500	6500
PACKARD				
3-35			5550	
3-25	†5200	5200	5200	
PIERCE-ARROW				
48	7650	7650	7750	
38	7250	7250	7250	
SINGER				
19	5250	†5250	5250	7200
STANLEY				
Steamer				5449
WINTON				
24				5600

*6-passenger, †4-passenger, ‡3-passenger.

CALENDAR OF COMING EVENTS

Jan. 26-27—Chicago, Ill., Third Annual Members' Meeting, National Automobile Dealers' Association, La Salle Hotel.

Jan. 26-31—Amsterdam, N. Y.; automobile show, benefit of Co. H, N. Y. State Armory, Amsterdam, N. Y.

Jan. 26—Elmira, N. Y., Annual Meeting, Auto Trade Association.

Jan. 27—Atlanta, Ga., Annual Convention, Georgia Automobile Dealers' Association.

Jan. 27—Chicago, Ill., Annual Meeting, Congress Hotel, National Association Automobile Show Managers.

Jan. 27-30—Louisville, Ky.; convention Kentucky Hardware and Implement Dealers' Association.

Jan. 27-30—Portland, Ore.; convention, Oregon Hardware and Implement Dealers' Association.

Jan. 28—Chicago, Ill., Truck and Tractor Meeting, Society Automotive Engineers.

Jan. 28-31—Louisville, Ky.; Kentucky Hardware and Implement Dealers' Association; M. J. Stone, secretary.

Jan. 31-Feb. 7—New Brunswick, N. J., Annual Automobile Show, Armory, W. A. Kuehn, manager.

Jan. 31-Feb. 6—Kansas City, Mo., Motor Car Dealers' Show, Overland building. E. E. Peake, manager.

Jan. 31-Feb. 7—Minneapolis, Minn., Twin City Automobile, Truck, Trailer and Industrial Exposition, Minneapolis Automobile Trade Association. Walter R. Wilmot, manager.

February—Chicago, Ill., International Automobile Managers' Congress.

February—New York City, Marine Motors Meeting, Society Automotive Engineers.

February—Deadwood, S. D.; annual show, Deadwood Business Club; F. R. Baldwin, manager.

February—Montreal, Quebec, Dealers' Show.

February—Manchester, England; North of England motor exhibition.

Feb. 2-7—Kansas City, Automobile Show.

Feb. 2-7—Toledo, O., Car and Truck Show, Terminal Auditorium, Toledo Auto Shows Co.

Feb. 3-7—Baltimore, Md., Car Show, Fifth Regiment Armory, Baltimore Dealers' Association.

Feb. 9-11—Wichita, Kan, tractor and farm machinery forum, Wichita Thresher-Tractor Club.

Feb. 9-13—Louisville, Ky.; annual show and convention, American Road Builders' Association; 10th annual good roads congress; 11th annual good roads show.

Feb. 3-13—Charlotte, N. C., Show of the Carolinas. Lee Folger, chairman, show committee.

Feb. 9-14—Nashville, Tenn.; Annual Show, Nashville Auto Trade Association.

Feb. 9-14—Kansas City, Mo.; Fifth Annual National Tractor Show, Kansas City Tractor Club. Guy H. Hall, manager, Sweeney building.

Feb. 10-14—Greenfield, Mass.; automobile show, benefit of Co. A, Massachusetts State Armory, Greenfield, Mass.

Feb. 10-14—Quincy, Ill.; Second Annual Automobile Truck and Tractor Show.

Feb. 12—Kansas City, Mo., Tractor Meeting, Society Automotive Engineers.

Feb. 14-21—Brooklyn, N. Y., Ninth Annual Brooklyn Automobile Show, 23rd Regiment Armory, Brooklyn Motor Vehicle Dealers' Association.

Feb. 15-20—St. Louis, Mo., St. Louis Automobile Show.

Feb. 16-20—Manchester, N. H., Automobile Show, Academy (only show in state). J. J. Callahan, manager, box 808, Pittsfield, Mass.

Feb. 16-21—New Haven, Conn., Annual Truck Show, Arena, New Haven Automobile Dealers' Association.

Feb. 21-28—Ottawa, Canada, Motor Show.

Feb. 23-March 6—Birmingham, England, British Industries Fair.

Feb. 23-28—Automobile show, benefit of Co. F, Massachusetts State Armory, Pittsfield, Mass.

Feb. 23-28—Louisville, Ky.; 12th annual convention, Automobile Dealers' Association, First Regiment Armory.

Feb. 23-28—Portland, Ore., Winter Automobile and Truck Show, Portland Automobile Trade Association. M. O. Wilkins, manager.

Feb. 23-28—Bethlehem, Pa., Sixth Annual Lehigh Valley Show, Coliseum. J. L. Elliott, manager.

Feb. 23-28—Duluth, Minn., Car Show, Automobile Dealers' Trade Association. W. F. Daly, manager.

Feb. 23-28—Grand Rapids, Mich., Commercial Car, Truck and Tractor Show, Automobile Business Association.

Feb. 23-28—Springfield, O., Car and Accessories Show, Memorial Hall, Springfield Automobile Trades Association.

Feb. 23-28—Waterbury, Conn., Automobile Show, Auditorium. Guy A. Parsons, manager.

Feb. 23-March 6—Utrecht, Holland, Fourth Annual Fair of Dutch Products.

Feb. 24-March 1—Kansas City, Mo.; motor car dealers' show, Convention Hall; trucks, passenger cars and accessories.

Feb. 27—Waterbury, Conn., Annual Meeting Auto Dealers' Association.

Feb. 28-March 6—Newark, N. J., Newark Automobile Show, First Regiment Armory. Claude E. Holgate, manager.

March—New York City, Airplane Meeting, Society Automotive Engineers.

March—New Orleans, La., Fashion Show.

March—Jersey City, N. J., Automobile Show.

March—Adelaide, Australia; all-Australian exhibition of motor vehicles, airplanes, engines and automotive equipment.

March—London, England; motor boat, marine and stationary engine exhibition.

March 1—Fort Smith, Ark., Annual Meeting, Auto Protective Association.

March 1-6—Eighteenth annual automobile show of Buffalo Automobile Dealers' Association, Broadway Auditorium.

March 1-6—Perth Amboy, N. J., First Automobile Show, Auditorium.

March 1-6—Scranton, Pa., Car, Truck and Tractor Show, Armory, Scranton Motor Trades Association. Hugh B. Andrews, manager.

March 1-7—Springfield, Mass., Annual Automobile Show, Springfield Automotive Dealers' Association.

March 1-7—Grand Rapids, Mich., Truck Show, Automobile Business Association.

March 1-13—St. Louis, Mo., First Annual Mississippi Valley Exposition.

March 1-15—Lyons, France, Spring Exposition.

March 2-6—Denver, Col., Automobile Show, Stockyard Stadium, Denver Automobile Trade Association. Harrison Goldsmith, manager.

March 3-6—Lancaster, Pa., Annual Automobile Show.

March 7-13—Muskegon, Mich., Car and Truck, Armory.

March 8-13—Syracuse, N. Y., Annual Automobile Show, Syracuse Automobile Dealers' Association. Howard H. Smith, manager.

March 13-20—Boston, Mass.; Boston automobile and truck show, Mechanics' building; Chester I. Campbell, manager.

March 15—Little Rock, Ark., Automobile Show.

March 17-18—Lake Charles, La., Semi-Annual Convention, Louisiana-Mississippi Automotive Trade Association.

March 19-20—Chicago, Ill., Convention, National Association Motor Truck Sales Managers, Congress Hotel.

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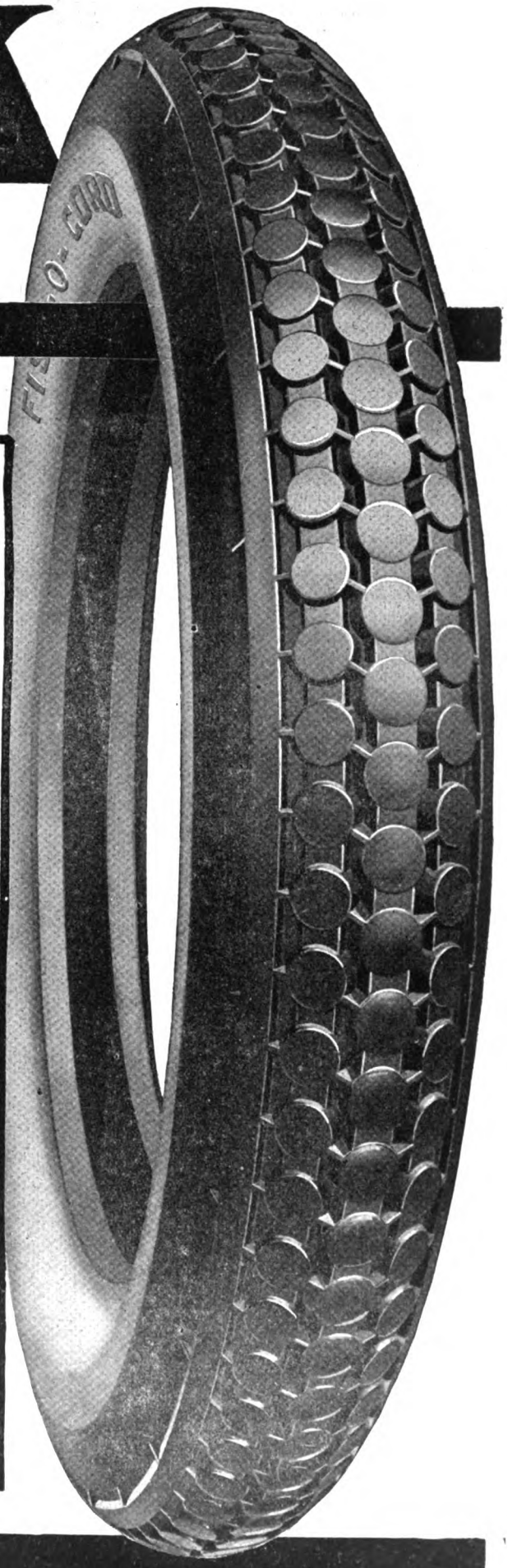
FISK TIRES



THE Fisk Black Tread Non-Skid is the best dollar-for-dollar value on the market, bar none.

The Fisk Cord represents the very peak of "cord" workmanship.

And the Fisk Red-Top—between the two in price, and, with its extra heavy tread and extra ply, actually without a rival in the tire world—is the wonder of the trade.

Investigate. You'll find ***completeness*** only in Fisk.

Next Time—BUY FISK

Sold ***direct*** to dealers and manufacturers. There is a Fisk Branch within 24 hours of any dealer.

(When Writing to Advertisers, Please Mention the Accessory and Garage Journal.)

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RECORD SHIPMENT OF REO TRUCKS TO FORT WORTH, TEX.

The great demand for motor trucks in Texas is shown by the fact that the first railroad train composed exclusively of motor trucks to be transported for any considerable distance, was dispatched from Lansing, Mich., to Fort Worth, Tex., by the Reo Motor Car Co. the latter part of November. This was composed of 29 cars, was loaded with 100 Reo Speed Wagons and was sent out as a "through freight" direct from Lansing to Fort Worth, consigned to the Stapleton-Brown Motor Co.

The accompanying picture shows the huge banners which were attached to the sides of the cars as they pulled out of the Reo yards.

LIBERTY'S CHICAGO DEALERS.

McShane-Hill, Chicago agent for the Liberty car manufactured by the Liberty Motor Car Co., Detroit, has purchased the property at the northwest corner of 25th street and Michigan avenue, where it will erect a two-story automobile salesroom and service building. The frontage is 40 feet and the depth 112 feet, and it is planned to have it ready for occupancy by the first of March. The McShane-Hill concern has contracted for a large allotment of Liberty cars for 1920 and in order to fully carry out its policy of giving the utmost in service, finds its present quarters at 2250 Michigan avenue inadequate.

VESTA EMPLOYEES TO BENEFIT BY PROFIT SHARING.

The Vesta Accumulator Co., Chicago, maker of Vesta storage batteries and electrical equipment, has put into effect a new plan of sharing with its employees whereby the profits will be distributed each year at New Years, beginning with this year.

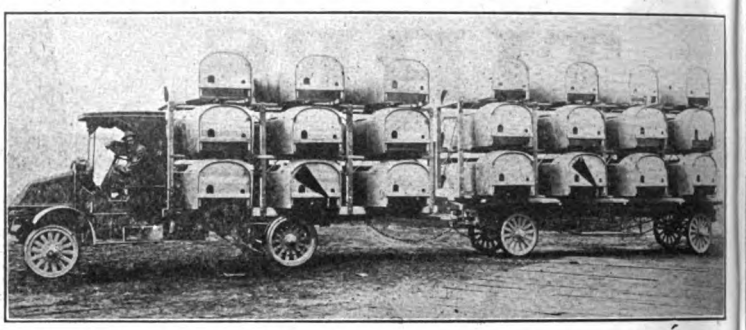
The profit sharing idea is not new with the Vesta company, but it has heretofore been done on the basis of a percentage of each year's profits. The new plan puts the matter on a more definite basis, based upon the length of time the employee has been in the service of the company. It starts by apportioning an amount equal to one per cent. of salary to all employees who have worked less than one year, and each succeeding year that the employee remains in service an additional per cent. is added until a maximum of 10 per cent. is reached for 10 years' service.

Many of the Vesta company's employees were engaged in military activities during the war and the percentage of these has been figured so as to give them credit for all the time they were in government service.

Hauling Truck Bodies by Trailer Found Economical by Westcott Motor Co.

J. S. WAGNER Transfer & Storage Co., Springfield, O., is a trucking concern which, to meet a particular haulage need, has just purchased from the Troy Wagon Works Co., Troy, O., a three-ton trailer with a 22-foot chassis for use in connection with a truck which has a body equipped with special racks.

During the recent freight congestion, the Westcott Motor Co. of Springfield had great trouble in getting bodies from Muncie, Ind., as oftentimes the bodies were a week on the way when sent by rail. To meet this condition the Westcott company called to its aid the Wagner Transfer Co., and the accompanying picture shows the truck and trailer outfit loaded with 21 light six Westcott touring car bodies, the number that could be loaded on a 40-foot railroad car. These bodies were transported from the Westcott body factory at Muncie, to Springfield, an approximate run of 100 miles each way. The round trip is made in 20 hours, this including loading and unloading time. The average hourly mileage is 15 miles. This makes a saving in time of six days.



Tractor and Troy Trailer That Hauls Loads of 21 Auto Bodies from Muncie, Ind., to Springfield, O.

In bad weather the bodies are protected by a large canvas envelope, which fits closely over the loads on both truck and trailer. The bodies average to weigh 500 pounds each, making the total load for truck and trailer 10,500 pounds, but in this case it is the bulkiness rather than the weight which governs the amount of the load.

The traffic manager of the Westcott company states that while it costs a little more to ship these bodies by truck and trailer than by railroad, the fact that deliveries are promptly made more than offsets the extra expense.

CAPITAL INCREASED.

The capital of the Western Die & Stamping Works, 720 Fulton street, Chicago, has been increased from $7000 to $12,000.

The Curtiss Southwest Airplane Co., Tulsa, Okla., manufacturer of aircraft, announces an increase in capital from $10,000 to $200,000.

The Chicago Steel Tank Co. has increased its stock to $25,000.

India Tire & Rubber Co., Akron, O., from $1,500,000 to $5,000,000.

CROFOOT GEAR WORKS BUYS LARGE PLANT.

The Crofoot Gear Works, Inc., Cambridge, Mass., has purchased of the Mason Regulator Co., Dorchester, a large plant containing approximately 50,000 square feet of floor space and about 87,000 feet of land on Hyde Park avenue in the Hyde Park district of Boston.

The Crofoot company will occupy these premises early this year and will, it is understood, employ 200 hands. This factory is considered one of the finest industrial plants in Boston, being of first class construction and equipped with every modern convenience. The cost of construction was more than $200,000 and the purchase price is said to be near that figure.

Train Load of Reo "Speedwagons," Said to Be the Largest Single Shipment Ever Made, Leaving Lansing, Mich., for Fort Worth, Tex. The Train Carried 100 Machines.

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24 LESLIE'S WEEKLY October 25, 1919

This advertisement appeared in Leslie's on Oct. 25th, 1919, and in Collier's on Oct 4th, 1919.

When Your Springs Break
put on
VULCAN
QUALITY
The Replacement Spring
IN THE UNITED STATES OF AMERICA
A. D. 1919

There are some seven thousand good dealers in parts and supplies for the motor car who deem it wise to handle quality and render service.

From their stock they replace your weak or broken spring with an exact duplicate of VULCAN quality.

Our name plate is for your protection.

Jenkins Vulcan Spring Co.
FACTORY
RICHMOND, INDIANA

In conducting a persistent national advertising campaign directed to the *consumer*, our aim is to improve and extend the business of *the VULCAN DEALER.*

Branches
Atlanta, Ga.. Kansas City, Mo.
Boston, Mass., Minneapolis, Minn.
Dallas, Tex. Reading, Pa.
St. Louis, Mo.

IN EVERY TOWN for EVERY CAR

Jenkins VULCAN Spring Co.
Factory Richmond, Ind.

(When Writing to Advertisers, Please Mention the Accessory and Garage Journal.)

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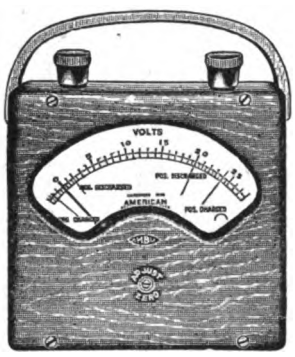
AMBU BATTERY SHOP NECESSITIES GO HAND IN HAND WITH INCREASED PRODUCTION AND GREATER PROFITS

KNOW WHICH SET OF PLATES ARE IN BAD CONDITION WITHOUT OPENING BATTERY

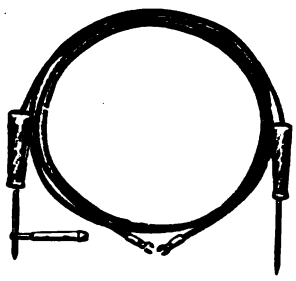
AMBU CADMIUM VOLTMETER AND LEADS TELL YOU QUICKLY



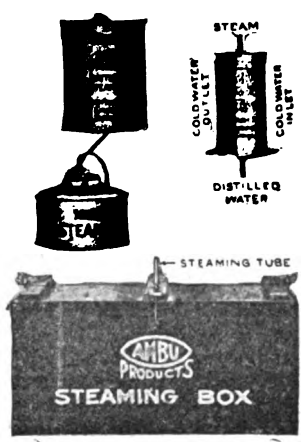
Ambu Cadmium Leads are two heavily insulated flexible wires with brass prods and wooden handles, and forked terminals for attaching to the voltmeter. Fastened at right angles to one of the brass prods is a rod of chemically pure cadmium. With them you have the means to make tests in finding out which set of battery plates is functioning properly and whether they are positive or negative plates. No Battery should be sent out of your shop until a Cadmium Test shows that both positive and negative plates are fully charged and ready to give good service.

In order to make accurate Cadmium Tests you must have a fine reading Voltmeter.

The AMBU CADMIUM VOLTMETER is made especially for Cadmium Tests, and is, therefore, absolutely certain to give you accurate results. A complete instruction book for making Cadmium Tests goes with each instrument.



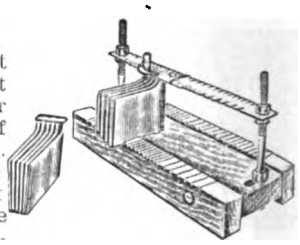
Voltmeter with Cadmium Leads.....$25.00
Voltmeter, only..... 22.50
Cadmium Leads, only..... 3.25



AMBU BATTERY STEAMER

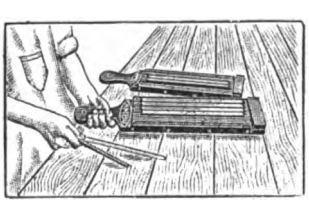
Softens the sealing compound in a few minutes so that it can be easily removed. Works while you are busy elsewhere. No chance to burn the battery top cover as with a flame. Supplied either with or without condenser for making distilled water for batteries. Type "A," with steaming box, $52. Type "B," steam direct into cell, $25. Condenser with either of above, $12.50 extra.

AMBU PLATE BURNING RACKS



Holds plates at exactly right spacing and absolutely upright when burning in new ones or attaching new strap. Saves half the time of any other method. Attachments fit around plate lugs permit puddling lead. No iron touches the bottom of the plates. Made in two sizes—smaller one takes two groups—⅛-in. and thin plates—and large size takes 95% of all types, including the two sizes cared for in the small rack. Every shop needs these. Small size $7.50. Large size $12.50.

AMBU BURNING LEAD MOULD



In every shop there is an accumulation of scrap lead from old plates, post drillings, etc. Save this scrap and use it in lead burning. The Ambu Lead Mould gives a very handy sized burning lead, absolutely free from air holes.

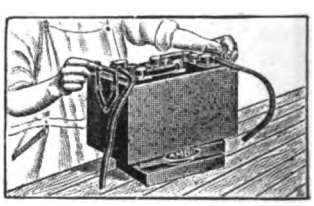
Price, each.....$1.50
Price, per pair..... 2.50

AMBU BATTERY CARRIER

Enables you to carry a battery like a suitcase, with the least strain on your arms. One man can carry two batteries at once, one in each hand. Also useful in lifting battery in and out of the car.

Price, each.....$1.50
Price, per pair..... 2.50

AMBU BATTERY TURNTABLE



Nobody moves a battery around unnecessarily on account of its great weight. Yet, in lead burning, sealing and repairing or painting the case, it is necessary to get at all sides of the battery. The Ambu Turntable enables the repairman to get at all sides of a battery when making repairs and eliminates the tiresome lifting and turning by hand.

Price, each.....$2.50

Other Ambu Battery Shop Appliances upon request

Order from Your Jobber or Direct
APPLIANCE DIVISION
AMERICAN BUREAU OF ENGINEERING
109 E. 16th Street
Chicago, Ill., U. S. A.
Makers of the Famous AMBU TROUBLE SHOOTER

Write for List of Ambu Books

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To Wholesale Tire Distributors

We want the one best WHOLESALE TIRE DISTRIBU in each territory not now occupied, to write for ou clusive proposition!

To Retail Tire Dealers

Our new plan of having a factory branch—or an exclu wholesale distributor in every important trade center ables you to get STERLING TIRES when you v them—and at our best factory price.

Why are STERLING TIRES *so dependabl*

Twelve years of successful experience!
Highest quality material—and plenty of it!
A sincere desire to make the best tire possible!

LONG experience alone is not a sufficient guarantee that a tire will be made as good as it is possible to make it.

Highest quality of material and plenty of it is necessary to make a thoroughly dependable tire, but even this added to long experience, will not insure long life in a tire—and satisfaction to the user.

Experience counts for much, and good materials are essential; but the one thing that crystalizes both these factors and develops them into a good tire, is the earnest desire of the manufacturer—and each individual workman, to put *"Sterling Conscience"* and *"Sterling Character"* and *"Sterling Dependability"* into every STERLING TIRE!

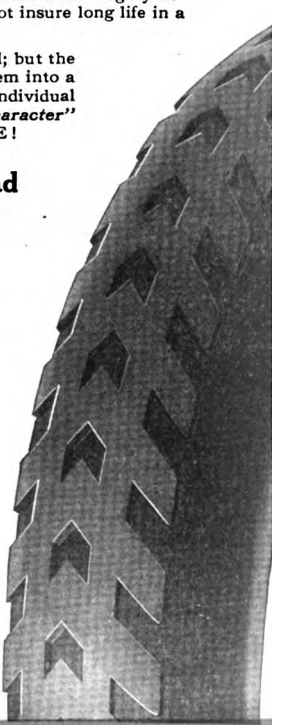
Vacuum Tread, Non-Skid -:- Plain Tread

Cords and Fabrics

STERLING CORDS have never been excelled by any cord tire made—and seldom equalled.

STERLING FABRICS are like old friends; they are dependable.

STERLING SEAMLESS RED TUBES are made of pure gum. A section will float in water. Only the highest quality of pure rubber will float.



Sterling Tires

STERLING TIRE CORPORATION
Rutherford, New Jersey, U.S.A.

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Foreign Trade Mark Piracy Cases

THE American Manufacturers' Export association, through its patent and trade mark committee, has taken action with a view to bringing about relief in the serious situation of trade mark piracy. Acting with the National Automobile Chamber of Commerce, an appeal has been sent to the state department at Washington asking the United States ambassador at Portugal to protect the interests of those manufacturers whose trade marks were appropriated by Manuel Silva Carmo of Oporto, Portugal. This, under Portuguese law, he is entitled to do, although it is indicated that an opportunity is granted for the interposition of objections by any whose interests may be injured.

The American Manufacturers' Export association has repeatedly warned exporters of the danger of doing business without protecting their trade marks. The Portuguese registration of American trade names was discovered by an international patent attorney upon his attempt to register the names Jordan and Mercer at Oporto. Not alone was it found that these names had already been entered for registration by Carmo, but that a long list of others was equally endangered, so far as their real owners are concerned. Among those reported by cable are: Chandler, Bartholomew, Velie, Cole, Grant, Chalmers, Paige, Auburn, McFarlan, Saxon, Kissel, Dorris, Stutz, Mitchell, Moline, Hackett, Maxwell, Monroe, Chevrolet, Lexington, Winton, National, Stearns, Westcott, Hal, White, Moline Plow, Jackson, Haynes, Elkhart, Oakland —in all there were 43.

The pirating of American trade marks is not limited to any particular country. Hundreds of American trade marks are appropriated throughout the world. Only recently the registration of the words "India Rubber" as a trade mark in Argentina was successfully opposed. If this trade mark had not been registered it would have enabled the person who registered this mark to confiscate any goods shipped into Argentina marked with the words "India Rubber."

Only a few weeks ago an attempt was made in Spain to register the trade mark "Peerless," "Selden" and "F. W. D." for automobile trucks, "Corona" for typewriters, "3-in-1" oil and "Havoline" for lubricants. In Cuba, within the last month, "Diamond Grid" for storage batteries, "Kirschbaum" clothes, "Fashion Park" cloth, "Kissel Kar" and "McFarlan;" "Commerce Trucks" in Uruguay; "Coca-Cola" in Japan; "A. C." spark plugs in Japan; "Marmon" and "Stutz" in the Argentine Republic. The list could be added to indefinitely.

It is stated, however, that in view of the patent and trade mark provisions of the peace treaty, it will be possible upon ratification of the treaty to recover all the trade marks pirated in Portugal, owing to an extension of the International Trade Mark convention, to which this country is a party.

AN ENGLAND WITHOUT RAILS.

Brigadier-General Charles B. Drake, chief of the United States army motor transport corps, predicts that England is destined within a few years to become "a nation without railways, or with railways supplementing a highly developed system of motor transportation." This forecast can be made with reason after a study of the recent railway tie up in England.

"Because of the efficiency of the system of transportation by motor that was devised under the compulsion of necessity," says General Drake, "the life of the nation was not thrown out of joint entirely and the strike itself, in consequence, fizzled out."

CARS IN THE PHILIPPINES.

During the past year of record there were 4326 cars of 144 different makes registered in the Philippine bureau of public works, which has the oversight of the licensing of motor vehicles in those islands. Considering the most popular car from the viewpoint of passenger capacity, the five-passenger car stands far in advance, with a total of 2153 cars. The seven-passenger ranks second with 1171 registrations; next in order come the two-passenger, 459; four-passenger, 181; eight-passenger, 108; three-passenger, 107; six-passenger, 94; 10-passenger, 37; nine-passenger, 16.

WILL DEAL IN AUTOMOBILES.

The Eagle Star & British Dominions of London, England, is to open an automobile department through its United States manager, Fred S. James & Co.

Canadian Programme of General Motors

The General Motors Corporation is extending its Canadian construction programme. The already extensive building operations now in progress at Walkersville, Ont., is being expanded to permit of the manufacture of transmissions. Howard E. Blood, general manager of the Canadian Products, Ltd., the Canadian subsidiary of the General Motors Corporation, recently announced that an additional department will be added at Walkersville to those already planned. Plant No. 1 will be used for the manufacture of automobile motors and for office space. Plant No. 2 will be used for production of axles and tools.

The plants are of most modern construction. There is being shown an increasing tendency to make more desirable working conditions and the Canadian Products plant is an outstanding example of this. A lighting system of maximum efficiency is being installed throughout the various buildings, and in addition to this, ceilings and structural supports are painted white. Ventilation is also provided along scientific lines. The power and heating plant, costing approximately $175,000, is nearing completion. Construction of huge oil tanks to hold 60,000 gallons is under way at the rear of plant No. 2. A maintenance building for the repair of electric motors and plant equipment will be built.

The Walkerville site is 38 acres in extent. The expenditure there is estimated at $6,000,000, and the entire appropriation of the corporation for extensions this year in the United States and Canada was $37,398,000.

MOTOR ROAD FOR BRAZIL.

An improved automobile road is being constructed between Rio de Janeiro and Petropolis, Brazil, and this highway, 25 miles long, is expected to prove one of the most popular drives in South America, as it affords fine panoramas of the surrounding country.

Cuba is discarding the historic two-wheeled mule cart for the American motor trucks in connection with the big sugar industries.

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FREE
CURTIS AIR
FREE FROM OIL

The Curtis Sign is 10x14 inches—baked enamel on steel. Furnished FREE with every Curtis Garage Air Compressor—can not be had in any other way.

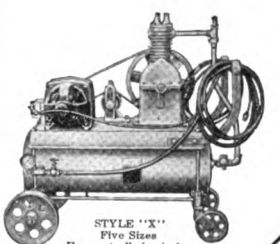
Curtis Free Air Service Brings You New Patrons and Increased Profits

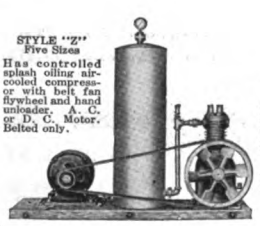
It is generally recognized that compressed air to fill tires frequently carries oil and that this oil has a deteriorating effect on inner tubes. For this reason motorists are discriminating in their use of "free air service"—and are on the lookout for the Curtis sign because they know that Curtis Air is free from oil. It may be that the installation of the CURTIS outfit will be the beginning of a new era of profit-making for you.

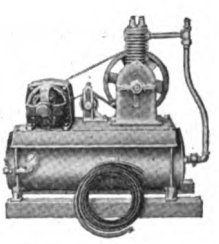
Curtis Air—Free From Oil

Curtis Air Compressors, through a patented construction, prevent oil from getting into the air line—therefore the air delivered is clean, pure and free from oil. The many other exclusive points of superiority, together with the simplicity, sturdiness and dependability of Curtis Compressors make them the popular choice everywhere. With the two new outfits illustrated—Style "Y" and Style "Z"—the Curtis line is now complete, offering a suitable compressor to meet every requirement. Ask your jobber or write us for illustrated literature describing the different sizes and types of outfits.

CURTIS PNEUMATIC MACHINERY CO.
1621 Kienlen Avenue St. Louis, Missouri
Branch Office: 531-A Hudson Terminal, New York City







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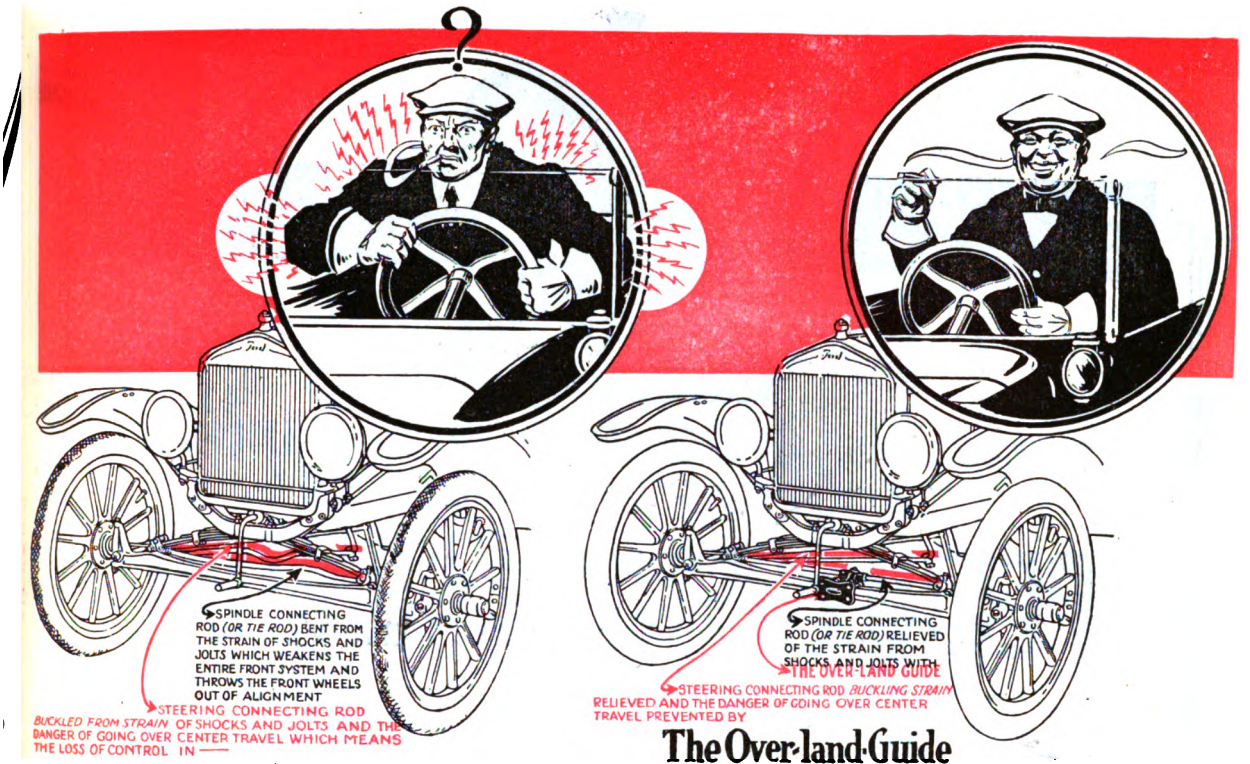

A Ford Controlling Itself

The Over-land Guide PATENTED *Controlling* the Ford

The OVER-LAND GUIDE Will Do It

When a Ford car or truck is equipped with the Over-Land Guide the driver can steer the vehicle with the tips of his fingers.

Over rocky or hilly roads, through sand or gravel, mud holes or washouts on city streets or rutty country roads the Over-Land Guide will keep the wheels in alignment.

It protects the entire front system and steering mechanism and the steering gears up to the wheel from undue wear and breakage. It will save parts and repairs and insures the longest possible service life of any Ford car or truck.

It will eliminate the danger of ditching and collision with the possibility of fatal results to the occupants and the destruction of the car even though the steering mechanism be broken or failed to work.

There is no danger from a blowout of a front tire even though the Ford car or truck is driven at high speed, as the Over-Land Guide will hold the machine to its course.

The Over-Land Guide stops the wabbling, scooting and creeping of the front wheels. There is no strain on the arms or shoulders of the driver. It does away with the strain and stresses on the steering mechanism. It saves time. It is life and car insurance of the highest order and affords a degree of security that makes it worth a hundred times the cost to any owner.

It is strongly made, neat and compact, requiring no upkeep. It will last longer than the car or truck and always saves and serves. It will not get out of order or fail to operate properly.

THERE IS NO EQUIPMENT MADE FOR THE FORD CAR OR TRUCK THAT IS MORE PRACTICAL OR NECESSARY. NONE THAT PROTECTS SO MANY PARTS AND SAVES SO MANY REPAIRS. THERE IS NONE THAT ADDS SO MUCH TO SAFETY AND SERVICE. ESTIMATE THE SAVINGS, ADDED EFFICIENCY AND PROTECTION AND YOU WILL AGREE THAT THE OVER-LAND GUIDE SHOULD BE ON EVERY FORD CAR OR TRUCK.

The OVER-LAND GUIDE protects these parts against breakage, undue wear and repair. Spindle connecting rod (or tie rod.) Spindle body arms and bushings. Spindle body and bushings. Ball and roller bearings and hub. Steering connecting rod and ball joints. Steering gear ball arms. Steering post bracket, bushing and bolts. Steering post. Steering gear pinion. Steering gear drive pinions. Steering gear internal gear case and bushings.

Also helps to keep axle from breaking or bending—and may save the entire car from destruction.

JOBBERS AND DEALERS:—The Over-Land Guide is a wonder seller. The sales are limited only to the number of Ford cars and trucks in use. Sold under an iron clad guarantee. It is priced right and the discounts are liberal. Write today for proposition and discounts.

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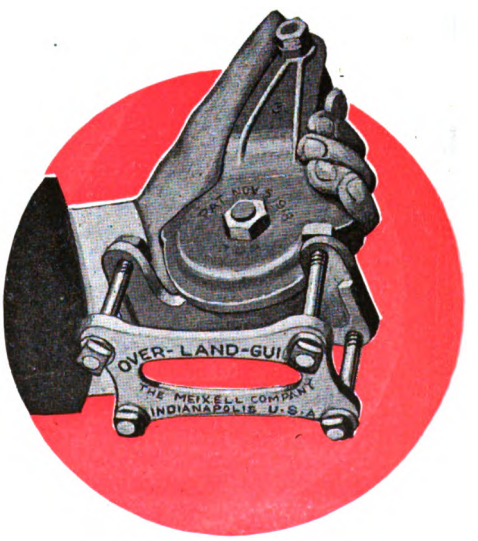
THIS BROAD GUARANTEE IS PART OF EVERY SALE.

The Over-Land Guide properly installed (which only takes a few minutes) is guaranteed to do all we claim. Your customers can use it for twenty days, and if at the end of that time they are not satisfied, money will be refunded upon its return.



The OVER-LAND GUIDE bolts to the center of the front axle and the center of the spindle connecting rod (or tie rod), securely relieving the vibration and strain in the spindle connecting rod (or tie rod) and the entire front system, and the steering mechanism up to the steering wheel. Can be attached in a few minutes by anyone.

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THIS MEANS COMPLETE RADIATION FOR FORD ENGINES

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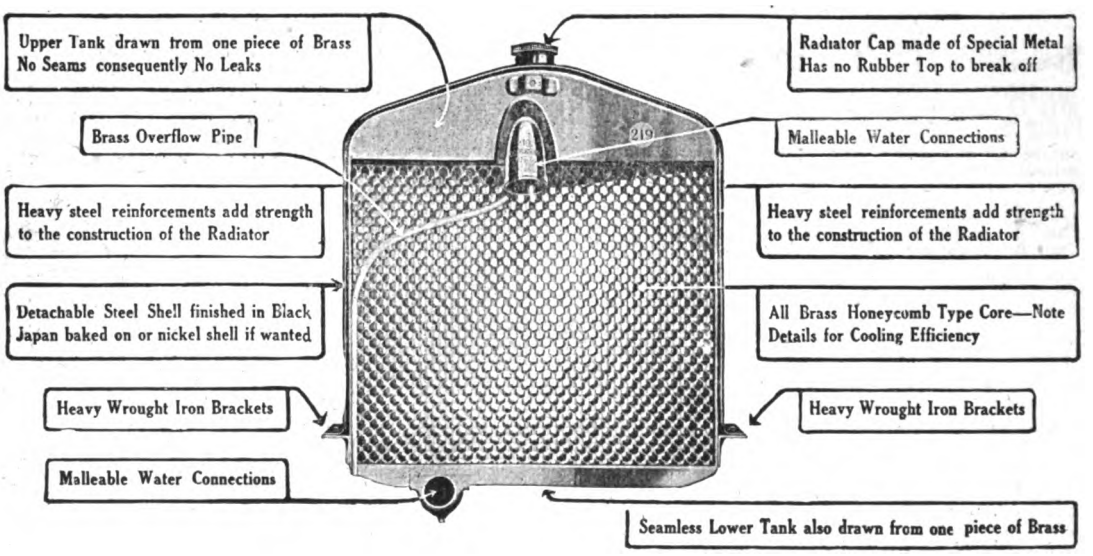

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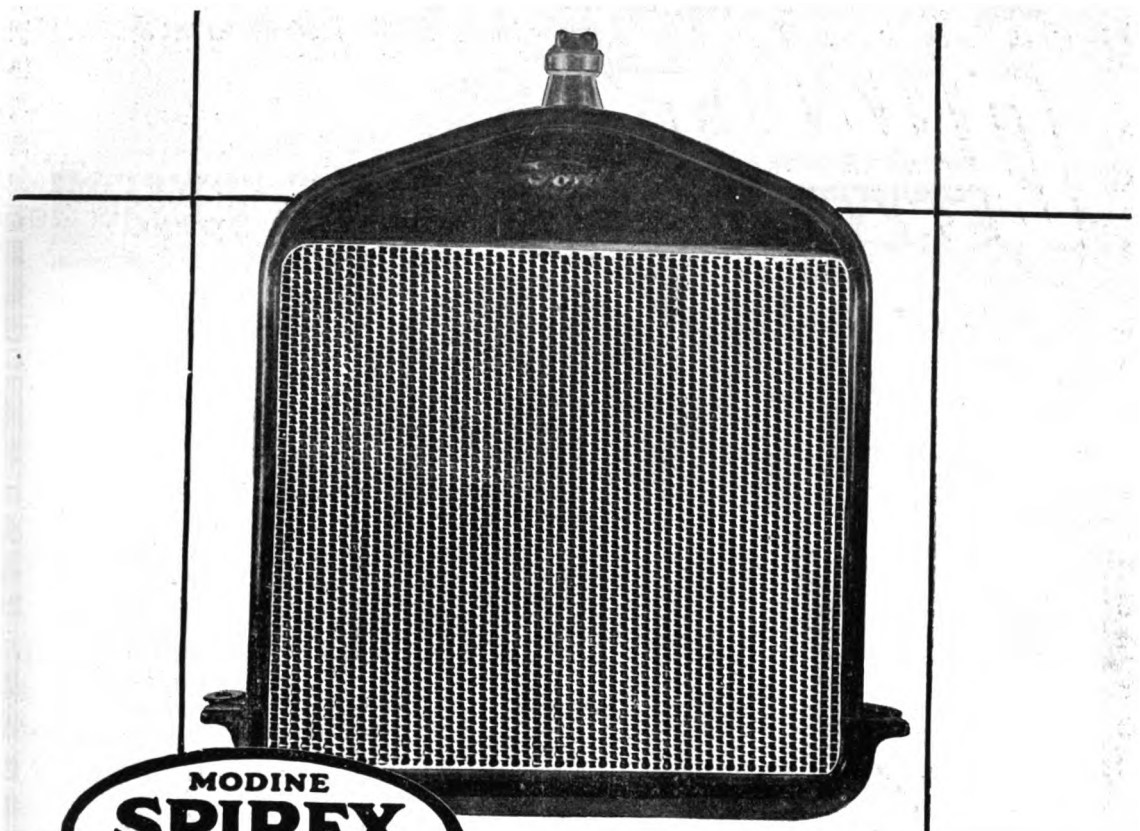

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You can also get a special SPIREX for Fords that has a 67% larger cooling capacity.

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Racine, Wisconsin

THE ZINKE CO., General Sales Agents
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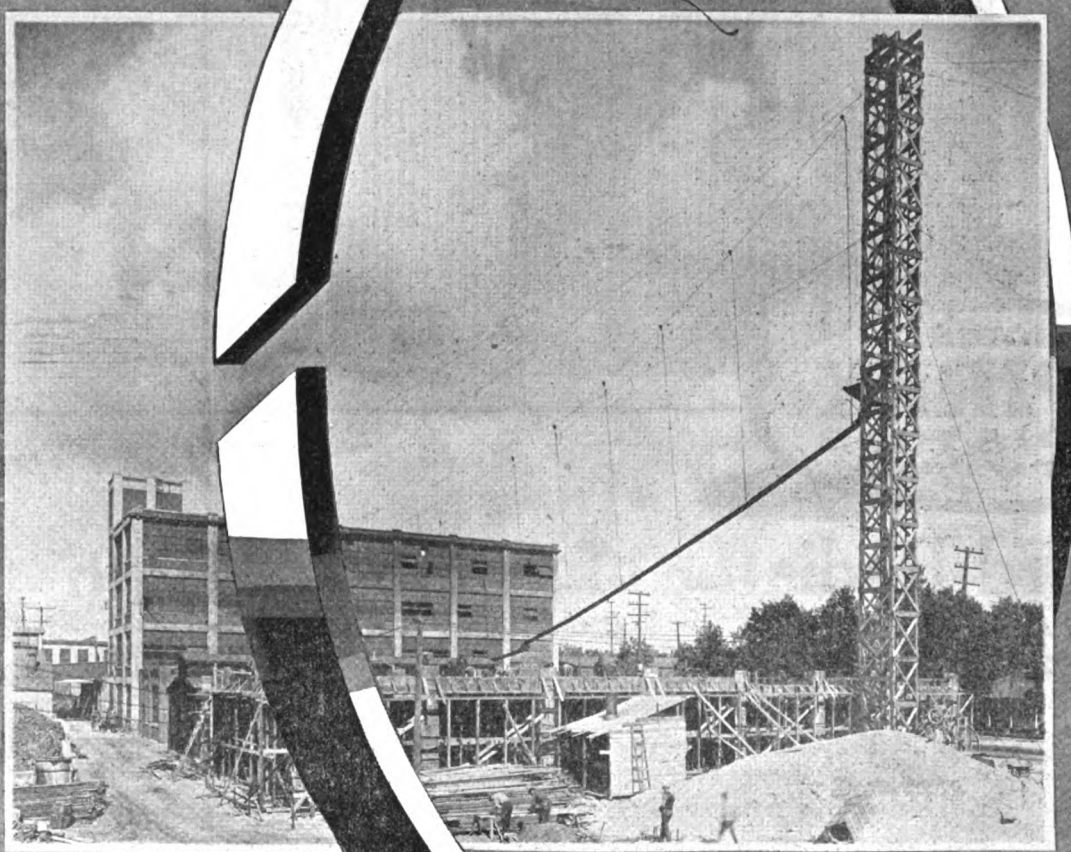

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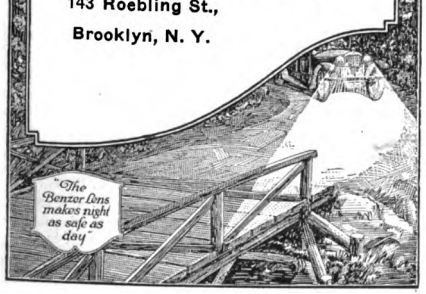

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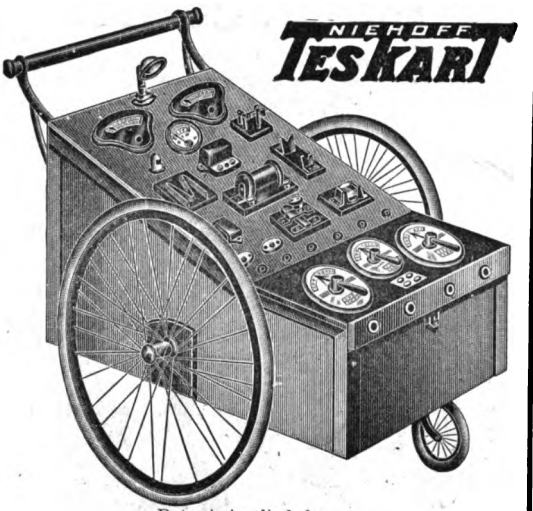

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The NIEHOFF TEST KART is the latest achievement in the way of a complete Testing Outfit for locating all electrical trouble in the ignition, starter, generator, battery, wiring, relays, meters, in fact anything in connection with the electrical mechanism of an automobile. It will also recharge Ford magnets on the car. This outfit is a necessity in every repair shop. With it you can render a service to the motorist that will insure you increased business. It will enable you to inform the motorist intelligently, just what has to be done and give him an estimate as to the approximate cost.

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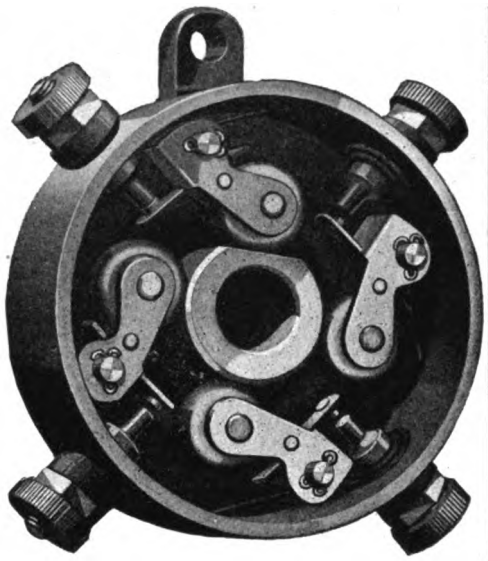
For Cold Weather Starting

FOR FORD CARS



FOR FORDSON TRACTORS

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TIMER

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With the new Duntley magneto break timer you are assured perfect ignition 100% of the time, because

It is self-cleaning.

It requires no lubrication.

It has no whirling contacts to jump over a metal segment and wear out or become insulated with oil.

It is equipped with genuine tungsten points that will not corrode, pit or burn out.

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Dealer write for our proposition today, it is mighty interesting

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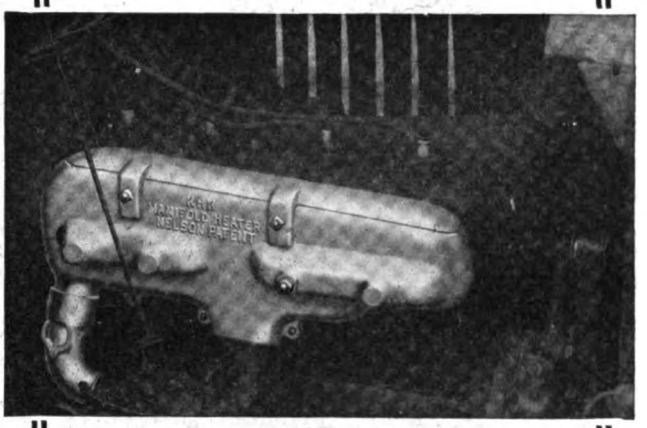

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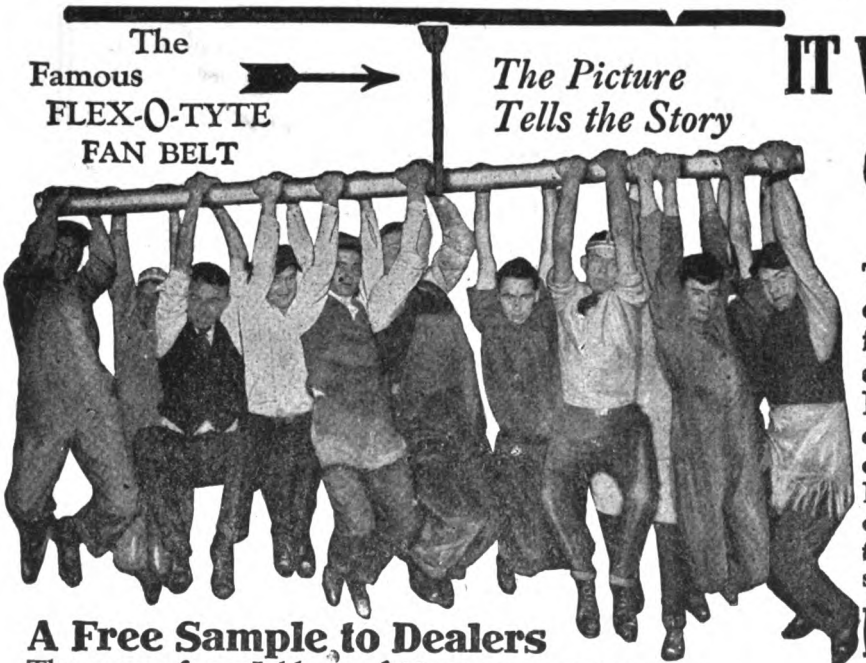

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Every Ford owner should read "Transforming the Ford." Tells how to secure smooth, positive brake action that no car can excel. A little "transforming" and your car will glide to a quick, quiet stop without the annoying, irritating clatter that you now experience. It will go into low or reverse without jumping or jerking, and you can pick up speed with all the smoothness and ease of a high-priced car. All accomplished without additional expense and the result is a clear saving of 75 per cent. in one direction alone. "Transforming the Ford" tells how it's done. Send for your copy this very minute. 10c stamps or coin. **CORMACK CO., Dept. 57, 500 Fifth Ave., New York City.**

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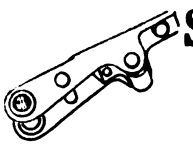

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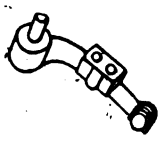

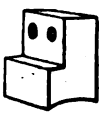

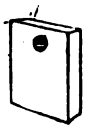

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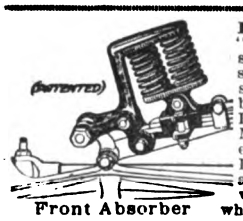

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AUTO PARTS.
50% to 90% Off List.
24 Hour Service. Unlimited Stock.
Pope-Hartford, Columbia, Reo, Overland and 200 other makes.

Motors,	$20.00 up	E. Presto Tanks,	$4.00
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Cylinders,	$3.00 up	Bearings,	50c up
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1000 Other PARTS Bargains.
If you want any part not listed here.
Write Us—We Have It.

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$12 Diamond Bumpers.....$5.50
Jobbers in Bankrupt Auto Supplies.

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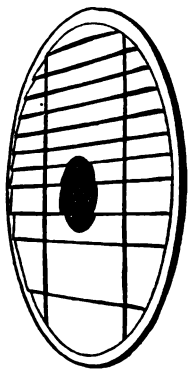

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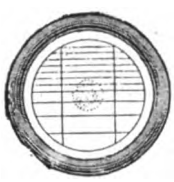
The Safest Lens for Dealers - - The Safest Lens for Motorists

Any good law that helps make motoring better and safer means good business for the dealer. You, as a good dealer, ought to welcome the anti-glare laws passed for the good of motoring. You can make these laws profitable by handling the right kind of lens. And the best lens from the motorist's point of view, as well as your own is



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CRAVATH LONG DISTANCE TYPE

No Glare
No Dimmers
74% More Road Brightness Rays Thrown 1/3 of a Mile.
Never More Than Waist High.

Write for our proposition.

This is the lens that makes the road safe by giving 74% more road brightness just waist high for one-third mile ahead. It throws the rays forward and downward without glaring into the faces of people coming head-on.

By stocking the Osgood Lens you save yourself the nuisance and grief of carrying a bewildering assortment of different sizes and different makes, and the Osgood is the one lens that meets every requirement of the law, fits every car and every size.

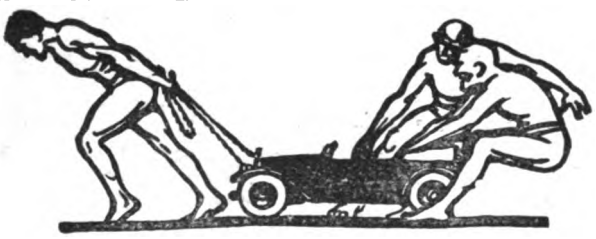
Another thing, complete stocks of Osgood Lenses are now on hand and ready for instant delivery. Prices, $2.90 to $4.50, according to size.

You have all the sales arguments on your side if you handle the Osgood. It outsells all others combined because it does not waste the light like colored glass or cut it in two like old-fashioned dimmers.

With the Osgood in stock you've got the goods and you're ready for all comers. And the prices are right, and your profits are right. Clean stock, quick delivery and complete satisfaction.

These are the facts and the arguments that have made the Osgood Lens the best lens proposition from the dealer's side of the fence throughout the country.

Osgood Lens & Supply Co., Mfrs. Harris Trust Bld., Chicago



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Transmissions and differentials are the go-betweens in the constant fight of **Power** against **Resistance.** Here the battle takes place—where the two forces meet.

DIXON'S GRAPHITE Transmission and Differential LUBRICANT

is made specially to meet a difficult lubricating problem like that.

It stands to its post under the tremendous pressure that must be met and conquers in this gruelling work.

It stays on the gears as faithfully when they are not moving as when they are in action.

They will build better lubricating business for you and satisfy your customers.

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ALUMINUM SOLDER

For filling defective aluminum castings, mending crank cases, engine bases, aluminum pattern work, or soldering aluminum parts.

Requires no flux or acid, and is used with an ordinary soldering iron or blow-torch.

Flows at a low melting point and machines up perfectly.

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With our ten years experience in manufacturing Aluminum Solder, our facilities for immediate shipments of your orders; and our reasonable prices; coupled with a record of having never received a single complaint against our material, we can assure you of satisfactory service.

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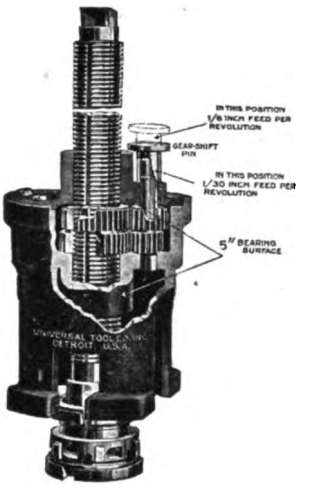

Tests Have Proved It

The Universal Cylinder Reboring Tool has been tested by the manufacturers of America's leading cars.

Today, knowing that it is a perfected machine, they endorse, recommend and use it.

See current issue Auto Trade Directory and Chilton's Directory for list of jobbers carrying stock. Write for Catalog.

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The Universal Tool Company, Inc.
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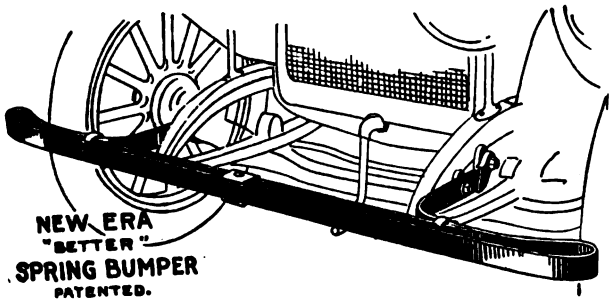
Manufacturers Universal Cylinder Reboring Tools for all Automobile Motors and Main Bearing Replacement Equipment for Fords and Fordsons

The Spring Bumper That Protects The Car "Better"



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"Better" Spring Bumpers Ignore Bumps

Attach Quickly —both— Front and Rear

Our Standard Hook-on "Better" Spring Bumpers are interchangeable and fit all makes of cars without bother or delay in exchange. A firm resiliency makes these Bumpers preferable and their rigidity of strength combined with neatness in appearance gives them a true leadership in the field of Spring Bumper Construction.
Lighter—neater—stronger.
Acknowledged by leading dealers as "Better."
Write for 1920 condensed catalog and nearest jobber's address.

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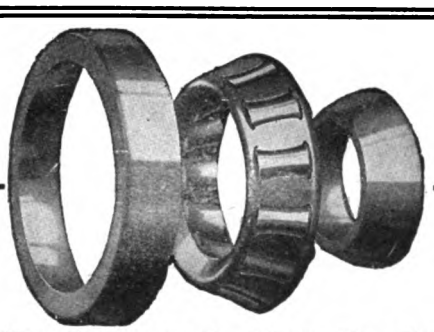
1190 Hamilton Ave., Grand Rapids, Mich.



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For Front Wheels

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F, FA, Baby Grand, 490	ALLEN 37
OVERLAND	AUBURN 1916-17-18-19
81, 83, 83B, 90, 4	SCRIPPS-BOOTH 39
ROAMER	VIM TRUCK 21, 21
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The Shafer is the only 100% load capacity bearing that is made. It stands equally well top load and side thrust. It is an exact replacement for cup and cone bearings, as well as others—is easily installed—automatically self-aligning.
Because the Shafer **concave** rollers are placed at a 20-degree angle against **convex** surfaces of outer race and inner cone they stand every shock on the full length of each roller regardless from what direction the blow comes.
Give your customers better service by supplying Shafer Bearings for their cars. Write for details.

GEO. D. BAILEY CO.
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Self Aligning SHAFER Roller Bearing
100% Load Capacity From Any Angle

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The Most Remarkable Automobile Top Material

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NON-CRACKING—NON-BLISTERING

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TRADE DRIDEK MARK REG

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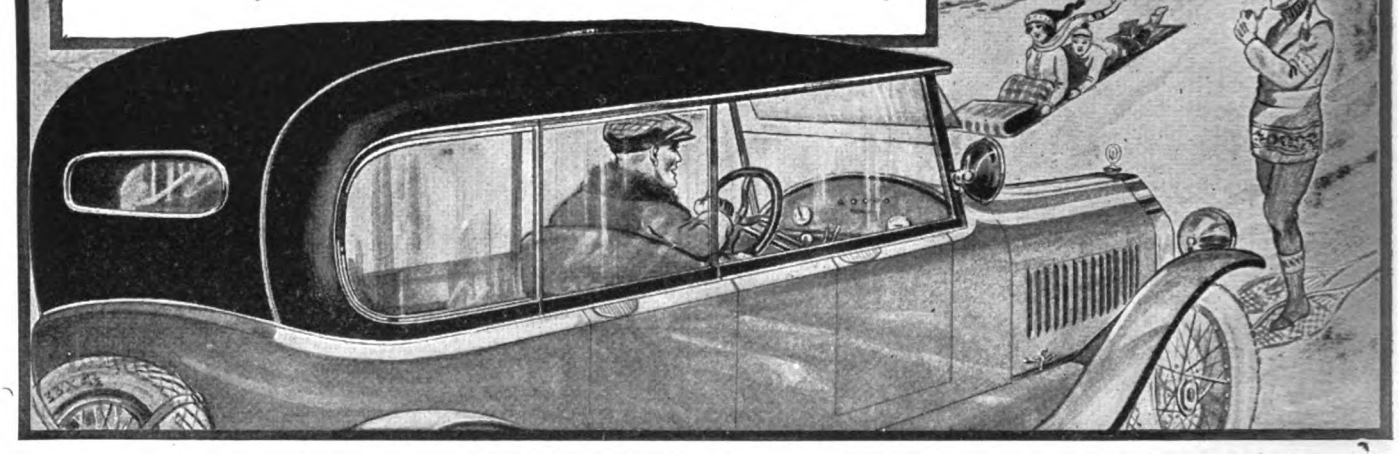
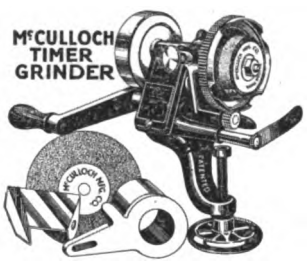


You will appreciate McCulloch Products

The name "McCulloch" on automobile ignition parts signifies products made by engineers in a machine and tool shop. Once used always used because they are dependable.

Replaces the old style roller. It slides instead of rolling, eliminating the extraordinary wear on the rotor pin.

List 60c.



Will grind the worn out timers back to usefulness. Driven by hand or power. A necessity in any private or public garage.

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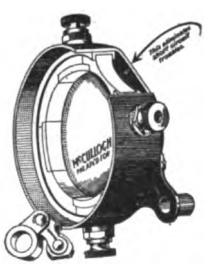

And the McCulloch Timer

A well made, accurate and simple timing device made right and perfect in every detail. The arrow points to the real feature.

Territory is open for McCulloch Timer Grinder. Dealers and Jobbers write for prospectus.

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INSIST UPON THE "RED CLOTH"

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SUFFOLK MANUFACTURING CO., INC., DEPT. D.
60 LONG WHARF BOSTON, MASS.

STANDEX GASOLINE GAUGE for FORD CAR or CHEVROLET "490"

"Accurate to the do:'

METERS fuel unerringly. Saves gasoline overcharge. Shows exact gasoline mileage. Tells at a glance how much gas you have to run on. To install, screw in filling hole. Never in the way, never need be removed from gasoline tank. Made for sedan or regular model. Price, $1.75. Gauge for Overland model Four ready soon.

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You can produce sales or inquiries with personal letters. Many concerns all over U. S. are profitably using Sales Letters we write. Send for *free* instructive booklet, "*Value of Sales Letters.*"

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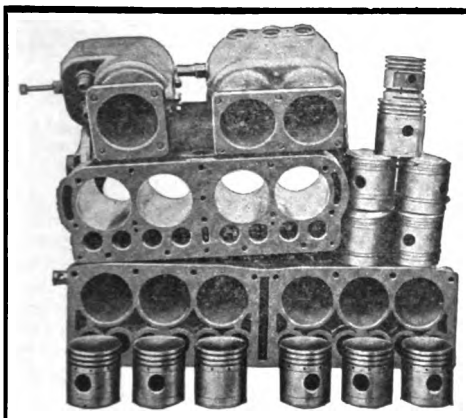

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Regrinding the cylinders, fitting new oversize pistons and rings on your Automobile, Truck, or Tractor, will restore the motor to its original efficiency. Write today for full particulars and standard price list.

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Make Money Equipping old Fords with classy Club Roadsters, Speedsters, Torpedo & Touring Models.

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1—Made of the highest grade acid resisting BRONZE.

2—LEAD COATED, adding additional protection from the acid.

3—The only 1 piece clip—gives absolute conductivity to both jaws.

4—No springs to break and allow clip to fall over and short circuit battery or open charging circuit.

5—The pointed teeth insure positive connection.

6—Jaws of clip open 1¼". Capacity 50 amperes.

7—The long legs allow clip to be used on batteries where connections are close together without danger of shorting.

8—Has a perfect terminal for wire connection which also protects wire from corrosion.

9—The long screw for wire connection acts as a stop, thus limiting the amount of pressure on the hinge of the clip and insures lasting tension.

10—Will outlast other clips several times.

PRICES: Less than 10, 25c. 10 to 100, 23c. 100 or more, 21c.

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Positive Proof of How It Fires

Just Show Him The Famous "Lead Pencil" Test

This simple demonstration will instantly convince even the most skeptical motorist that **Twin Fires** will banish all his troubles with spark plugs.

Take any lead pencil and you can convincingly prove to the troubled motorist that **Twin Fires** give two independent sparks—entirely different from any other spark plugs.

This test will prove to his sense of sight that with **Twin Fires** he will always get two distinct, hot, fat, and instant sparks—that if dirt, oil or carbon clogs one point—the other point continues to fire.

Show Him Twin Fires—Then You'll Equip His Engine

The handy **Twin Fire** demonstration outfit enables you to prove how this plug overcomes troubles from oil and from carbon, and how it increases power. When the motorist sees this he wants you to sell him a set.

Dealer Plan Sent to You On Request.

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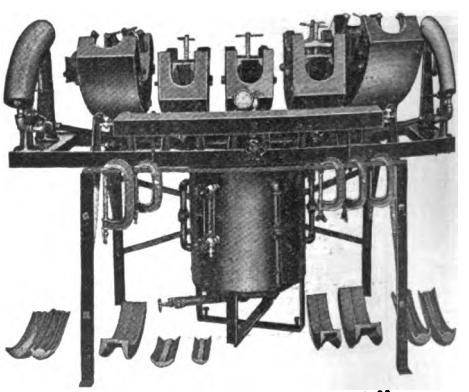
Business good and growing fast. Wonderful opportunity to get into a most profitable business. Hundreds of cars. Hundreds of customers. Our Free Tire REPAIRING MANUAL gives full particulars and shows how to do the most satisfactory work. Write today. Why slave your life away for others when your own name can go across the door and you be the proprietor and have others work for you. Vanderpool makes you successful and independent for life. Write today.



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Give the Motorist What He Wants

Public approval is the soundest possible basis upon which to build your business. For upward of 30 years we have been pre-eminent throughout the world in the manufacture of Electrical Measuring Instruments. Today, the

Weston. Model 354 **Ammeter**

which is advertised through the national publications with circulations totalling into the millions, is used on a very large percentage of the highest-grade domestic and foreign cars. You will increase your reputation and your trade if you install this standard Instrument on the cars of your customers.

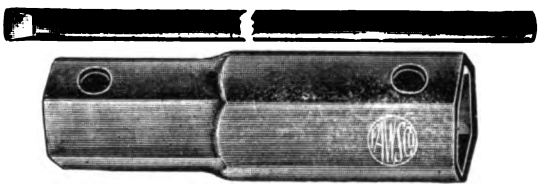
The Weston Ammeter furnishes the driver the only absolutely reliable means of knowing whether his generator is working properly and his storage battery receiving its proper charge. Write us—don't fool with inferior substitutes!

Weston Electrical Instrument Co.

103 Weston Avenue, Branch Offices in the Larger Cities. **Newark, N. J.**

FAWSCO SPARK PLUG WRENCHES

TUBULAR DRAWN STEEL



These wrenches are the highest grade coppered and nickel steel. Made in standard combinations of sizes. Complete with Bessemer steel pin.

No. 29x31—For ⅞ & 15/16" Plug Shells.....Each, $0.45
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Packed in individual boxes.

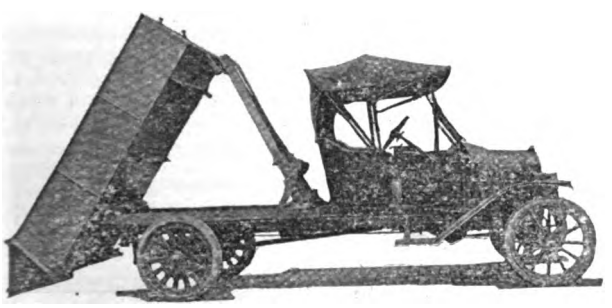
Ask for Circular.

27 WARREN ST. NEW YORK CITY — **J. H. FAW, Inc.** — **918 Hearst Bldg. SAN FRANCISCO**

THE PEERLESS HAND HOIST

Single Cable Quadruple Worm Gear Drive

For Any Make or Type of Truck.



A wonder in efficiency and speed. It will fit any chassis and body. Weighs but 200 pounds. Simple, fool proof, wholly dependable and will last for years in the hardest service.

Any one that can drive a truck can hoist the heaviest load to 30 or 50 degrees in the longest body in less than two minutes. The smaller the body and load the quicker the action.

But two gears are used, quadruple worm and gear (both machine cut) and housed to protect from dirt and dust. The single cable makes an even pull. Compact and can be installed without drilling holes in chassis frame. The body hitch is also furnished.

We specialize in building all-steel bodies for any need.

Write for complete information.

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OLDFIELD TIRES

"The Most Trustworthy TIRES Built"

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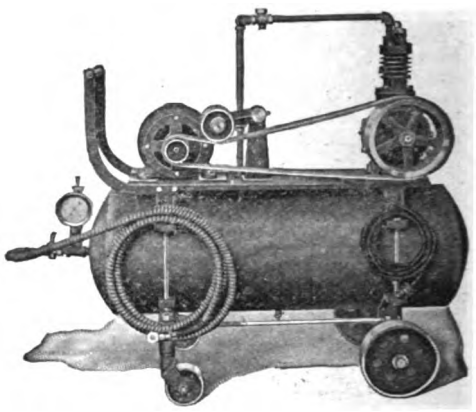
GARDNER AIR PUMPS

Result of 50 years manufacturing experience.

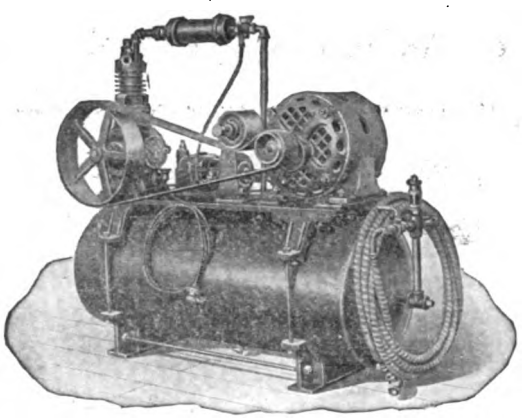
An inefficient air pump makes your air service expensive.
It hurts the quality of your service.
Makes a customer dissatisfied and hurts your business generally.

Install a GARDNER

It will pay for itself in a short time.
It is simple, rugged and efficient.
The fact that many filler stations supplying hundreds of car owners daily use the Gardner air pump is proof that experience had demonstrated it is economical.



GARDNER AIR WAGON



GARDNER AUTOMATIC UNIT

Made in Single and Two Stage Types

Variety of sizes ***Prompt shipment***

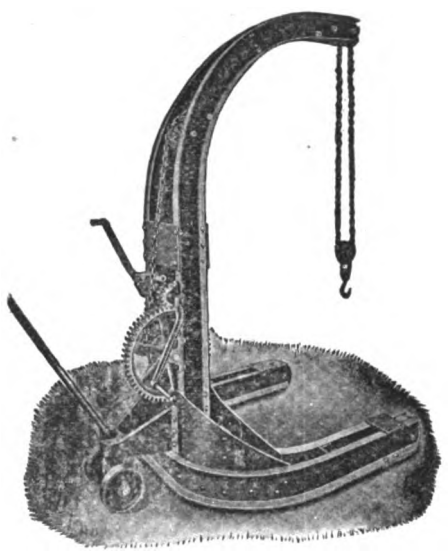
There is a Gardner Air Pump to meet the demands of every garage no matter how large or small.

Ask your jobber for prices.

THE GARDNER GOVERNOR COMPANY

138 Williamson Street, Quincy, Ill.

Garage Department



SAFE POWERFUL CHEAP

"LAFAYETTE PORTABLE STEEL CRANE"

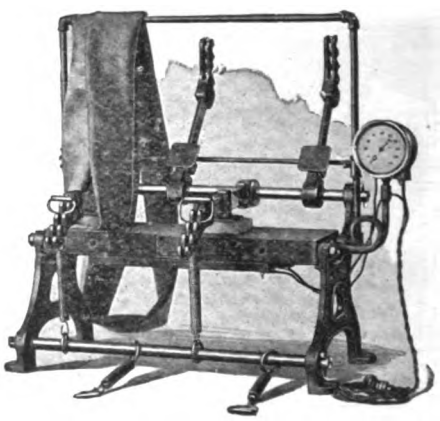
The war is over and we are ready again to fill orders promptly. Labor and materials are 100% higher than pre-war. Our advances are only 50%. It is steel. It will not break. Roller bearings. Low center of gravity and will not upset. Double locked. It is safe. It is a heavy, strong machine for heavy, rough work. It won't wear out in 100 years. For the thousands in use we have not furnished $100 worth of repairs in seven years. It will always invoice at cost. It is in every state and most foreign countries. The only successful steel crane made and standard everywhere. It saves its cost in a short time. No first class garage or shop is without them and none other should be. For sale by jobbers everywhere. If the jobbing men who call upon you do not have it listed, write direct to the manufacturers.

LAFAYETTE ENGINEERING COMPANY
LAFAYETTE, INDIANA.

Heintz Automatic Electric-Steam Vulcanizer

Generates steam by electricity, eliminating all fire and flame. When the desired amount of steam is generated the current is automatically turned off, then on again when the pressure falls a pound or two, in this way maintaining a perfect uniform working temperature.

ALWAYS SURE OF A PERFECT CURE.



USED AND RECOMMENDED BY THE LEADING TIRE MANUFACTURERS AND TIRE REPAIR SCHOOLS.

Write us for descriptive data.

JAMES C. HEINTZ and COMPANY
2069 East 9th St., Cleveland, Ohio.

(When Writing to Advertisers, Please Mention the Accessory and Garage Journal.)

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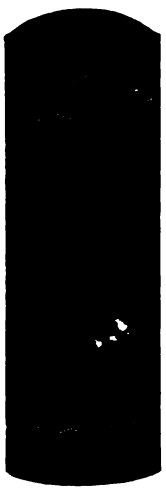


TANKS

The tightest, safest, strongest tank it is possible to construct by any known method. Process originated by us over twenty-five years ago

We also make a special portable emergency tank for filling tires. Throw it in your emergency car and take it with you

Gasoline and Oil Storage Tanks and Pumps

AIR-TIGHT STEEL TANK CO.

Main Office and Works

PITTSBURGH, PA.

"OHIO CARBON PRODUCTS"

"OHIO" **BRUSHES**

GARAGEMEN TAKE NOTICE

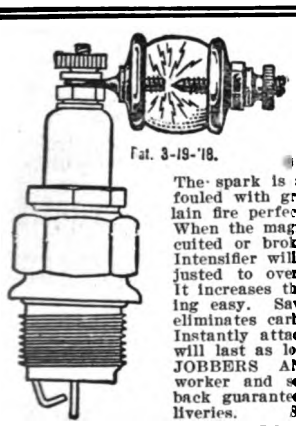
Write for Our No. 6 Car List for Information on New Cars

FOR AUTOMOBILE

STARTING MOTORS AND LIGHTING GENERATORS

THE OHIO CARBON COMPANY

1900 FULTON PLACE, CLEVELAND, O.



It Finds Ignition Troubles

Attached to Any Plug

Stops All Spark Plug Trouble

Universal and Marvel Spark Plug Intensifiers

Pat. 3-19-'18.

The spark is always visible. It will make a plug fouled with grease or carbon or with broken porcelain fire perfectly.

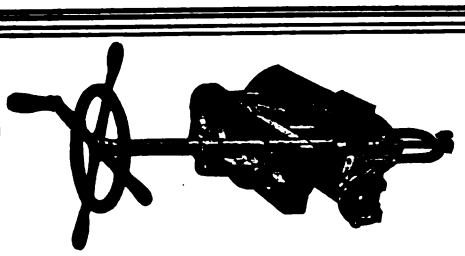
When the magneto is not working, a wire short circuited or broken, or the battery out of order, the Intensifier will prove it at a glance. It can be adjusted to overcome almost any ignition weakness. It increases the voltage and spark and makes starting easy. Saves in oil and gas. Adds to power, eliminates carbon and preserves plugs. Instantly attached to any screw terminal plug and will last as long as the car.

JOBBERS AND DEALERS—This is a wonder worker and sells at a glance. Sold on a money back guarantee. Liberal discounts and prompt deliveries. *Send for full information.*

UNIVERSAL MFG. and SALES COMPANY

554 West Harrison St. Chicago, Illinois

Repairmen, Listen!



Patented May 19, 1914; Dec 15, 1914; June 20, 1916; June 27.

The Heiser Improved Cylinder Reboring Tool for FORD MOTORS is the only reboring Tool in the world that is self-sharpening. It is the only tool that rebores between centers—this insures a finished cylinder, square with the crankshaft, round, straight, true and free from taper. It is adjustable and the only tool that will rebore different sizes without losing the adjustment. **The best mechanic in the world can't build reputation without proper TOOLS and EQUIPMENT. THE HEISER IMPROVED CYLINDER REBORING TOOL makes good shops out of poor ones and better shops out of good ones. Write today for full particulars.**

HEISER SPECIAL TOOL CO., 2007-21 Washington Street, Kingston, Mo.

NAME	POSITION	SALARY
John	AUTOMOBILE ENGINEER	$125 A WEEK
	REPAIR MAN	$50 A WEEK
	CHAUFFEUR	$30 A WEEK

PUT YOUR NAME ON THIS PAY-ROLL

Men like you are wanted for big-pay positions in the fascinating field of automobile engineering. We have made it easy for you to fit yourself for one of these positions. You don't have to go to school. You don't have to serve an apprenticeship. Fifteen automobile engineers and specialists have compiled a spare time reading course that will equip you to be an automobile expert without taking any time from your present work.

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6 Volumes Shipped Free

Now ready for you—an up-to-the-minute six-volume library on Automobile Engineering, covering the construction, care and repair of pleasure cars, motor trucks and motorcycles. Brimming over with advanced information on Lighting Systems, Garage Design and Equipment, Welding and other repair methods. Contains everything that a mechanic or an engineer or a motorcyclist or the owner or prospective owner of a motor car ought to know. Written in simple language that anybody can understand. Tastefully bound in American Morocco, flexible covers, gold stamped, 2,650 pages and 2,100 illustrations, tables and explanatory diagrams. A library that cost thousands of dollars to compile but that comes to you free for 7 days' examination.

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Please send me the 6-volume set, Automobile Engineering, for 7 days' examination, shipping charges collect. If I decide to buy I will send $2.80 within 7 days and the balance at $2 a month until the $21.80 has been paid. Then you send me a receipt showing that the $30.00 set of books and the $12 Consulting Membership are mine and fully paid for. If I think I can get along without the books after the seven days' trial I will return them at your expense.

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NEW YORK
AUTOMOBILE REPLACEMENT IGNITION COILS

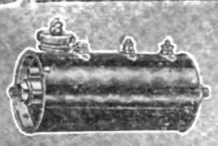
are the ORIGINAL Replacement Coils

that have successfully made Coil Replacements possible. Every sale is permanent, profitable and satisfactory. They are the most treasured line of the smallest and largest Service Stations throughout the U. S.

A special New York Coil engineered to suit the exact requirements of each car manufactured that will fire the poorest gas that positively will not "miss" at highest engine speeds and rival magneto ignition, is available.

They are installed with no trouble in ten minutes, as they positively fit each car. Fifteen years of successful coil building experienced by an organization of Ignition Specialists, is the reason a car owner always agrees when told he needs a New York Coil.

MORE REAL PROFIT, LESS COME BACKS AND EASIER MADE SALES THAN ANY ARTICLE YOU EVER HANDLED.

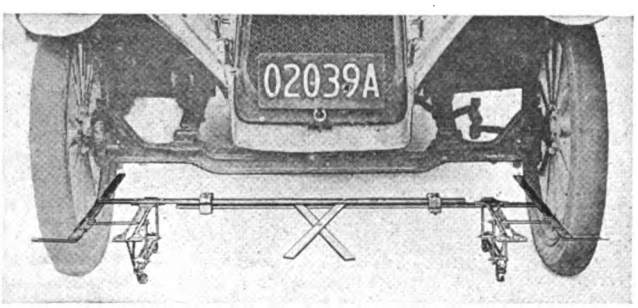


NEW YORK COIL COMPANY

338-340 Pearl Street New York, N.Y.

Duby's Wheel Gage

A positive instrument which tells instantly if wheels are out of line. Can be used on either front or rear wheels and adjusts itself instantly to any car regardless of the size of wheels or tires. The Pointers register on the dials in plain view of the operator.

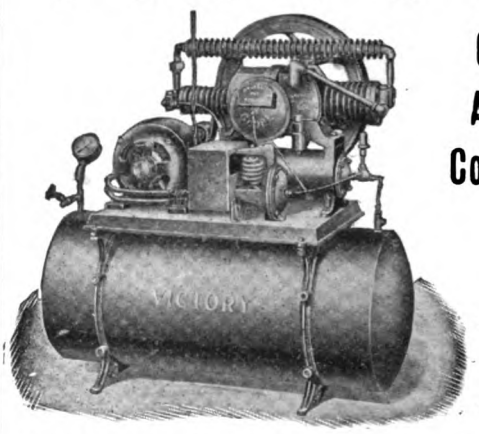


With this device ten cars can be tested by one man in less time than two men could test one car by the old method. Price to garages and service stations $15.00. Special discount to jobbers.

J. F. DUBY

11 River St., Mattapan, Mass.

VICTORY



Complete Automatic Compressor Unit

ACE OF ACES

GLOBE TYPE B—Original Two-Stage Garage Compressor. Saves power, time and money.

WONDERFUL new system of AUTOMATIC LUBRICATION insures Oil-Free Air, provides abundant and continuous lubrication and wastes NOT AN OUNCE of lubricant.

Automatic Pressure Unloader protects belts, fuses and motors.

15 Sizes and Styles of LAST WORD Equipments from which to select.

Desk C.

Globe Manufacturing Co., Battle Creek, Mich., U.S.A.

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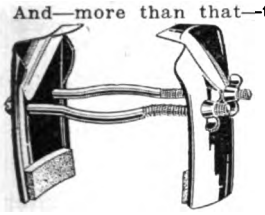
Steers Your Ford Safely

And—more than that—the Jubilee Stabilizer absorbs those numerous jerks, twists and jolts which otherwise tire the driver. Makes steering easy, safe and pleasant—'cause the wheel can't pull on the driver's arms or wrench from his hands. The Jubilee prevents this. It's a neat, clever and practical attachment. Costs



Only $1.50

ABSOLUTELY NO TOOLS REQUIRED FOR INSTALLATION

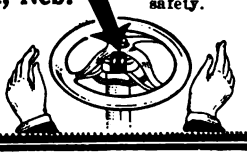
Good Profits for Dealers

Here's something that SELLS, stays sold, and sells others; turns your money quickly, with a good profit too—

The Jubilee Stabilizer

A safety-insuring and comfort-making steering device for Fords. Takes the place of high-priced and complicated accessories. Strong, durable, efficient, easily installed—just what the Ford owners need and want—yet it sells for **only $1.50.** Send *today* for our dealer proposition.

By acting as a safe and constant brake on the steering post, the Stabilizer keeps the front wheels steady—holds the car to the road—despite all bumps, ruts and high crowned centers. You avoid "turning turtle" or crashing into curb, and—with a Jubilee Stabilizer—there's no need of GRIPPING the wheel. You can pull out of ruts, round the curves, meet and pass others with perfect safety.



JUBILEE MFG. CO.

1328 Station C, Omaha, Neb.

Makers, also, of Jubilee Spark Plugs, Two-in-One Spark Plug, Bulldog Chain Fastener and Jubilee Spark Intensifier. Write for catalog.

JEFFERSON AUTOMOBILE IGNITION COILS

Small Stock For Fitting All Cars

Because of flexible caps, terminals and brackets these coils are adapted to all ignition systems. You are required to carry only a very small stock. Consequently, your investment is unusually small and at the same time you can fit all makes of cars.

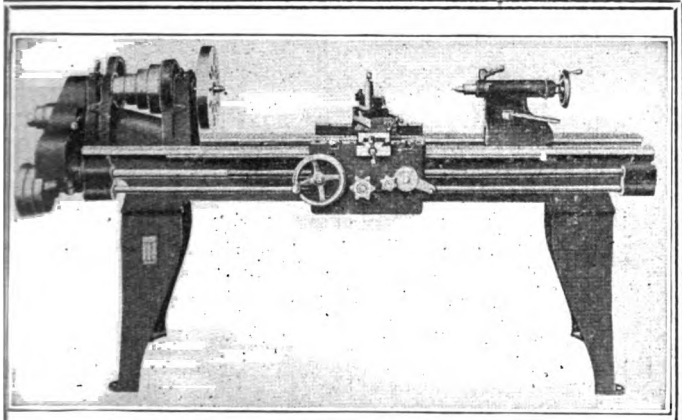
JEFFERSON

Coils are famous for their long life, dependability and uniformly high standard. Order your stock at once.

Send for Coil List

showing list of all cars that are Coil-Equipped and the types of Jefferson Coils and Brackets to be used as Replacements.

Jefferson Electric Mfg. Co.
429 S. Green Street
Chicago, Ill.



UNION LATHES

MANUFACTURED BY

UNION LATHE WORKS, York, Pa., U. S. A.

This lathe is especially designed for garage and machine shop work. It is well constructed and can be obtained at a moderate price.

Obtainable in various sizes with equipment of large and small face plate, follow rest, tool post, center, double friction counter shaft (see cut) rod and screw feed and all necessary change gears, wrenches, etc.

Write for complete descriptive literature and prices.

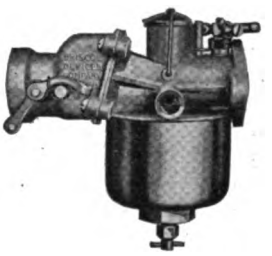
THE UNION LATHE WORKS

York, Pa., U. S. A.

SCOE

CARBURETOR

MAKES A FORD RUN LIKE A SIX



SAVES ITS COST IN 60 DAYS

Any dealer who puts a Scoe Carburetor on one Ford, opens for himself a neat and profitable line of business.

Simply because this carburetor enables the Ford engine to perform as nothing else can or will.

Write us to send you the Scoe on our 30 Day Trial Plan. Pay half the net—$4.25—on receipt of the carburetor. Put it on a customer's machine and check up its performance for 30 days.

Then pay the balance, or ask a refund, and we will make it without a question.

That surely is a fair offer, and hundreds of dealers have proved it so.

BRISCOE DEVICES CO.

PONTIAC, MICH.

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Hall Motor Co.

AUTHORIZED Ford AGENT
THE UNIVERSAL CAR

SERVICE AND PARTS

512-516 W. UTICA ST., Cor. BRAYTON
BUFFALO, N. Y. Bell, Tupper 4886

August 11, 1919.

The Stenman Electric Valve Grinder Co., Inc.,
42 Southbridge St.,
Worcester, Mass.

Gentlemen:-

Replying to your letter of August 9th, would say it affords us much pleasure to send you our check to cover the cost of the Electric Valve Grinder sent to us for trial a short time ago.

We have no hesitation in stating that we have tried three or four other different makes of grinders, and consider yours much superior to any of them. Its smooth, velvety action enables us to make a much nicer job than any other valve grinder we have tried.

HHH/FM Yours very truly,

HALL MOTOR COMPANY,
By Harry A. Hall

The moral from the above letter, is that you insist on getting a "Stenman" and accept no other. "As good or better" has not yet been made. Your jobber can supply you—if not—write to —us. Circulars on request.

Made under U. S. Patents 876,449 1,313,490. Others pending.

"Will Pay 300%"

The Stenman Electric Valve Grinder will pay 300% yearly on the original cost where it is used to grind but one set of valves a week. If used more the returns will be proportionately greater.

"They Serve Best Who Are Best Equipped To Give Service"

The Stenman Electric Valve Grinder is the greatest time and labor saving tool that ever went into a repair shop. It is eight times quicker than hand work and does a better job. Thousands are already in use and you can depend on this wide use as a guarantee of its worth. Order one today from your jobber. It will have practically paid for itself before the bill is due.

"They profit most who serve best"

Stenman Electric Valve Grinder Co.
Makers of the Original Electric Valve Grinder
Worcester, Mass.
Copyright 1919 by Stenman Electric Valve Grinder Co.

THIS Year, Sell Reflex Spark Plugs because of what they HAVE done.

—because of the business and profit they meant for Reflex dealers throughout 1919.

BUSINESS, due to such service as the above illustrated plugs delivered in a rough-road-going truck. And "without attention," writes the user—a mid-west trucking establishment.

PROFITS, because prices, discounts and guarantees to you are right.

Simply drop a card for complete information, such as prices, the Reflex advertising campaign, dealer helps, etc.

The Reflex Ignition Co.
1352 West 106th St.,
Cleveland, U. S. A.

REFLEX SPARK PLUGS
KEEP THE CAR ON THE GO!

EQUIP YOUR GARAGE with PARO SHOP EQUIPMENT

OUR

EKERN'S PORTABLE WORK BENCH AND ENGINE STAND
EKERN'S MOTOR STAND (Portable)
EKERN'S SHOP BENCH MOTOR SUPPORT (attachable to a shop bench)

Are all specially designed for Ford Motors.

The Ford engine block is secured to either one of the above devices, by two cap screws that hold the water inlet connection. The engine can then be held in any desired position.

By using an Ekern Axle Attachment with either of the above devices, you can convert them into axle repairing stands for any make of automobile axle.

We have other devices. Send for catalog.

List Prices	Without Axle Attachment	With Axle Attachment
Shop Bench Motor Support	$10.00	$16.00
Motor Stand	$20.00	$26.00
Work Bench	$40.00	$46.00

H. C. Paro Co.

1412-14 South Michigan Boulevard, Chicago, Ill.

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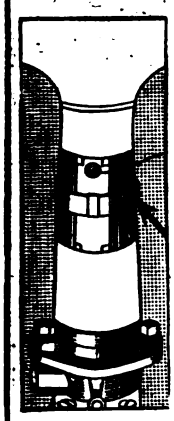
Starts Any Cold Motor In a Jiffy



Attaches to the Intake Manifold or Carburetor
Current from battery to a resistance coil in the heater warms the air inside the intake, causing the gasoline to **vaporize** and **ignite** with the **first turn-over** of the motor. Same heating principle as used in the electric flat iron. Gives same result as pouring hot water on the manifold.

This Electric Intake Heater

assures easy and quick starting on the coldest winter day, **and saves drain on battery.** No priming. No delays. Operates from dash switch. Easy to attach. **No drilling or tapping or alterations.** Entirely out of the way. Always ready and perfect in performance. Sold with the distinct understanding that it will give satisfaction when the simple instructions for applying are followed

If your car or truck has storage battery, write for descriptive matter today. **$3.50**

Dealers and Garages Get Our Proposition.

Electric Intake Heater Co. 130 Cortland St. Jackson, Mich.

WELDERS!

There's economy in using the best fluxes you can find for particular welding jobs. Insure better and stronger welds, more easily and more rapidly made, by using

ANTI-BORAX COMPOUNDS

For Acetylene, Gas and Electric Welding

Anti-Borax WELDING FLUX

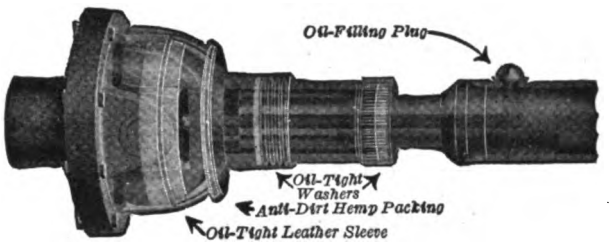
Best on the market for all grades of iron and steel. Weld at lower heat. Leave no scale. They cleanse the molten metal, assist fusion and improve the quality and appearance of your work. Guaranteed to give perfect satisfaction or your money refunded.

Write for sample and price list.

ANTI-BORAX COMPOUND CO.
FORT WAYNE, INDIANA

New-Practicable-Proven

A Positive, Leakproof Oil Lubricated Joint



"M&E" Universal Joint

(Pat. and Pat. Pend.)

This Joint embodies the best points devised by Automotive Engineers for the War—U. S. and Allied program.

Severe variable speed tests in all temperatures, up to 15° ± were made without change or loss of oil, or injury to the leather sleeve.

This Joint is simple, very strong and has ample bearing surfaces.

We will continue to make our present grease lubricated Joint, but by inserting a special sleeve, the Joint can be made to retain oil.

See our new Clutch at the New York and Chicago Automobile Truck Shows.

MERCHANT & EVANS Co

PHILADELPHIA

NEW YORK, BALTIMORE, ATLANTA, CLEVELAND, WHEELING, CHICAGO, ST. LOUIS, KANSAS CITY

BUNTING BEARING BRONZE — B.B.B. CO. No. 1

Same quality as our finished bronze bushings and bearings used by manufacturers the country over.
Your repair stock is not complete without it.

All leading jobbers
Ask for catalog N

The Bunting Brass & Bronze Co.

727 SPENCER STREET
TOLEDO, OHIO

CORED BARS

STOCK SIZES

PIECE NO.	Outside Diameter	Inside Diameter	Length	Approx Weight
A	1	½	12	2
B	1¼	⅞	12	3½
C	1½	¾	12	5
D	1¾	¾	12	7
E	2	1	12	8½
F	2¼	1¼	12	10
G	2½	1½	12	11½
H	2¾	1¾	12	12¾
I	3	2	12	13¾
J	3¼	2¼	12	15½
K	3½	2½	12	17
L	4	3	12	21
M	4¼	3¼	12	20

TRIPLEXD

AXX GASOLINE HOSE XXX

THE FABRIC TAKES ALL STRAINS

All strain is taken by the tough fabric cover of Triplexd.

The flexible metal lining cannot be damaged.

The fabric, woven tightly over a rubber intermediate layer, binds the hose into a leak-proof unit.

Triplexd Pump Hose is guaranteed for one year's service.

METAL HOSE & TUBING CO INCORPORATED
227 Tillary St.
Brooklyn, N. Y.

The metal protects the rubber from gasoline or oil.

Labor-Savers for Ford Service Stations

Machines and tools which will save time and increase profits wherever Fords are repaired:

Bearing Burning-in Machines
Engine and Axle Stands
Bearing Boring Machines and Re-Babbitting Jigs
Cylinder Reboring Machines for Fords and Fordsons
Power Grinders
Bench Motor Clamps
Rear Axle Pinion Gear Presses
Pinion Gear Pullers
Valve Port Renewing Tools
Speed and L Wrenches
Tow Bars
Combination Electric Drills and Valve Grinders
Visible Measuring Gasoline Pumps,
and many other special tools and machines
Engine Testers
Emergency Wheel Clamps
Rear Axle Sleeve Pullers
Transmission Reaming Machines

Write for Catalogue 8, just issued.

The FAIRBANKS Company

Administrative Offices—New York.
Branch Houses in Principal Cities.

FAIRBANKS O.K.

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A FORD THAT PURR-R-R-S

That is the way your Ford will sound when you equip it with a

GARDNER THERMOSTAT CARBURETOR

The temperature of a Ford motor changes quicker and more often than the temperature of any motor. The Gardner Carburetor is designed to overcome this condition.

The Gardner THERMOSTAT CONTROL is governed by the temperature of the motor and automatically supplies the correct mixture for every varying temperature.

The GARDNER actually saves 25 to 50% of your gasoline, but the main advantage is a smooth purring motor whether cold or hot. Ask us for literature and open territory.

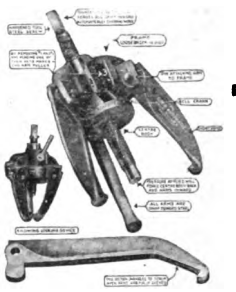
Gardner Carburetor & Brass Wks.

23 Hancock West, Detroit. Mich.

GREB AUTOMATIC GRIP PULLER

BEACH PATENT

"The One Best Bet" in Wheel, Gear and Bearing Pullers. Combinations of two or three jaws. Quick, Strong, Durable, Efficient and Simple. Positive Grip, cannot unhook and adjust to work instantly.



East of Rockies

Greb Arbor Press Base—designed to be used with the three long jaws of No. 1 Puller. Comes complete with two V Blocks and one T on. Makes desirable equipment for pressing off gears, bushings, bending pipes, straightening shafts, etc. It is a good Bench Plate. Width 11 in. Depth 2 in. Diameter of Center Opening 1 1/4 in. Weight approx. 90 lbs. Price complete $12.50

Greb Automatic Grip Puller

No. 1 Senior Size—designed for heavy work—a one man Puller with a locking device. Capacity 1 to 18 in. Complete with two sets of jaws, 7 in. jaws open to 10 in., and 12 in. jaws to 18 in. Screw of hardened steel, 1 in. diameter, 14 in. long. (See Arbor Press Base Attachment.) Shipping weight 30 lbs.
Price complete $25.00

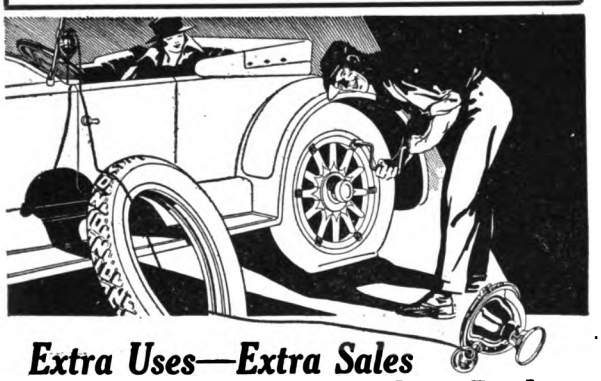
Greb Bearing and Race Attachment for No. 1 Puller has a Knife edge and can be forced behind magneto, electrical generator and self starter bearings and races where it is impossible for the jaws of any Puller to be attached. This attachment when used back of small gears and bearings not only saves them but the rest of the Puller jaws as well. Capacity—Bearings and Races up to 4 in. including 2 in.
Price complete $5.00

No. 2 Junior Size—designed for all types of motors. Will remove magneto and pump shaft gears, couplings, etc. An efficient tool for all small work. Capacity 1 to 7 in. Complete with two sets of jaws 2¾ in. jaws open to 4 in. and 4 in. jaws to 7 in. Screw of hardened steel, 9/16 in. diameter, 7¼ in. long. (See Bearing and Race Attachment.) Shipping weight 4 lbs.
Price complete $12.00

Greb Gear Attachment for all sizes of Greb Pullers has a 1/8 in. edge and can be forced behind gears where there is little or no room. This attachment when used back of small gears furnishes something for the jaws to get hold of and as it lays flat against the back of the gear it permits an even pull. Made in two sizes. Small size has capacity to take gears up to 3 in. on its front and 1¾ in. on its back.
Price complete $5.00

No. 3 Intermediate Size—designed to pull the average motor gears, such as timing, pinion, transmission differential, and crank shaft gears, carbon and universal joints, pulleys and for general work. Capacity 1 to 12 in. Complete with two sets of jaws, 5 in. jaws open to 8 in., and 9¾ in. jaws to 11 in. Screw of hardened steel, 7/8 in. diameter, 10 in. long. (See Gear Attachments.) Shipping weight 12 lbs.
Price complete $18.00

Large size has capacity to take gears up to 4 in. on its front and 4 in. on its back.
Price complete $8.00



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The Handy Spotlight On a Reel

Autoreelite is a convenient and powerful spotlight with the added advantage of a self-winding cord on a reel. By two twists of the thumb and finger, Autoreelite can be reeled out to a distance of twelve feet.

There is a ready market for this combination spotlight and trouble-light. Motorists appreciate its usefulness for making repairs on the road at night. And Autoreelite is priced no higher than ordinary spotlights.

Write for Catalog AG-301

Anderson Electric Specialty Co.
118-124 South Clinton Street Chicago, Illinois

Autoreelite

Security Auto Lock

Affords every protection to Ford car owners that a perfectly designed and extremely well made lock can give. While neat and attractive it is built very strong. In operation it is positive and the car can be left with a feeling of confidence that no one but the owner can use it.

It is the original loose wheel lock for Fords.

It is approved by underwriters.

It will reduce insurance premiums 15%.

When locked the car cannot be towed.

List Price, $6.00

It makes the Ford thief-proof

Anyone can easily install the Security in ten minutes. No drilling, filing, sawing or chiseling necessary. It is made of solid brass. Nickel plated finish.

TO DISTRIBUTORS

When this lock is shown no other will satisfy Ford car owners. It sells at sight. Our trade discounts are liberal and our proposition will interest any one that can sell high grade car protection at a moderate price. *Write for details today.*

Security Auto Lock Co.
414 N. PAULINA ST., CHICAGO, ILL.

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GOGGLES FOR WELDERS.

Fitted with "Essentialite" Lenses.

THE FIBRE WELD.

Frame: Vulcanized fibre, non-conductor of heat and electricity, non-inflammable and infusible not affected by moisture, leather center, ventilated side pieces, adjustable elastic head band. We have demonstrated conclusively that with these lenses we vanquish the so-called "fatigue-weariness" and headaches caused by Ultra Violet and Infra Red rays. Circulars and prices at request. Price each, prepaid, $3 pr.

Manufactured by

CHICAGO EYE-SHIELD COMPANY

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SCAIFE COPPER-BRAZED AIR TANKS

are positively guaranteed to hold air indefinitely without loss of pressure.

(117 years old. Founded 1802)

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38 So. Dearborn St., Chicago, Ill.

SCAIFE GASOLINE STORAGE OUTFITS

ARE IDEAL FOR PRIVATE GARAGES.

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Pistons For Ford Cars

Ready for Immediate Installation
A Ground Piston Complete With Pins, Rings, and Bushings

Immediate Delivery

Sizes:—Std. .0025 .005 .010 .015 .020 .025 .030 .03125 .033

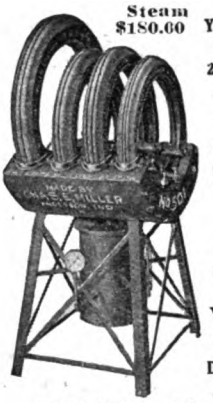
Price $6.00 Per Set of 4

AUTO SPECIALTIES CO.

P. O. Box 294 Madison Square Station, New York City, N. Y.

Money Refunded if not Satisfactory

COMPLETE TIRE REPAIR SHOP OUTFITS



Steam $180.00

YOU CAN SAVE 25 to 40%

WRITE for our complete catalogue TODAY

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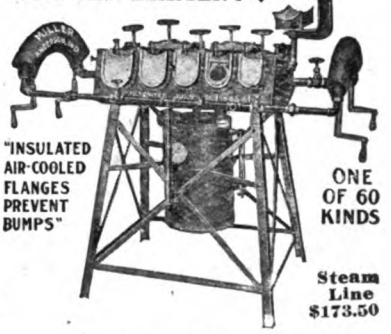
"U-BUY MILLER'S FINALLY"
"WHY EXPERIMENT"?



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ONE OF 60 KINDS

Steam Line $173.50

1-4 Cavity Ribbed Retreader — 1-3-4-5 Cavity En Bloc Vulcanizers
1894— *Business Established 26 years—PIONEER* —1920
CHAS. E. MILLER (QUICK SERVICE) 1402 Meridian St.
Anderson Rubber Works ANDERSON, IND. U.S.A.

NEW DEPARTURE BALL BEARINGS

Strength
Stamina
Service

The New Departure Manufacturing Co., Bristol, Conn.

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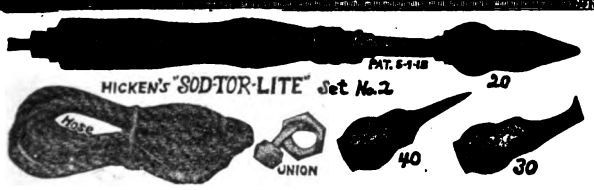
UNIVERSAL BATTERY CLIPS

Offer a quick and ready means of connecting storage batteries for charging. Simply fit your connecting cords with these clips and snap them over the battery terminals.

No. 21-A—lead coated—1½" spread of jaws.
Sample mailed postpaid for 15c in stamps.

Single Lots, Each 20c. Lots of 10, Each 15c.
Lots of 100, Each 12½c.

MUELLER ELECTRIC CO., 431 High Ave., Cleveland, O.



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3 TOOLS IN 1

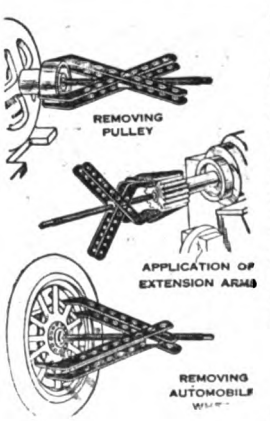
Soldering Iron, Brazing Torch and Light

Saves time and trouble—costs less than three tools it replaces. Requires no generating.

Attach to Presto-Lite or Searchlight tank and have hot point in a minute or torch heat over 3650 degrees Fahrenheit. Equipped with three tips for all classes of soldering work and 6 foot hose. Hose union fits three popular size tanks.

FREE TRIAL—We'll ship Sod-Tor-Lite C. O. D.—use 10 days. If not satisfied, return and we'll refund your money. For further information write Box H.

B. E. HICKEN SOD-TOR-LITE CO., Prairie Hill, Mo.



"LITTLE GIANT"

GEAR AND WHEEL PULLER

Pulls any gear, wheel or pulley anywhere in a jiffy. Built on the only correct principle. Produces maximum efficiency with minimum effort. Can't twist off or let go. THE HARDER THE PULL—THE TIGHTER THE GRIP. Reduces operating cost and increases the earning capacity of any Repair Shop. Made from best grade drop forge steel. Almost unbreakable. Adjustable up to 13 inches diameter. Satisfaction guaranteed or money refunded. Order or write for details today. Price complete with extension arms, $11.00.

Liberal Discounts to Dealers.

Premier Motor Products Co.

3956 N. Robey St., Chicago, U. S. A.

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THE JOYS OF A MOTORIST

What is a pleased customer worth?

It's a rare motorist that doesn't cheer for Pep Plugs. Either he hasn't called on the right dealer or he is located beyond the Alps.

The Pep is self-cleaning. A sparking surface completely around the disk makes a ring of fire that cannot be had with other plugs. No broken porcelains. Motor starts easily in cold weather.

Your profits are good, your turnover fast. You want to begin making these profits early, and we want you to.

Every Pep Plug is guaranteed: **"Your Money Back If You'll Take It."** No strings to this guarantee.

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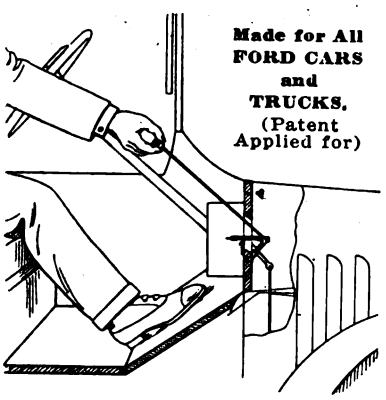

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IN FIVE MINUTES YOU CAN INSTALL A

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It holds carburetor choke valve in any position.
Operates from seat. Trips with the foot.

All Other Cars Have its Equivalent, Why Not Your Ford?

ELIMINATES { Racing engine to warm it up
Continuous reaching for choke
Driving with too rich a mixture.

MAKES STARTING EASY, YOU DRIVE RIGHT OFF WARM OR COLD WEATHER ALIKE. SAVES GASOLINE BY A THIN RUNNING MIXTURE.

Model 1 for cars without self-starter.....$1.25
Model 2 for cars with self-starter.....$1.00

Jobbers, Dealers find big demand, no competition.

TOLMAN-REEVE ENGINEERING CORPORATION
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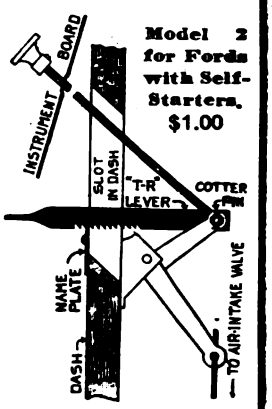


Model 2 for Fords with Self-Starters, $1.00

PEERLESS AUTOMOBILE SPECIALTIES

Make old cars look like new.

Some of the Leaders are:

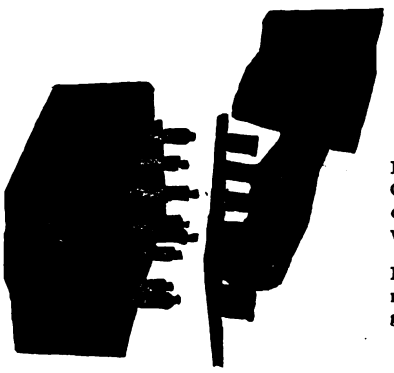
MOHAIR TOP DRESSING	GASKET SHELLAC
LEATHER TOP DRESSING	TOUCH-UP BLACK
LINING DYE	BODY POLISHES
CUSHION DRESSING	TIRE PAINT
LAMP ENAMELS	RIM PAINT
CYLINDER ENAMELS	EIGHT COLOR FINISHINGS

Carried in stock by nearly all large jobbers handling Auto Supplies.

Made only by

THE COLUMBUS VARNISH CO.

Columbus, Ohio U. S. A.



B & H COIL INSULATOR

For Ford Cars.

Positively prevents Coils from getting wet or damp in rainy weather.

Easily applied and is made of one piece good tough rubber.

Fully Guaranteed.

Dealers claim it to be one of the best and most needed accessories for Ford cars.
Price, East of Rocky Mountains, **$1.75**

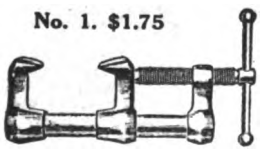
BROWN & HADFIELD, Louisville, Ky.

Keep Springs Greased

Knowlson Spring Spreaders

Squeaking Stopped and 100% Easier Riding

No. 1. $1.75



Nickel-plated and polished.

No. 3. $1.25

Gun metal yoke, screw and handle nickel.

Spring Breakages Eliminated.
Both Guaranteed. Either or Both Delivered. Your Money Back if You Want It.
Don't Ruin Your Springs by Neglecting Them!
They Fit Any Spring. Easy to Operate. Both Drop Forged.
Use a Heavy Grease (not oil) for Real Results.

At your Dealers, or Sent Direct.

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The car of the Year **A New England Product**

Honest through and through

$1695 F. O. B. factory FULLY EQUIPPED

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BOSTON, MASS.

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ALLWAYS TRADE APCO MARK RIGHT

Equipment For Ford Cars

The ten items shown below are taken from our new catalog, which is now ready for you. As a dealer you are interested in satisfying your customers besides making money and if you sell Apco products you do both. Five hundred jobbers stock Apco goods and if yours does not, send your order to us and we will see that it is shipped promptly by a jobber near to you. Remember Apco means made right and advertised so that they sell themselves.

Get your catalog today and tell us your jobbers name.

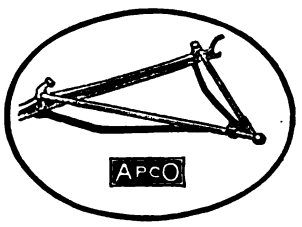
APCO MFG. COMPANY, Providence, R. I.

MUFFLER AND TESTING VALVE NO. 99

A one-piece cast Muffler with testing Valve cast integral. When open the Valve gives a clear opening for the gases and the valve positively will not stick or leak. Detects a missing cylinder instantly and its construction eliminates back pressure.

List $5.00
Dealer's Price.....$3.65
Lots of 5.....$3.39

FRONT AXLE BRACE NO. 117



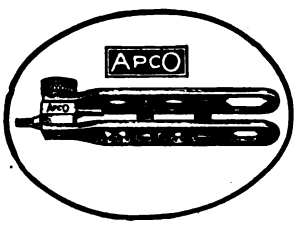
Designed to accomplish the same results as our No. 72, but it is not adjustable. Made from steel instead of angle iron. Finished in black enamel. A real article at a real price.

List $1.00
Dealer's Price..... 66c
Lots of 10..... 61c

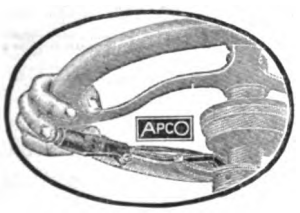
TIRE VALVE TOOL NO. 84

A six in one tool that should be in every kit. Dies are fitted with guides to prevent cross-threading. Tap is tapered to enter jammed valve. Wrenches fit valve stem nuts. One of the best tools ever offered to the trade. High grade steel hardened.

List $1.00
Dealers' Price..... 73c
Lots of 10..... 68c



HORN BUTTON NO. 9



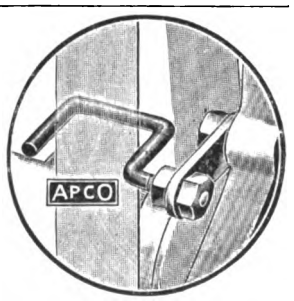
Places the Horn Button under the driver's finger all the time, where the horn can be sounded without an effort. Complete, ready to attach, and installed in five minutes. One of the best selling items we have ever offered.

List $1.00
Dealer's Price..... 73c
Lots of 10..... 68c

FAN BELT GUIDE NO. 36

Prevents the fan belt coming off, a fault found with a number of Ford cars. Adjustable and made from steel. Can be put on by removing one bolt as shown in cut.

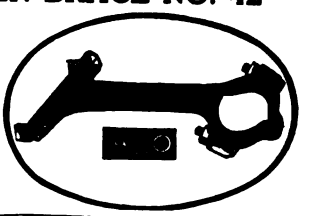
List 25c
Dealer's Price.....15c
Lots of 10..... 14c



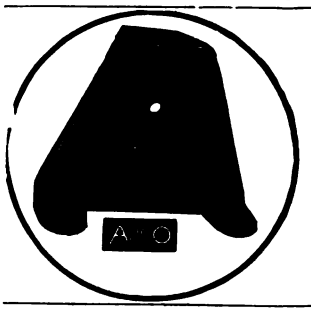
STEERING COLUMN BRACE NO. 42

Supports the steering column, preventing excessive vibration and loosening of the column caused by pulling on the steering wheel when getting in and out of the car. Consists of a black enameled malleable iron bracket, bolts and screws, ready to attach. Can be put on in a very few minutes.

List $1.00
Dealer's Price..... 66c
Lots of 10..... 61c



CRANK CASE ARM NO. 30



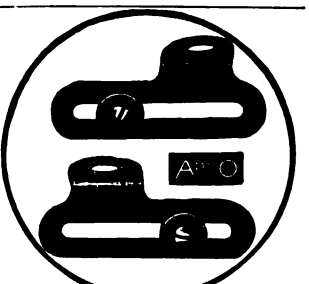
Replaces broken Ford Crank Case Arms in a few minutes, without taking motor down or welding of any kind. Remove four bolts and broken arm, place Apco Arm in position, replace bolts and job is done. Made from Loller plate steel, ¼-inch thick, finished in black enamel.

List $1.50
Dealer's Price..... 73c
Lots of 10..... 68c

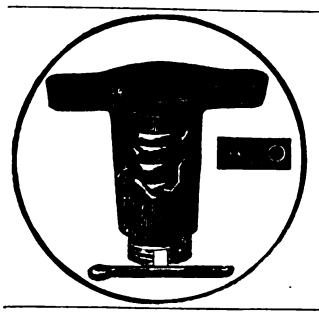
LICENSE BRACKETS NO. 27

Hold the front number plate or license tag rigid, under the spring clip nuts. Made from steel, finished in black enamel and furnished with nuts, bolts, washers, etc. Will fit any plate.

List 25c
Dealer's Price..... 15c
Lots of 10..... 14c



ANTI-RATTLERS NO. 21-51



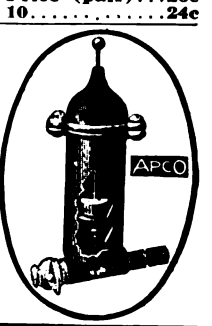
Take all the rattles out of the Steering Rods and Radius Rod. Malleable iron castings, black enameled, heavy springs, pressed steel cups, machine cut screw plugs. Easily installed, and as necessary as gasoline.

Radius Rod Type
List (each).....50c
Dealer's Price (each)..26c
Steering Rod Type
List (pair).....50c
Dealer's Price (pair)...26c
Lots of 10.....24c

METAL OIL GAUGE No. 48

Tells how much oil there is in the car at all times and it is always right. Consists of a cast-metal chamber, a cork float, with rod extending through top. Ball on top of rod indicates height of oil. Can be seen at night; takes ten minutes to install. As necessary to the car as hands to the clock.

List $1.00
Dealer's Price..... 58c
Lots of 10..... 54c



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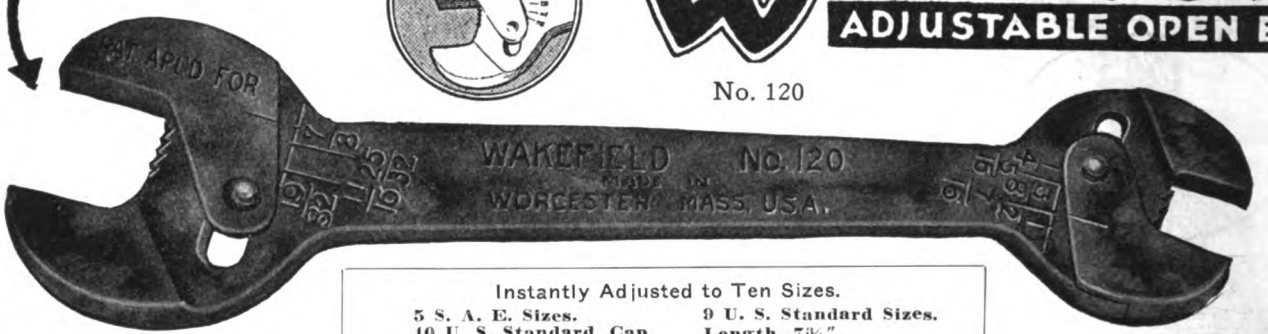
What More Can You Demand?

STRENGTH
UTILITY
DURABILITY
QUALITY
10 SIZES IN 1
ALL THIS AND MORE - YOU'LL FIND IN THE WIZARD

WAKEFIELD
WIZARD WRENCH
ADJUSTABLE OPEN END

No Knurl Adjustment.
No Back Lash.

No. 120



Instantly Adjusted to Ten Sizes.

5 S. A. E. Sizes.	9 U. S. Standard Sizes.
10 U. S. Standard, Cap Screw Sizes.	Length, 7¾".
4 Set Screw Sizes.	Thickness, ⅜".
	Width, 2⅛".

A combination tool equal to the average wrench set, a perfection of simplicity and instantly adjustable to ten sizes as follows: 1-4, 5-16, 3-8, 7-16, 1-2, 9-16, 19-32, 11-16, 25-32, 7-8.

It is made of highest quality steel, heat treated, by methods developed from 30 years' experience and manufacturing wrenches.

It is designed to economize time and labor, and compared with the cost of any other tools having equal utility, the price is extremely cheap.

There are ten individual settings, more quickly made than an exchange of tools, always in readiness for use.

No tool or even wrench set is its equal, in the shop, the service station or garage, or in the tool kit of the car, truck, motorcycle or bicycle.

It is guaranteed by the Wakefield trade mark, known the world over as a standard of quality.

The list price is $1.50 a wrench.

Jobbers and Dealers

We have a splendid sales proposition. We are at full production and can guarantee deliveries, and the discounts are exceptionally attractive. If you want worth while business, write today.

C. E. WAKEFIELD

WORCESTER, *Sole Manufacturer, Established More Than 30 Years* **MASSACHUSETTS**

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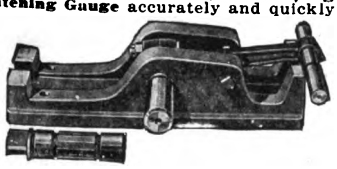
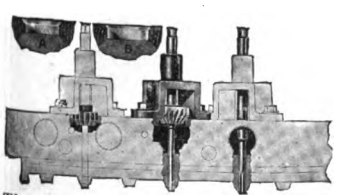
STORM
MOTOR REPAIR EQUIPMENT

Storm Standard Reboring Machines have been tested, approved and are being recommended by all leading jobbers and manufacturers throughout the world. *Made by practical men for practical purposes.*

The Storm Connecting Rod Bearing Reamer, Jig and Straightening Gauge accurately and quickly fits and cleans connecting rod bearings—tests and straightens the rod.





The Storm Valve Port Renewing Tool renews valve systems completely—enlarges the port, produces new narrow seat and new, accurate stem guide.

Makes You Able to Handle Any Motor Repair Job

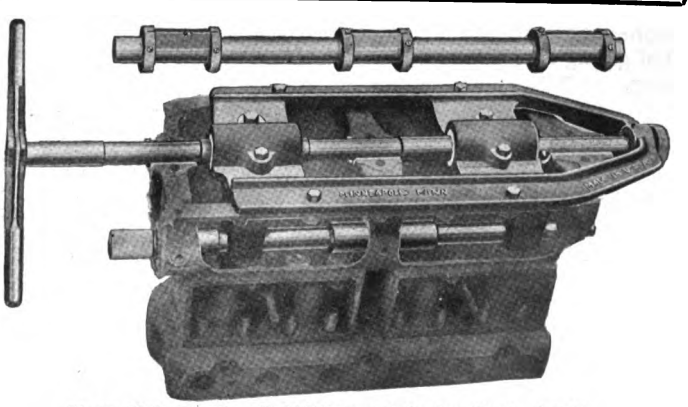
GIVE your customers quick service on first-class repairs. Sending out the most profitable jobs to other repair shops means loss of time and money. Storm tools will equip you for every class of repair work. You can make the dull season a profitable period in general overhauling and rebuilding. You will soon become known as the leading repair shop in your community.

Storm Equipment is standard and is built for hand or power operation. No matter how small your garage is—or how large—we can supply you with Storm Tools that will increase your output and your profits.

Ask for our catalog and full details. It will pay you to look over our line.

Storm Manufacturing Co.

Dept. P. **Minneapolis, Minn.**



Storm Main Bearing Babbitting and Boring Tools should be used by every shop doing Ford and Fordson work. For making new, *perfect* main bearings in proper position and perfect alignment. *Speedy and accurate.*

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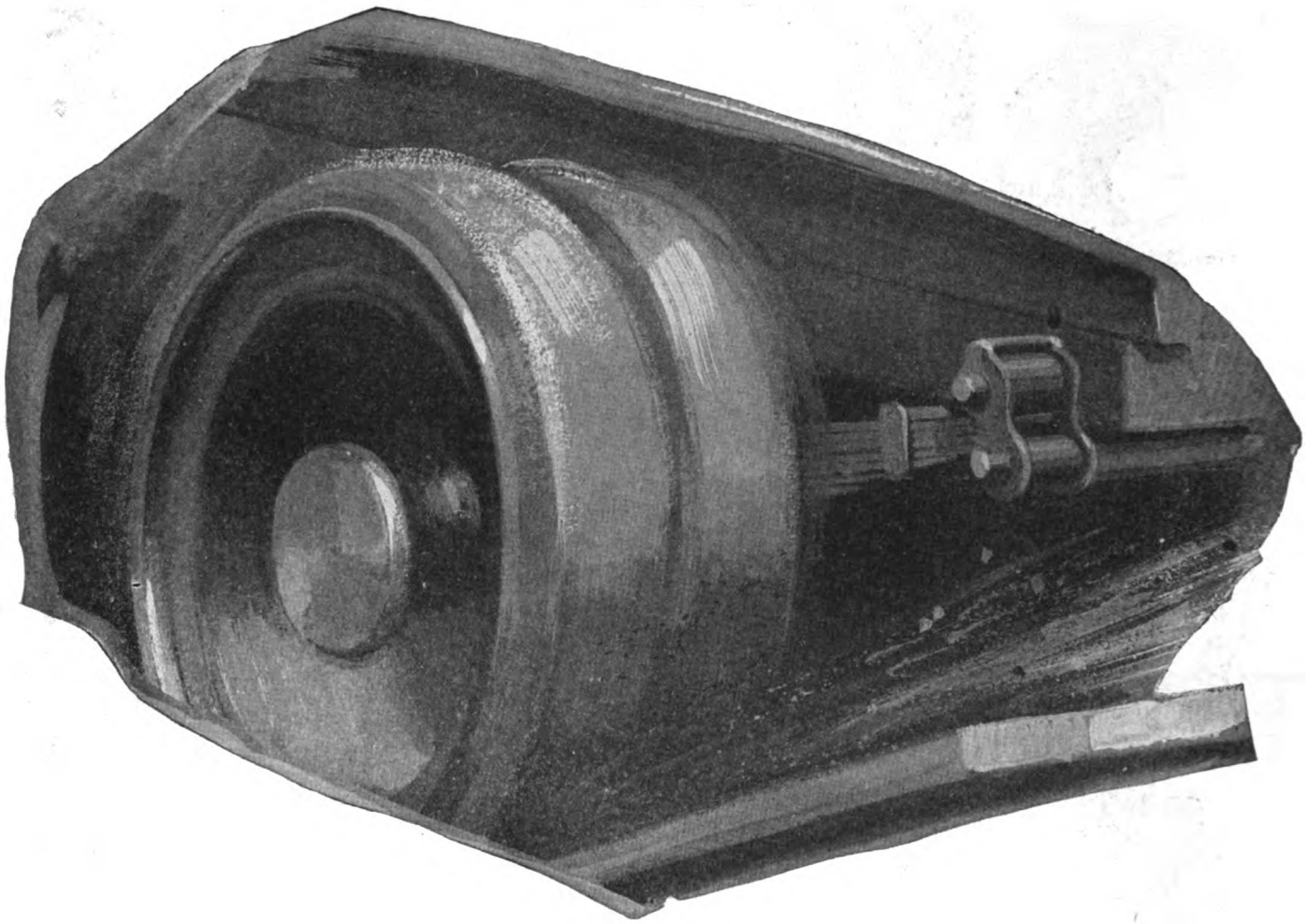
Powrlok in the Rear Axle



Stops Stalling

Powrlok actually does stop stalling and prevents skidding, because it automatically distributes the power to the rear wheels the logical way—in direct proportion to the traction or hold which the wheel has on the ground—instead of in indirect proportion as the ordinary differential does.

It supplies the power to the wheel that can use it instead of giving it to the wheel that wastes it in useless spinning.

Even conservative automobile engineers class it as one of the three or four greatest improvements made in motor cars within a decade. This is best proven by the fact that fifty manufacturers of all classes of automotive vehicles—passenger cars, trucks, tractors and industrial trucks—now use it as standard equipment.

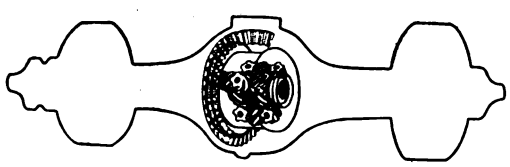
Write for our new booklet entitled—"More Than a Differential."

Specify Powrlok when you buy.

THE POWRLOK COMPANY, 1107 East 152nd Street, CLEVELAND, OHIO

Foreign Representatives: The Powrlok Company, Ltd. Offices: 24 Maddox St. Regent St., London, England.
19 Avenue MacMahon, Paris, France.

POWRLOK

"More than a  differential"

For Motor Trucks, Passenger Cars. Tractors, Industrial Trucks, Axles and Transmissions

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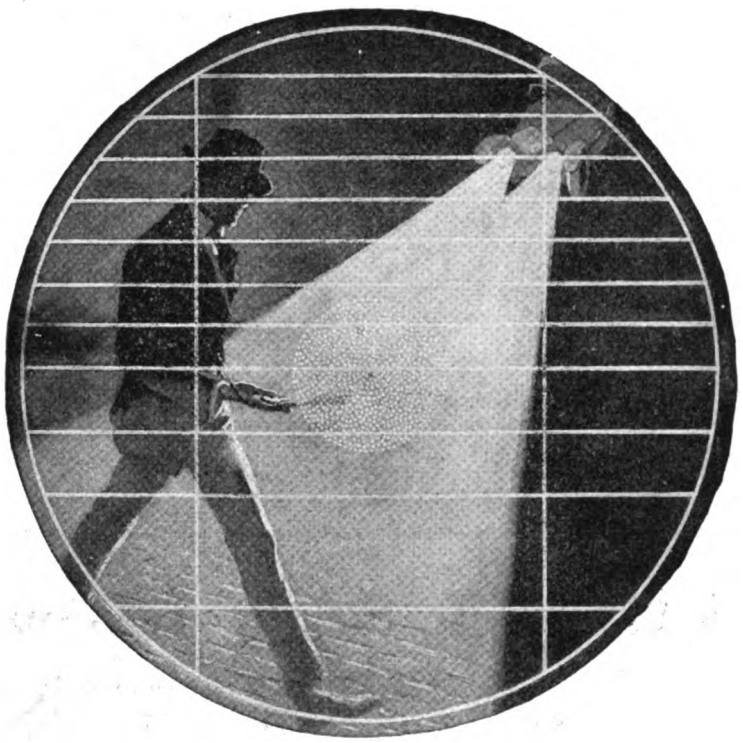

Take Care of That Glare

And Make the Road Safe for Others as Well as Yourself

The Osgood Lens does a lot more than merely stop glare; it gives you a brighter, clearer light and more of it—out onto the road ahead of you *and downward*, right where you need it.

THE NEW

OSGOOD LENS

CRAVATH LONG DISTANCE TYPE

throws a powerful light one-third of a mile ahead of the machine and never more than waist high. It makes the road just as safe for others as it does for you and solves absolutely the safety-problem of night driving. Another thing, with the Osgood Lens, there is absolutely no need of dimmers.

DEALERS: There's more lens-profit in handling the Osgood, than in all the rest of them put together, and you get rid of having to carry all sizes of other lenses. Osgood outsells them all, because they do the business. Complete stocks of all sizes now ready for instant deliveries. Write us today.

Prices $2.90 to $4.50 According to Size.

OSGOOD LENS & SUPPLY CO., Manufacturers

Harris Trust Bldg., Chicago

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BRANCHES

Atlanta *12-14 W. Harris St.*	**Cleveland** *1973 East 61st St.*	**Kansas City** *1416 McGee St.*	**Omaha** *1806 Harney St.*
Boston *19-23 Jersey St.*	**Denver** *1332-38 Acoma St.*	**Los Angeles** *1152 S. Grand Ave.*	**Philadelphia** *242-248 N. Broad St.*
Buffalo *1127-33 Main St.*	**Detroit** *77-83 W. Willis Ave.*	**Minneapolis** *10-12-14 S. 10th St.*	**San Francisco** *Van Ness at Clay*
Chicago *2715-17 Mich. Ave.*	**Indianapolis** *1133 N. Meridian St.*	**New York** *239-241 W. 56th St.*	**Seattle** *1708-10 Broadway*

Toronto
88 Adelaide St., West

FACTORY PARTS AND SERVICE
Delco KLAXON REMY
AUTHORIZED BY UNITED MOTORS SERVICE INCORPORATED

The Sign of an Authorized Distributor

A Complete Stock of Genuine Parts—

Every United Motors Service Branch and Authorized Distributor carries complete stocks of genuine Delco, Klaxon and Remy parts.

When you buy parts for repairs or replacements you may rest assured that they have been passed by either The Dayton Engineering Laboratories Co., The Remy Electrical Co., or the Klaxon Co.

This complete stock assures you quick service, and the fact that they are genuine parts assures you a satisfactory job of repair or replacement.

At the Branch or Authorized Distributor in or near your city you may obtain official factory service on Delco, Klaxon and Remy electrical equipments.

Send for Our Latest Organization List Which Will Give You Addresses of Our Authorized Distributors

Delco KLAXON REMY

MOTORS SERVICE TRADE MARK

UNITED MOTORS SERVICE
INCORPORATED
GENERAL OFFICES, DETROIT, MICH.
A BRANCH OR DISTRIBUTOR IN OR NEAR YOUR CITY

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Are you afraid to tell the truth?

When the car comes thumping into your garage, knocking like a wood pecker, are you afraid to tell the truth?

Don't you hate to tell the owner that his crankshaft needs regrinding?

You hesitate to tell him that you must take down the motor, remove the crankshaft, send it to a machine shop, and then after waiting a week, reassemble the job and present him with a bill that looks like the Allies' war debt.

It look as though you were trying to "put something over".

But if you will invest ten dollars in an Atlas Abrasive Tool, you can look your customer squarely in the eye and tell him the truth.

You can grind his crankshaft in ONE HOUR, and save him time, money and temper.

The Atlas Abrasive Tool, Patented Nov. 11, 1919, is built for all passenger car and truck crankshafts. Adjustable to pins up to 2½ inches diameter.

There is only one adjustment necessary with the Atlas and anyone with a sense of feel can do a job that is accurate within a thousandth of an inch—and finish the job in one hour. No lathe or other equipment necessary, the crankshaft need not even be removed from the crank case.

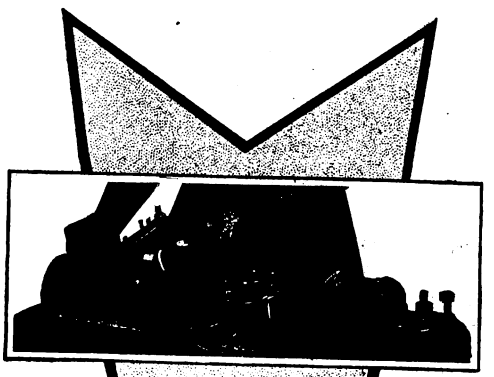
This tool is sure to make good for you, just like it has for hundreds of others. Master mechanics write us that they would rather part with a $50 bill than their Atlas Tool.

Price, complete with cutter, $10, postpaid. Extra cutters (including bronze bearing tracks) good for from 10 to 20 pins or bearings, 30c each.

ATLAS SPECIAL TOOL, Capacity 2 to 4 inches—$25.00 delivered.

Atlas Manufacturing Co.

705 N. Canal St., Pittsburgh, Pa.



SEND THIS COUPON

Tear Out and Mail Today!

ATLAS MFG. CO., Dept. A.
705 N. Canal St., Pittsburgh, Pa.
Send me postpaid, one Atlas Abrasive Tool complete and extra cutters. Also send complete instructions for use.

Name.....

Address.....

City.....

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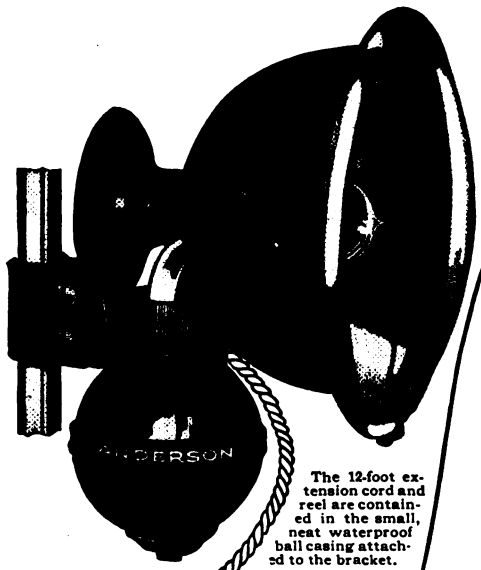
Autoreelite



The 12-foot extension cord and reel are contained in the small, neat waterproof ball casing attached to the bracket.

This feature is found only in the Autoreelite

WHEN Sinclair Lewis was touring to obtain the material on which he founded his interesting Saturday Evening Post stories "Adventures in Autobumming" the Autoreelite was part of his essential equipment.

It makes driving at night safe and sure. Has every spotlight advantage. Its powerful rays help "spot" and remedy motor and tire troubles.

Self-contained. No loose parts. Fits any windshield. Reels and unreels exactly like a window shade. Always ready to use. Made of highest grade materials and best workmanship. Costs no more than ordinary spotlights.

Model B-6, 6-in. diameter, 20 c. p. lamp, with rear view mirror - - - - $10.00

Model B-7, 7-in. diameter, 32 c. p. lamp, with rear view mirror - - - - 12.00

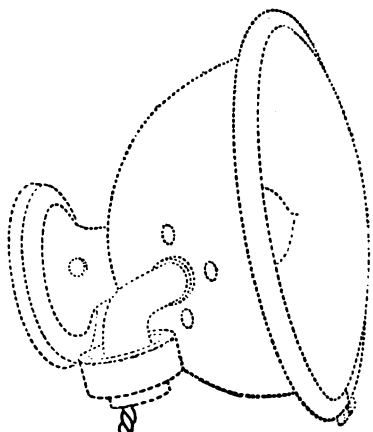
Sport model, all nickel, with rear view mirror - - - - - - - - - - 16.00

The only spotlight with a guarantee certificate

From the best dealers and supply houses

Write for Booklet No. AGJ 301-A.

Anderson Electric Specialty Co.
118-124 So. Clinton St., Chicago, Ill.



(When Writing to Advertisers, Please Mention the Accessory and Garage Journal.)

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BURD Quick-Seating PISTON RINGS Are Easy to Install

No medium priced—One Piece—patented piston ring—ever offered to the trade—has won the approval of mechanics and motorists so quickly. Millions of BURD Quick Seating Piston Rings are in successful operation, in practically every type of internal combustion engine. They are unequaled for ease of installation, micrometric accuracy, quick and perfect seating, efficiency of operation and economy of fuel and oil for this type of piston ring.

Seats in 45 Minutes

The outer edges—the Quick Seating feature wear down quickly, producing a seat in harmony with the hard, glass-like surface of the cylinder, giving maximum efficiency (for this type of ring) almost immediately.

The central channel on the face of the ring, two thousandths of an inch in depth, carries an oil film which absolutely prevents undue cylinder wear.

No slow, laborious "lapping in" is necessary. There is no delay of several days before the owner can use his motor. The BURD Quick Seating Ring promptly adjusts itself to a new or worn cylinder, and perfect seating is obtained in about 45 minutes running. It saves time, expense and trouble during installation—is efficient in operation, and prevents delays, loss of compression, waste of power, gasoline and lubricating oil.

Sizes: Made in all sizes and oversizes for practically every make and model of internal combustion engine.

Prices: Sizes up to and including 4 inches, 60 cents each. Sizes over 4 in. up to and including 5 in., 70 cents each.

It has the Quick Seating feature of a narrow ring—the wall tension of a wide ring.

Most Popular One Piece Ring

BURD Rings are cast individually, from a tough, dense gray iron of special analysis, filtered so that all impurities are removed, to insure absolute uniformity of metal texture, maximum strength and resiliency, prompt and perfect seating, and freedom from flaws, porous spots and other defects. BURD rings are ground (not turned) to a micrometic accuracy of .00025 of an inch. They fit accurately—are exceptionally resilient—exert an unvaried wall pressure, and will not break down under cylinder heat conditions.

Order From Your Jobber—Write for Directory of Sizes

Ask your Jobber's salesmen—or write now for the new 1920 BURD Piston Ring Directory of Sizes, and Dealer's Price List, which give complete information.

BURD HIGH COMPRESSION RING CO., Rockford, Illinois, U. S. A.

(When Writing to Advertisers, Please Mention the Accessory and Garage Journal.)

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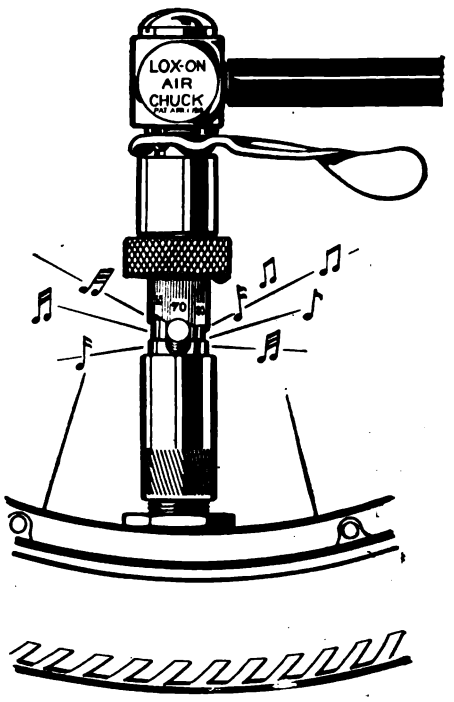

This view shows both the Whistler and the Lox-on in action.

LOX-ON TRADE MARK AIR CHUCK "DOESN'T RUB THE RUBBER"

Grips the Valve

Guards the tire against incorrect inflation. Set it for any pressure desired. It whistles when the right amount of air enters the tire. You can't put any more in. Saves 50% to 75% on tires; 20% gasoline; 100% time, trouble and temper.

YOU know the usual type of air hose chuck—you have to *push* it down on the valve. In a short time the rubber washer wears out—the chuck leaks and you've got to fix it—and then it does it again!

The Lox-on Air Chuck is positively *guaranteed* not to leak or wear out quickly. The rubber is not chewed to pieces by the valve threads. It slips over the stem freely—then, by turning the lever, you make it grip the valve like a hand.

When ready to take off, reverse lever.

Simple, strong, everlasting and efficient, the Lox-on Air Chuck answers the crying need of garage men everywhere for a chuck that can be used indefinitely without wearing or leaking. $3.00 each.

Whistler TRADE MARK

"IT WHISTLES WHEN IT'S HAD ENOUGH"

Automatic Safety Tire Valve Corporation
1765 Broadway, New York
Factory—Long Island City, New York

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PROOF of a Better Cooling Service

THERE is no stronger proof of efficient service than past performance under actual working conditions.

Modine SPIREX Radiators have been giving dependable service in hundreds of Ford cars and trucks. The following is one of many instances of SPIREX superiority:

CITY OF MILWAUKEE
DEPARTMENT OF PUBLIC WORKS

On September 5th, I asked you to make up a Ford radiator with a SPIREX core for my Ford, as it was almost impossible to drive even five miles with the original radiator without opening my side door and even taking off the hood in order to let the excess heat from my motor escape. My motor would pound terrifically and during one trip of 196 miles, it was necessary to refill with water three times.

Since using this SPIREX core radiator this excess heat has disappeared, the knocks are eliminated, miles per gallon of gasoline have increased and after driving 533 miles one quart of water refilled my radiator.

In fact I am so well pleased with this radiator that I am today ordering four more to be used on our one-ton trucks.

They are the best ever brought to my attention.

Very truly yours,
H. W. PARKER, Supt., Municipal Garage.

MODINE MANUFACTURING COMPANY
Racine, Wisconsin

MODINE
SPIREX
RADIATORS
for Fords

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Columbia Pyramid Starting and Lighting Brushes

THE right brush is absolutely necessary for the efficient operation of the electric system on any automobile.

Every starting motor and lighting generator is equipped with brushes, and they must be renewed from time to time.

To insure a quick start, steady lighting, and right storage battery charging, always put on Columbia Pyramid Brushes.

They come to you ready to install.

Write Your Distributor

NATIONAL CARBON COMPANY
Incorporated
Cleveland, Ohio San Francisco, Calif.
Canadian National Carbon Co., Limited, Toronto, Canada

7120

(When Writing to Advertisers, Please Mention the Accessory and Garage Journal.)

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GILL

The Perfect One Piece Piston Ring

This is a picture of "Mac." He is a corking good mechanic and a great booster for the Gill Piston Ring. "Mac" says you only have to show a motorist a Gill Ring to sell it and thousands of dealers all over the country have found this true to the advantage of their business.

What is the reason for this "Gill Enthusiasm"?

Look at the double step, interlocking joint and you will see for yourself. It allows an expansion of from $1/8$" to $3/16$" before any loss of compression occurs. In addition Gill Rings are made from single piece castings of special fine gray iron and machined to absolute accuracy. The easiest ring on the market to install, the easiest ring on the market to sell.

Send for the new Gill Piston Ring Size Directory, complete, convenient and full of just the information you need. It is free to the trade.

Dealers—Ask your jobbers about them
Jobbers—Write to us for information

The Gill Manufacturing Company
8301 South Chicago Avenue, Chicago, Illinois

Sole Foreign Agents:
AUTOMOTIVE PRODUCTS CORPORATION
Woolworth Building, New York, N. Y.

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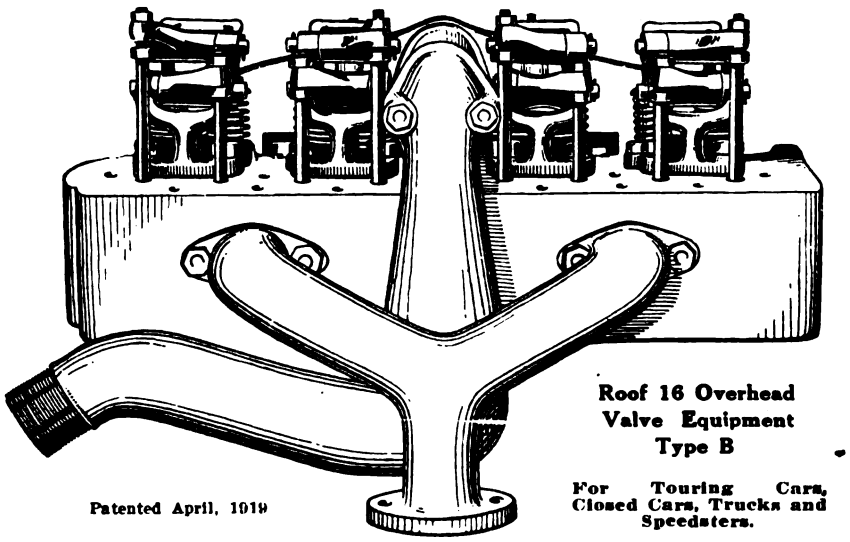
POWER and SPEED ROOF 16 OVERHEAD VALVE EQUIPMENT for FORD MOTORS



Patented April, 1919

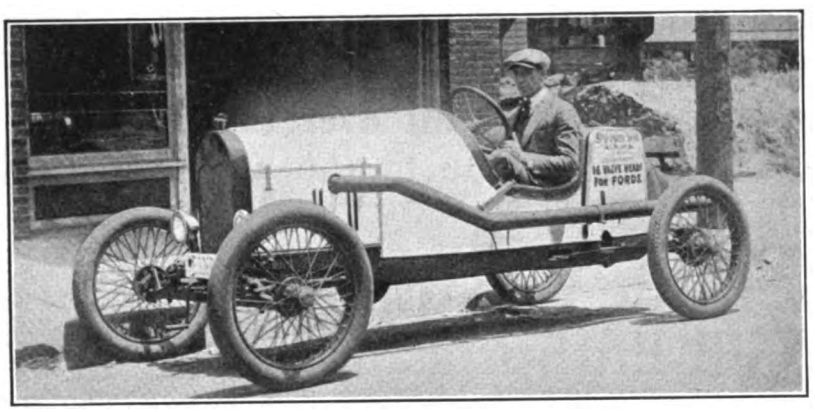
Roof 16 Overhead Valve Equipment Type B

For Touring Cars, Closed Cars, Trucks and Speedsters.

The Most Remarkable Power Device, Even in This Inventive Age

Hill climbing for touring cars—pulling power through sand and mud—doubles the hauling capacity of converted Ford truck-speed for mile and half-mile tracks to rival the fastest cars built. Ford racing cars with our Cylinder Head Equipment and special racing parts have attained speeds from 80 to 100 miles per hour. Hill climbing and pulling power for touring cars, closed cars and trucks. Price, complete, $115.00 f. o. b. factory. Nothing extra to buy. Cylinder head equipment all ready for installation. It takes the place of the regular Ford Cylinder Head. Any mechanic can easily and quickly install it.

Comparison Brake Horse Power Tests at the United States Bureau of Standards gave Standard Ford motor with regulation carburetor 18.7 Horse Power. The same motor with 16 Valve Head and regulation carburetor 22.4 Horse Power. The same motor with 16 Valve Head and Special carburetor 29.7 Horse Power. Recent tests at Bureau of Standards with Type B gave 32 Horse Power. We are Manufacturers and Distributors of speed and other specialties for Ford cars; 3 to 1 gears, high speed camshafts, aluminite, light grey iron pistons, lynite pistons, aluminite connecting rods, racing spark plugs, racing carburetors, roller bearings, counterbalances, wire wheels, multiple speed transmission, high tension magnetos, special oiling system, special worm and gear, steering gear, racing tires, racing bodies, hood and radiator, parts for underslinging chassis. Tell us what you want. We can supply it. Racing quality. Lowest prices. Send for our Complete Literature on how to build fast cars and double the value of your converted Ford Truck and descriptive circular on Speed and other Specialties for Fords.



16 Valve equipped fast speedster of high class design and construction owned by The Speedster Shop, Los Angeles, Calif. Speed, 70 miles per hour.

Ford Racing Car Speed Kings

From the hundreds of fast Ford car drivers we mention the names of a few of those who have won laurels through the use of our equipment and some with speed records approaching that of the highest priced racing cars in the world, ranging from 70 to 97 miles per hour, and who on mile and half-mile tracks have closely approached the world's record with their speed cars:

Loren Darst.....Eureka, Ill.
Haines Bros.....Ft. Benton, Mont.
Ben Lawell.....Columbus, Ohio
W. L. Frazier....Washington, D. C.
Herbert Black....Webster City, Iowa
John Proctor.....Washington, D. C.
Rolly Blair.....Shelby, Neb.
Joseph C. Hayes..San Francisco, Cal.
Paul M. Boozer.....Windber, Penn.
Hugo Goedthe.....Milwaukee, Wis.
W. C. Phalgrafh....Cheyenne, Wyo.
Milner Motor Car Co....Monroe, La.
C. F. Goltry.....Roann, Ind.
Fred Dawson.....Springfield, Ill.
W. C. Norris Motor Car Co.....
.....Oklahoma City, Okla.
Alvin A. Pfeiffer.....Clatonia, Neb.
J. Ross Castendyck.....La Salle, Ill.
Fred Hank.....Cheyenne, Wyo.
L. E. Kerbs.....Otis, Kan.
Phil M. Kepley....New Albany, Ind.
A. Malby.....Daytona, Fla.

Don Husted.....Marshall, Okla.
L. S. Stewart.....Cincinnati, Ohio
Irving Donohoe....Washington. D. C.
Taylor Bros.....Lafayette, Ind.
Robert Cusick.....Cleburne, Texas
Bozanni Bros.....Los Angeles, Cal.
J. Marshall Yeats....Champaign, Ill.
Kirby Horton.....Cleburne, Texas.
N. H. Steele.....Racine, Wis.
John G. Banzhaf..Greenwich, Conn.
Richard O. Fay.....Xenia, Ohio.
R. C. Wheeler....Chattanooga, Tenn.
W. J. Meagher.....Medford, Ore.
Gilbert Sartain.....Tahlequah, Okla.
Bert Wellington.....Casper, Wyo.
N. C. Burdett.....Stuart, Ia.
Perry La Merte....Kalamazoo, Mich.
Albert Willshaw.....
.....Ft. Wadsworth, N. Y.
Willard Brothers..Ponca City, Okla.
Roy A. Tolen.....Carlow, Mo.
W. H. Hooker..Bay Side, L. I., N. Y.

Cliff Duhme.....Cincinnati, Ohio
Brinker & Sheffer..Gibsonburg, Ohio
Roscoe J. Whitney.Leominster, Mass.
Frank Richardson....Segourney, Ia.
Roy A. Scofield....Council Bluffs, Ia.
Rister Garage....New Harmony, Ind.
Dennis Auto Co.....Ottawa, Kan.
Tunica Motor Co.....Tunica, Miss.
Treacy G. Mohney...Harrisburg, Pa.
Speedster Shop.....Los Angeles, Cal.
William Erwin.....Corcoran, Cal.
Packard Engineering Co.....
.....Cleveland, Ohio
Charles N. Davis....Piedmont, Mont.
Antone Bertoglio.....
.....Twin Bridges, Mont.
D. E. Snider.....Middletown, Ohio
Roy M. Barzem.....
.....Thief River Falls, Minn.
Bay View Auto Co.....Cheriton, Va.
A. Jackson.....Bloomington, Ill.

WRITE FOR OUR AGENCY TERMS TODAY

THE LAUREL MOTORS CORPORATION

ANDERSON, IND.

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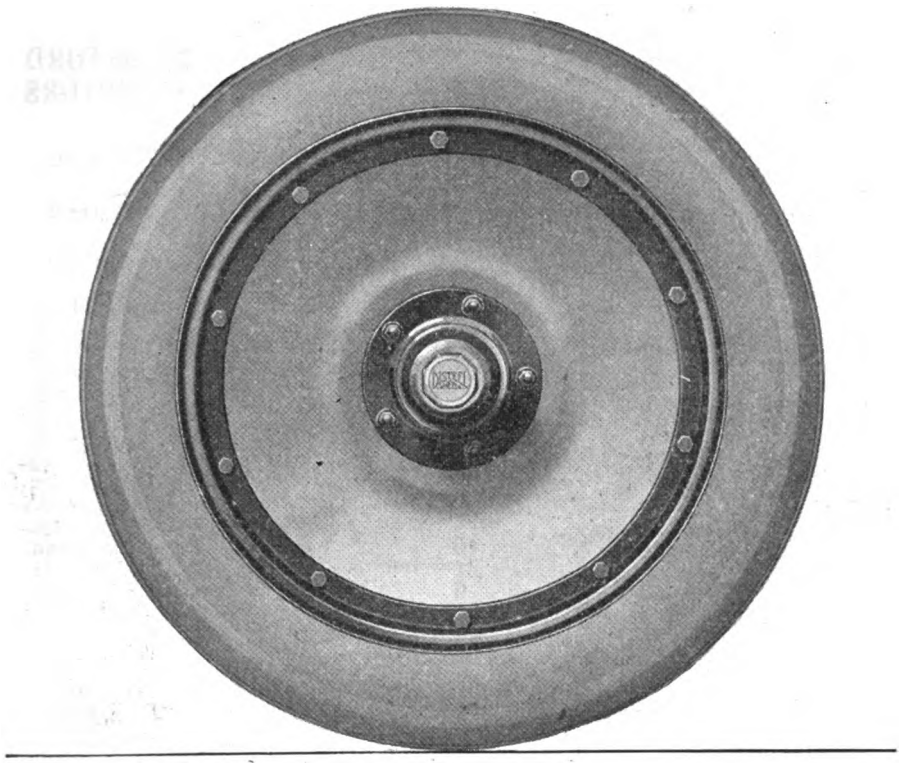

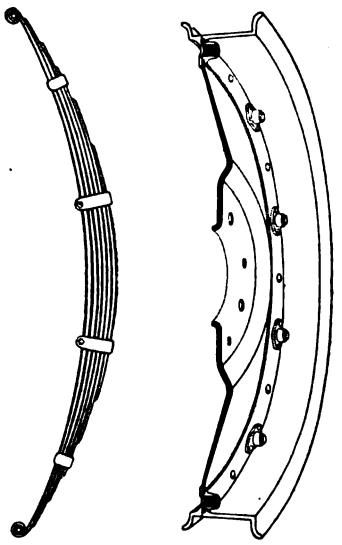

The Motor Car Spring and a Sectional View of the Disteel Wheel

Facts You Should Know About the Wheels of Your Motor Car

A motor car wheel should be so designed and constructed that road shocks cannot be transmitted directly to the bearings and the delicate mechanism of the car.

In the illustration at the top of this page is shown a motor car spring. That spring is thicker, heavier at the center than it is at the ends.

The spring is tapered.

It is tapered because it is a spring. The taper distributes and diffuses the strains.

The spring is dished.

That means it is curved slightly, which also serves to distribute and diffuse the strains.

Another example—In precisely the same way as the muffler of your car breaks up, diffuses and nullifies the noises that come from the exhaust of the motor—the wheel of the motor car can and must break up, diffuse and nullify the road shocks before they reach the hub, the axle and the bearings of the car.

The spring is made of steel.

Disteel Wheels are made of steel.

That Disteel Wheels add immeasurably to the beauty and distinction of good motor cars is, of course, universally accepted. However, from the viewpoint of mechanical excellence and in conclusion of the foregoing statements, we ask you to remember that—

Disteel Wheels are Tapered, Dished and Made of Steel.

Wheel Talk Number One

Being the first of a series that will appear at regular intervals in this publication. In this series we propose to tell some simple, basic truths about motor car wheels for the information of motor car owners and for the development of more economical and more comfortable motoring. We propose to outline, not only the principles of the scientific designing, engineering and construction of motor car wheels, but, also, those essential features which the car owner can and should demand of his wheel-equipment. If by these wheel talks we assist in raising the standard of wheel construction, we shall feel that we have been abundantly repaid.

Detroit Pressed Steel Company, Detroit, U. S. A.

Disteel Wheel Plant, Cabot Ave. **Automobile Frame Plant, Mt. Elliott Ave.**

New York: 1846 Broadway at 61st St. **Chicago: 732 Michigan Avenue**
Boston: 925 Boylston Street **San Francisco: 326 Rialto Bldg.**

DISTEEL WHEELS

The Wheels That Complete The Car

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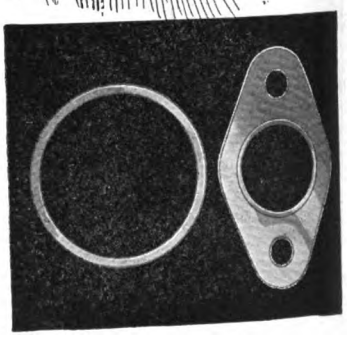
The Gasket You Want

—*Where You Can Get It Quick*

The best way to handle small gaskets in a retail store or garage is to put them on boards.

McCord Gasket Boards carry the round and flange gaskets (25 of each size) used on the most popular cars—all salable sizes.

Write for booklet giving complete information **as to sizes and types on each board, including dealer's re-sale prices.**



Order McCord Gaskets
Through Your Jobber

McCORD MANUFACTURING COMPANY, Inc.
DETROIT, MICHIGAN

Manufacturers of McCord Automobile Radiators and McCord Force Feed Lubricators

***McCord Gaskets** are made in hundreds of different sizes and fit every type and model of automotive motor.*

In specifying McCord you are assured a product of excellence which extended experience, insistence on the best raw material, specialized equipment and high inspection standards achieve.

McCord
GASKETS

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Paterson SIX

Out Of The Price Class

Yet it costs no more. That is the expression of the Paterson ideal and the Paterson policy.

The standards of the W. A. Paterson organization do not permit blind following of blind leaders—we create, without regard to price competition, and prospective car buyers probably think less of the dollar sign when viewing the Paterson Six than they do in considering any other car.

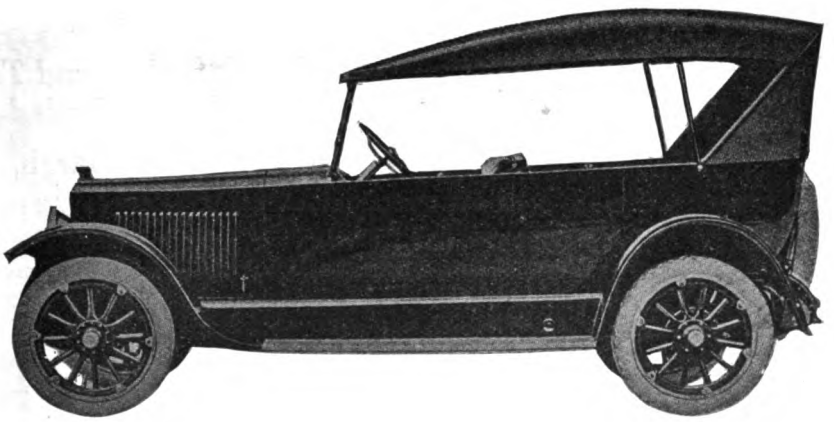
The Paterson Six is a finer value—obviously it is so much more desirable a purchase than others in its price class that buyers are agreeably surprised when they sign the dotted line to find that the price of the car is so modest.

The body is a masterpiece of the builder's art—the product of craftsmen. Long wheelbase permits full comfort. The flow of the smooth-blending lines creates pride of ownership. The color choice permits of artistic self-expression by the discriminating buyer. The standard, use-approved specifications completely satisfy the mechanically wise, and give point and justification to our claim that the Paterson Six represents a finer motor car value.

Substantial companies are invited to correspond with us

Price $1795

W. A. Paterson Co., Flint, Mich.



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THE ATSCO PORTABLE AIR TANKS

For EMERGENCY ROADSIDE REPAIR JOBS

Service and Speed Count Big In Profits

In every emergency job there is always more or less work to do on tires.
A stalled motor makes the power pump useless and the inflation of tires with a hand pump is slow and tedious work, costly and not practical.
With an Atsco Portable Air Tank in the emergency car, any tire can be inflated in less time than it takes to find and attach a hand pump.
The Atsco adds to the repairer's profits in time and labor saved. It supplies all the air wanted, when and where needed. It eliminates all effort and adds to efficiency.
The Atsco has almost unlimited utility in the shop, garage or service station. It is service equipment that permits quick and satisfactory work. It is light in weight, compact and easily carried. Where air can be used the Atsco will supply it.
Atsco Tanks are 36 inchs in length and 10 inches diameter. They are made of steel with genuine copper brazed seams and joints, good for 500 pounds and intended for a working pressure of 250 pounds. All Atsco Tanks are guaranteed to be absolutely air tight.

Atsco Tanks Are Shipped Completely Equipped With Hose and Tire Valve and Connection For Filling. Nothing More is Needed or Necessary.

LIST PRICE $24.50 f. o. b. Pittsburgh, Pa.

Many service stations have in use a dozen or more Atsco Tanks. All repairers should have one. In emergency service there is no equipment more desirable.

We specialize in the production of garage pressure tanks, and have in stock or will build to specification tanks of any size or pressure requirements.

Our tanks are used by most of the producers of compressor and air storage systems.

These tanks are genuine copper brazed construction and the seams and joints are far stronger than the stock metal. They will not crystalize or crack and are guaranteed air tight.

We make pumps and pressure tanks for all purposes.

We Solicit Your Inquiries

AIR-TIGHT STEEL TANK CO.

PITTSBURGH, PENNSYLVANIA

TANK MAKERS FOR NEARLY THIRTY YEARS

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PEERLESS RADIATORS

PRACTICALLY FREEZE AND BOIL-PROOF

PEERLESS Guaranteed Radiators are equipped with the indestructible Peerless Honeycomb Core, that is so efficient for the cooling of Ford engines.

ALL parts coming in contact with water are of brass. Dimensions same as regular Ford radiator, insuring quick and easy installation on the reliable Ford car.

BECAUSE of the superiority, usefulness and attractiveness of the Peerless Radiator, a tremendous demand has been created. Thousands of satisfied users attest to the efficiency of the Peerless.

IT IS estimated that approximately $2,000,000 is spent monthly in the replacement of Ford radiators. Are you getting your share of this tremendous business that awaits Peerless Dealers?

ASK your jobber about Peerless Products for Ford Cars:—Radiators, Radiator and Hood Combinations, Fenders, Tool Boxes—or write for complete catalogue.

Address Department 5

The CORCORAN Mfg. Co.
CINCINNATI

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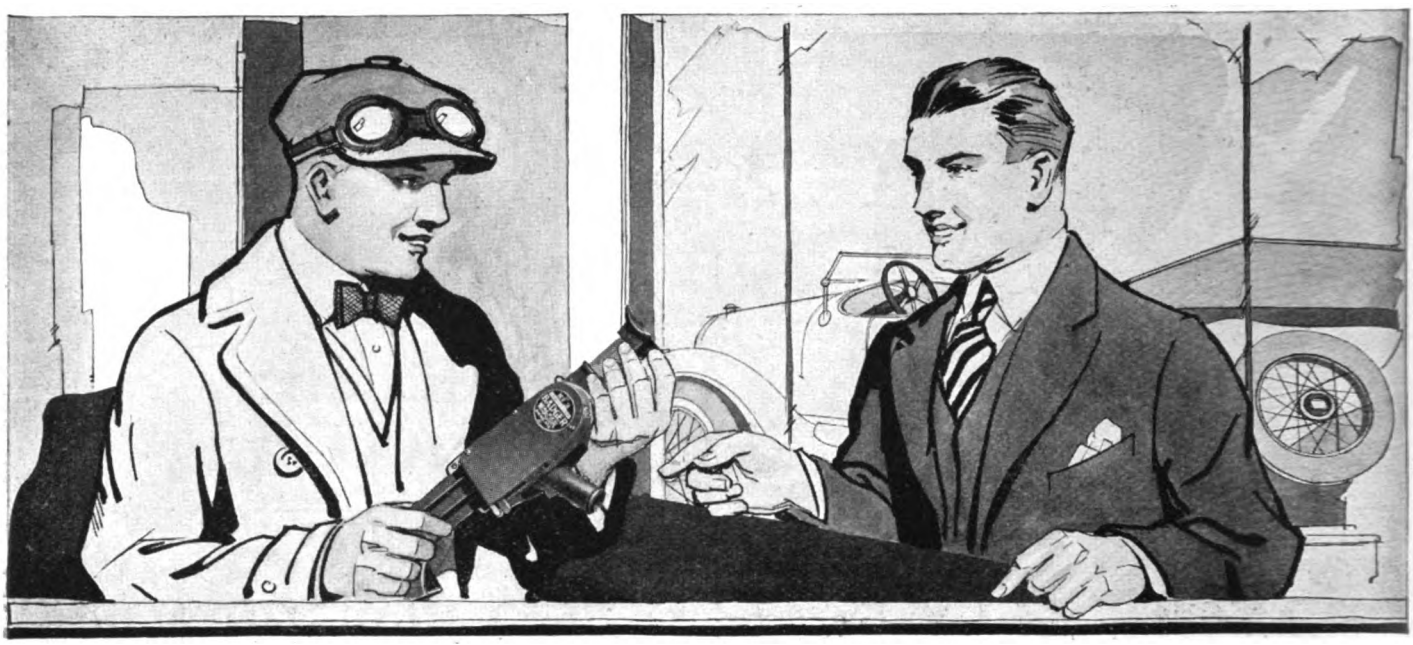
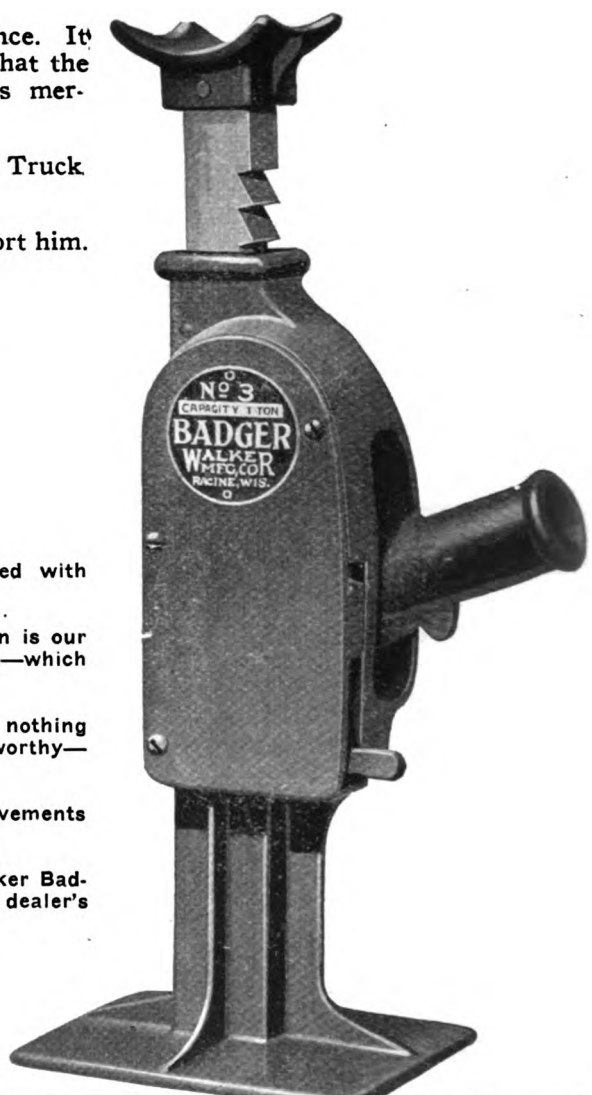


"If It Doesn't Satisfy You—Bring It Back"

That's the kind of talk it takes to sell goods. It creates confidence. It establishes a plane of buying protection. Any motorist knows that the dealer who makes such a statement is sure of the quality of his merchandise.

Dealers who handle the Walker Badger line of automobile and Truck Jacks—are sure. There is no question as to quality.

We, the manufacturers, stand solidly back of the dealer. We support him. Make selling easy. And satisfaction certain.



WALKER BADGER AUTOMOBILE JACKS

Are critically factory tested for lifting strength and endurance. Labeled with lifting capacity.

Each is packed in a neat, attractive cardboard carton—and on the carton is our printed guarantee of satisfactory service—signed by us. A positive pledge—which will never be violated.

Our confidence in our own product begets buyers confidence. It proves as nothing else can that Walker Badger Jacks are designed and built to give trustworthy—dependable service. And they do.

Walker Badger Jacks possess many exclusive and vitally important improvements—many selling advantages which promote profitable, desirable trade.

DEALERS, send for Catalogue illustrating and describing the entire Walker Badger Jack Line—"a Jack for every job." Get our dealer's proposition and dealer's sales-making helps.

Walker Manufacturing Co.

Racine, Wisconsin

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rage Journal.)

Sterling Spark Plugs

Why a Tractor Plug For a Motor Car?

Sterling Tractor Spark Plugs have been developed to meet the most exacting requirements of tractor motors.

Ordinary spark plugs will not withstand, for any length of time, the high heat produced by these internal combustion engines.

Sterling Tractor plugs meet the severest tests imposed, for they are scientifically constructed. The porcelain core is unusually heavy; the combustion chamber extra deep, and the center electrode—made of monel metal—will not warp.

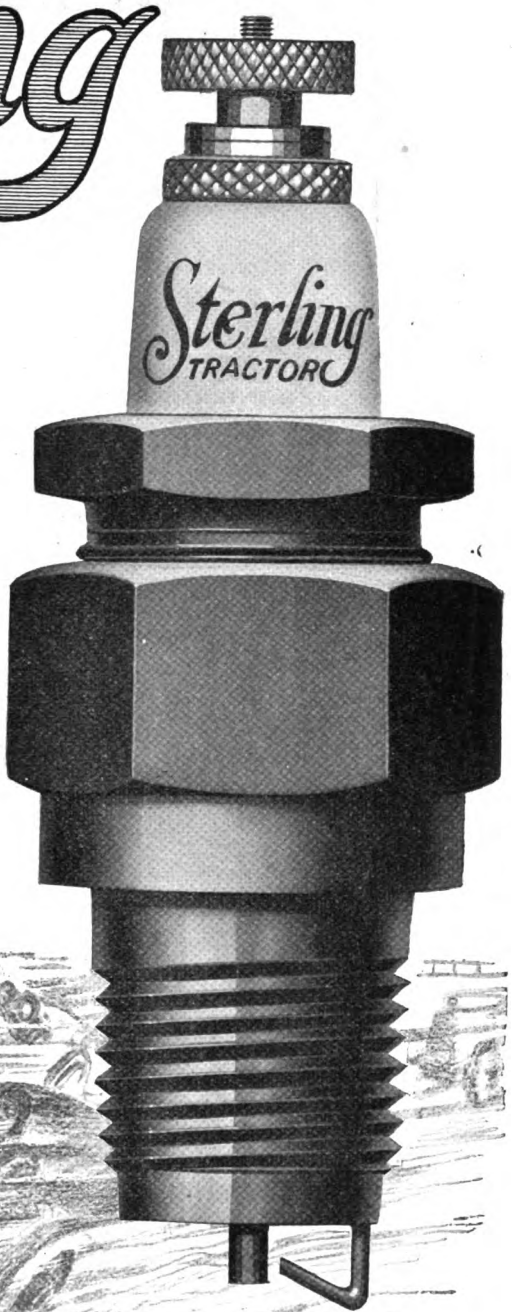
Since Sterling Tractor plugs fulfill the demands of tractor engines they are, naturally, the best possible spark plug for use in the motor car. These heavy-duty plugs are like all Sterlings, they are separable and easily cleaned.

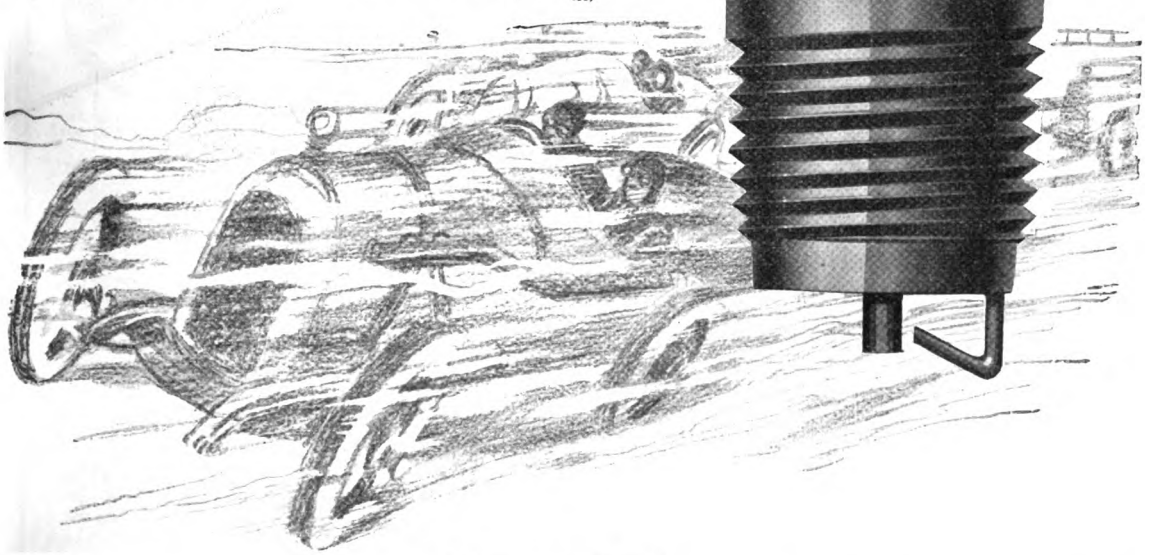
Progressive garages and supply dealers everywhere sell and endorse these Sterling guaranteed plugs.

The Lockwood-Ash Motor Company

2050 Douglas Street **Jackson, Michigan**

(68)





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Form 1204

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Day Letter	Blue
Night Message	Nite
Night Letter	N L

If none of these three symbols appears after the check (number of words) this is a telegram. Otherwise its character is indicated by the symbol appearing after the check.

WESTERN UNION TELEGRAM

NEWCOMB CARLTON, PRESIDENT GEORGE W. E. ATKINS, FIRST VICE-PRESIDENT

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DETROIT MICH DEC 16 1919

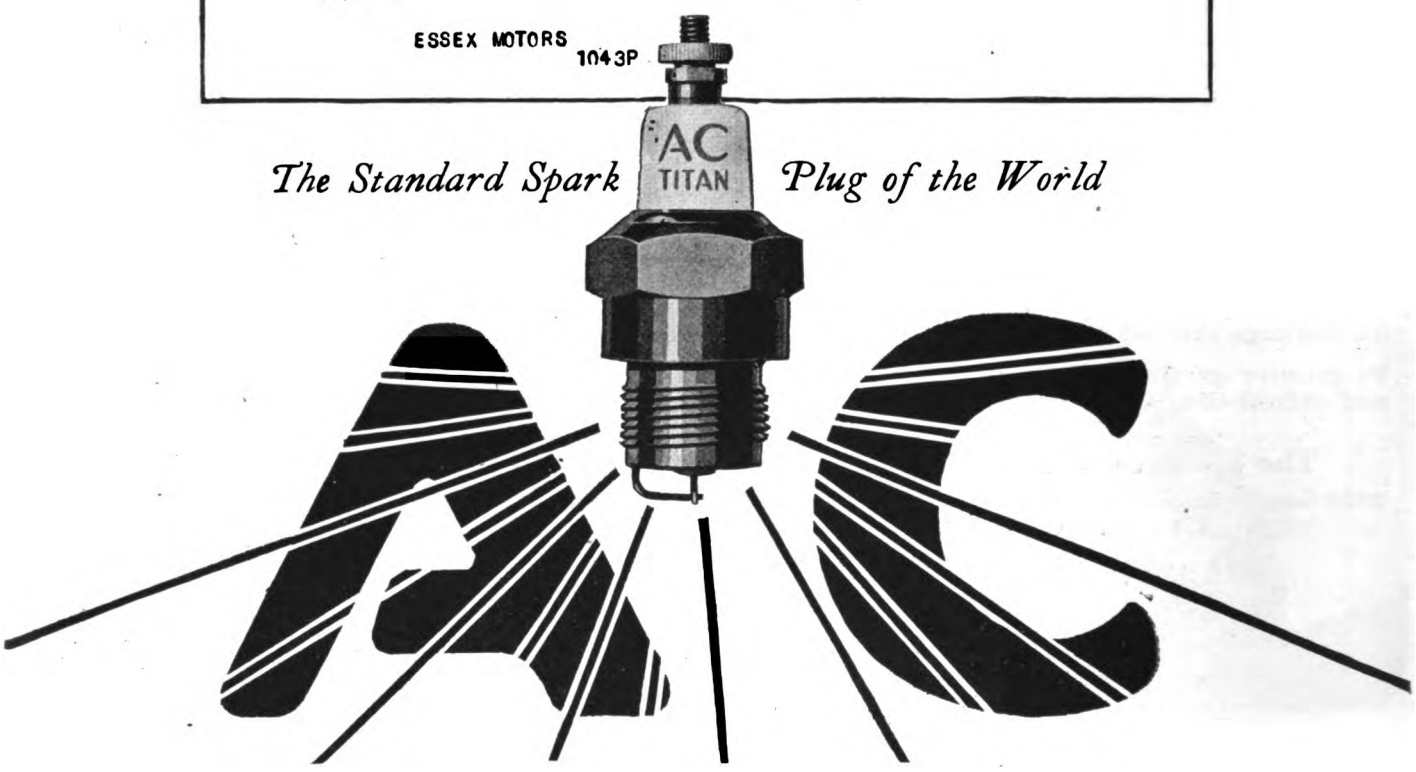
CHAMPION IGNITION CO

ALBERT CHAMPION FLINT MICH

CONGRATULATE YOU ON EXCELLENT PERFORMANCE OF THE AC PLUGS USED IN ESSEX CAR WHICH RECENTLY COVERED TOTAL OF FIVE THOUSAND EIGHT HUNDRED SEVENTY MILES AT AN AVERAGE OF BETTER THAN A MILE A MINUTE

ESSEX MOTORS 1043P

The Standard Spark Plug of the World



When the Essex established the new world's endurance record for stock chassis of 3,037 miles in 50 hours of continuous running on the Cincinnati speedway, AC Spark Plugs shared in the achievement.

The six plugs that sparked the Essex engine not only functioned perfectly in the successful 50-hour test, but also fired the motor charge for 94 hours and 22 minutes, during which time the record-smashing car covered a total of 5,870 miles at better than mile-a-minute speed.

The dealer who sells AC Spark Plugs, like the car maker who specifies them and the car owner who uses them, has the best spark plugs that the foremost ignition engineers can design. It pays that dealer, both in dollars and cents, and in customer good will, to stock AC's. Write today for dealer information.

Champion Ignition Company, FLINT, *Michigan*

U. S. Pat. No. 1,135,727, April 13, 1915, U. S. Pat. No. 1,216,189, Feb. 13, 1917. Other Patents Pending

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A Guaranteed Radiator for Fords

Ford owners, who generally know what Radiator trouble means, will appreciate a Radiator made good enough so that it can be guaranteed.

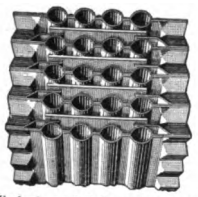
Every Lober Non-Bursting Radiator bears the manufacturers guarantee tag. It is put there for your protection and means just what it says. In the past two years thousands of Ford owners have taken advantage of this liberal guarantee of good quality, and have equipped their machines to their lasting satisfaction.

The patented construction of the Lober Radiator gives elasticity, strength and absolute freedom from freezing trouble. Super-cooling in hot weather and made to stand up under the shocks and strains of rough driving.

Lober Non-Bursting Radiator

Patented Nov. 12 and 18, 1918

Close up view of the front of a Lober Non-Bursting Radiator.



End view of Lober patent core showing flat brass spring between each water tube section. This core will stand repeated freezing without damage.

Showing how water tube expands under pressure, such as freezing. Flat spring presses the tube back to size after each freezing.

This Radiator is not an experiment. Many thousand are in use on Ford cars and giving splendid satisfaction. There is a reason. The patented Core construction allows the water tubes to expand and contract—without damage. This is obtained by a flat brass spring between each water tube section. It also makes the Core elastic so that road shocks are absorbed without leaking. Made of brass throughout. Strongest possible construction giving long service. Water tubes are straight and will not clog. Whirling of air through Core gives exceptional cooling no matter how hot the day or how hard the going. The perfect Radiator for all Ford cars or trucks.

Guaranteed Not to Burst From Freezing

Every Radiator bears the manufacturer's guarantee tag. That explains why it's easy for dealers to make sales. Write at once for photographs and detailed information. You will be interested in this new type Radiator that is doing such wonderful work on any and all Fords. Bitter cold nights, boiling hot sun or rough country roads have no terrors for the man who drives with a "Lober."

Nelson J. Quinn Co.

Toledo, Ohio

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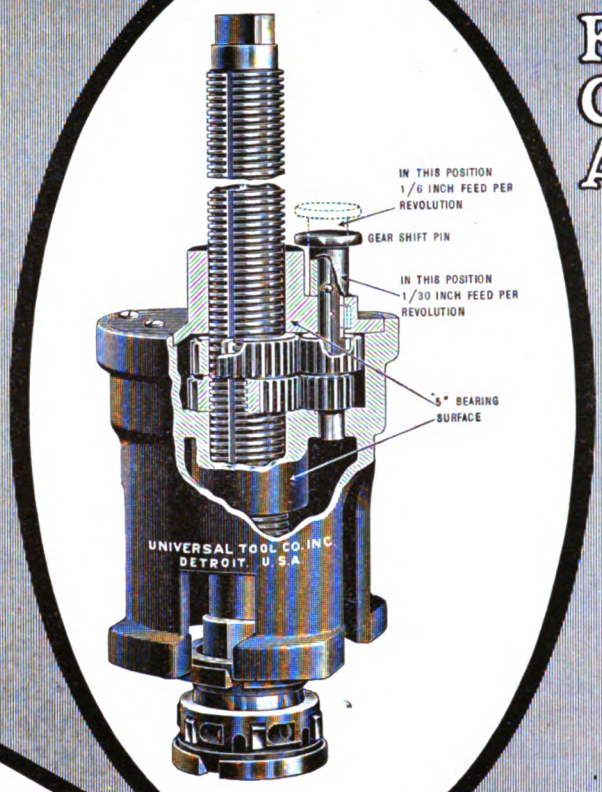
For Reboring the Cylinders of any Automobile Motor



The recommendation and the endorsement of the Universal Cylinder Reboring Tool by the following companies is a guarantee of the tool's accuracy and profit-making ability:

Chalmers Motor Car Company
Dodge Brothers
Essex Motors
Gramm-Bernstein Motor Truck Company
Gray Motor Co.
Hudson Motor Car Co.
Indiana Truck Corp.
Mitchell Motors Company, Inc.
The Nash Motors Company
Oakland Motor Car Co.
Oldsmobile Motor Works
Paige-Detroit Motor Car Co.
Republic Motor Truck Co., Inc.
Scripps-Booth Corp.
Service Motor Truck Co.
Willys-Overland, Inc.

At the Boston Show

Universal Tools Will be Exhibited By Linscott Supply Company Space 521

THE UNIVERSAL TOOL CO., Inc.

Makers of UTCO Products

435 Woodward Ave., Detroit

UNIVERSAL

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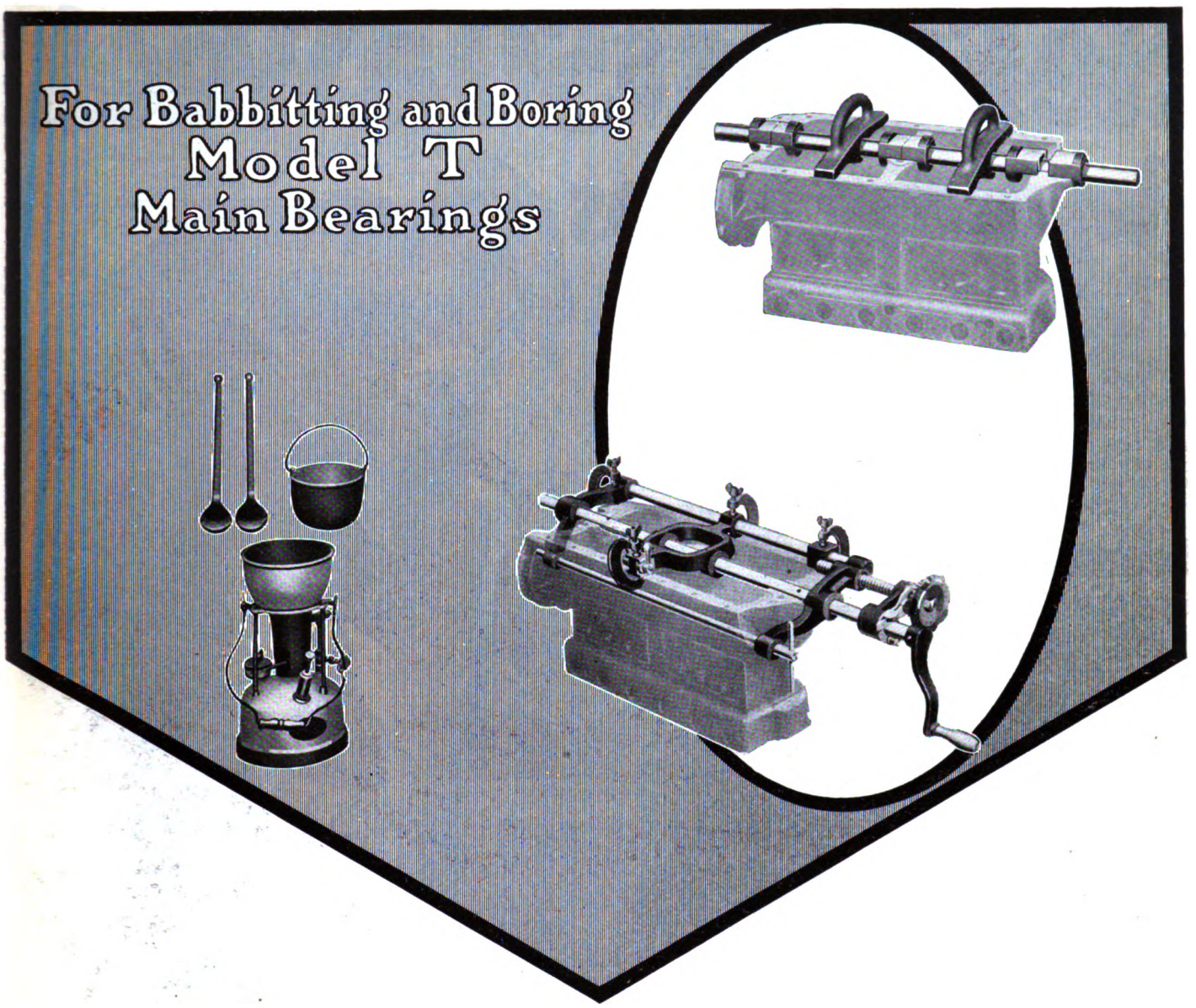

Here is the outfit that in twenty minutes will babbitt and bore the three main bearings of a Ford Model T—with 100% accuracy.

No need to tell any Ford dealer, garage or repair man, what the ownership of this equipment means in the way of building satisfaction among customers—and of increasing profit.

This equipment makes an easy matter of a heretofore troublesome task and produces a perfectly finished job.

You can also obtain Universal equipment for babbitting and boring the main bearings of a Fordson Tractor—and a combination equipment (one tool) for both Fords and Fordsons.

At the Boston Show

Universal Tools Will be Exhibited By Linscott Supply Company Space 521

THE UNIVERSAL TOOL CO., Inc.

Makers of UTCO Products

435 Woodward Ave., Detroit

UNIVERSAL

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He Earns $50 a Week Repairing Autos

THOUSANDS of men everywhere are doing the same. Many are getting more than this. Some are opening garages of their own. Why don't you get into the auto game too? Men in other lines with a little mechanical ability have doubled their earnings after getting into the fascinating field of auto construction and repairing. Ten times the number of men now engaged in the business are needed. Fine, big paying jobs are waiting for men who "know" to fill them. Read below and find out how you can fit yourself to hold one of these big, man's size jobs in your spare time, without going away from home at a cost of only 7c a day.

Learn at Home

No need to pay for an expensive course that will take you away from home. You can learn the auto game at a cost of one-tenth the expense of going away to school. You don't have to serve an apprenticeship either. Use spare time only and keep right on with your present work. This Library of Automobile Engineering and Tractor Information will make an expert out of you and fit you for the biggest kind of job. It is in six thick volumes, with 2600 pages and 2300 pictures, plans, diagrams and blueprints, etc. Every part of every well known car is explained. They teach you everything the best auto schools teach.

Fifteen great auto engineers prepared these money-making books for men like you. You don't have to know a thing about cars to understand them. Every page is written in plain, everyday language and they begin right at the beginning. With every set we give FREE a consulting membership in our society. You can write our engineers any time and get their help on any proposition on which you get stuck.

Everything About Autos

Automobile Motors; Welding; Motor Construction and Repair; Carburetors and Settings; Valves, Cooling; Lubrication; Fly-Wheels; Clutch; Transmission; Final Drive; Steering; Frames; Tires; Vulcanizing; Ignition; Starting and Lighting Systems; Shop Kinks; Commercial Garage Design and Equipment; Electrics; Storage Batteries; Care and Repair of Motorcycles; Commercial Trucks; Gasoline Tractors.

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Please send me the 6-volume set of Automobile Engineering for 7 days examination, shipping charges collect. If I decide to buy I will send $2.80 within 7 days and balance at the rate of $2.00 a month until $21.80 has been paid. Then you will send me a receipt showing that the set of books and the Consulting Membership are mine and fully paid for. If I want to get along without the books, I will notify you after 7 days to send for them at your expense.

Name.....

Address.....

City..... State.....

Reference.....

Please Fill Out All Lines

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THE ACCESSORY AND GARAGE JOURNAL
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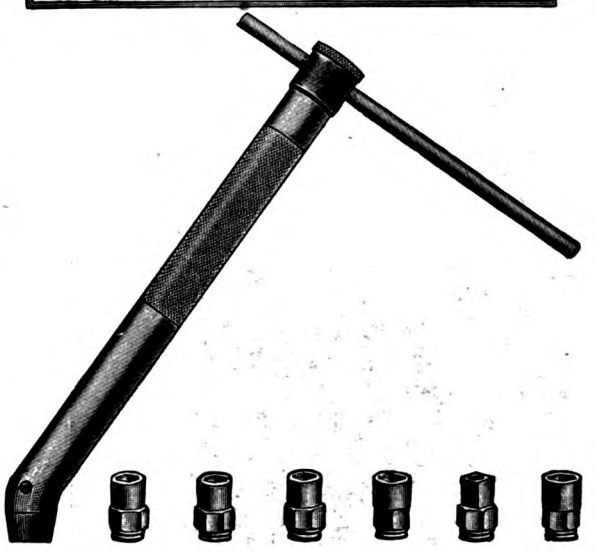
BILLMONT MASTER WRENCH
"The Wrench that Spins 'em off"



A Whole Tool Kit In Itself

A universal joint socket wrench with all driving parts incased in a heavily knurled, stationary, hand-grip sleeve.

Reaches almost every old nut or bolt on body or motor—even Ford 4th connecting rod nut. Hooked nose grabs hold and "spins 'em off."

Set consists of master wrench, 5 hexagon sockets (7/16, 1/2, 9/16, 19/32, 5/8), and 1 adapter, so any standard socket may be used. List price, in wooden box.. $10
(Canada.. 15

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628 Plymouth Bldg., Minneapolis

Western Canada:
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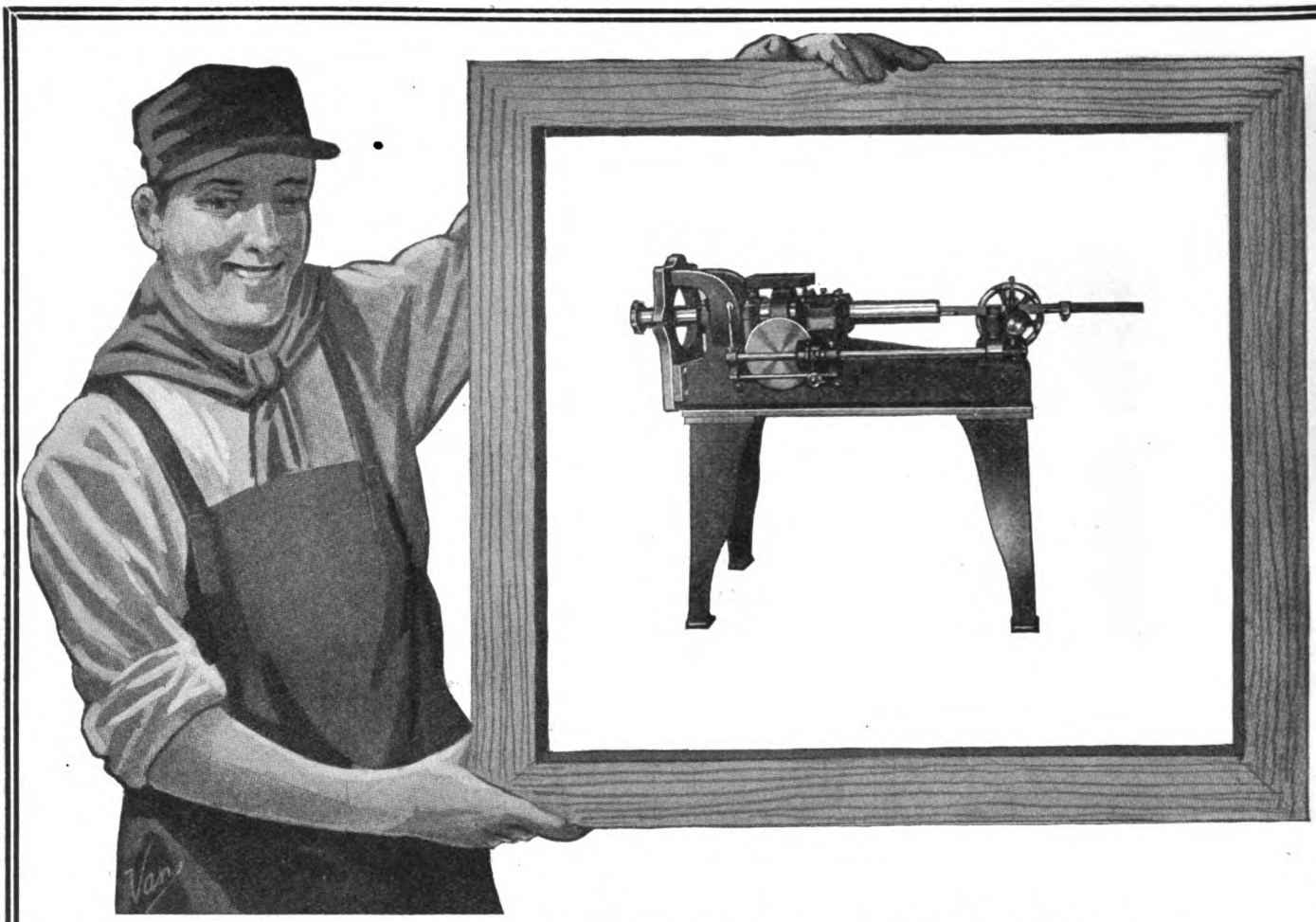

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You'll never need a doctor for your business if you have a Marvel No. 5 in your shop. It is always in shape—is spack and span—ready for work. It always does a high-class job and is the greatest little money maker you ever saw. It works faster and does better work at less cost than any machine ever invented and handles any gas engine cylinder from a MOTORCYCLE TO A TRACTOR.

Marvel Cylinder Re-Boring Machine No. 5

In your shop will double your man-power—will turn wasted time into profitable hours—will establish you in the Re-boring business and show a profit on your books.
The Marvel No. 5 is power-driven—automatic—accurate and speedy. It has been endorsed by hundreds of schools and colleges and automotive repairmen.

GET THE PROFIT

There's a lot of extra money floating around in your community and you can get it with a Marvel No. 5. Think of the hundreds of owners of motor cars, trucks and tractors whose cylinders need reboring. Cash in on it. Get in shape to rebore them on a Marvel No. 5 and fit them with Marco Oversize Pistons.

MARCO PISTON SERVICE

WRITE US TODAY

We will outline our entire proposition. We will tell you what a Marvel No. 5 will do for you—Will show you the profit you can expect. We will explain how, through our Co-operative Business Building Advertising, we help bring customers to your shop and how the Marvel No. 5 will hold them.

MARCO PISTON SERVICE

Marvel Machinery Company

516 Loan & Trust Building, Minneapolis, Minn.

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The ACCESSORY and GARAGE JOURNAL

VOL. IX. PAWTUCKET, R. I., FEBRUARY, 1920 No. 10

Success of Boston's Big Automobile Show Is Assured

Unbounded Enthusiasm Is Manifested in 20th Annual Exhibition, with a Record-breaking List of Exhibitors.

IN REGARD to the 20th annual Boston automobile show, which is always anticipated as the big closing event of the season's typical American car exhibitions, it is, perhaps, not too much to affirm that when the doors of Mechanics' building are thrown open Saturday, March 13, at 2 p. m., for its inauguration, there will be seen the most representative and comprehensive exposition of all phases of the automotive industry that has ever been brought together under one management and at one time.

According to latest information given out by the management, this 1920 Boston show will exceed the New York and Chicago expositions of this year in number of passenger car exhibitors by at least five, and these will include 12 new makes never before shown, and the number of commercial vehicle displays will equal, if it does not overrun, those at the two metropolitan shows. And in regard to accessories, when it is stated that this department will surpass by at least 100 the maximum number of displays ever before seen at Boston, the magnitude and completeness of this section can well be imagined. The management states that had the necessary space been available the list of exhibitors could easily have been augmented by at least a hundred concerns who have been for the past two months clamoring for a chance for representation.

It should also be remembered in gauging the magnitude of this exhibition that 40,000 additional feet of floor space have been added to the 105,000 afforded in the Mechanics' building, by overflowing into the South Armory on Irvington street, which is only a few minutes walk from the main show. Every available inch of exhibition space in the two buildings has been taken and will be filled, with the latest offerings of the season in passenger and commercial cars, with their accessories and equipment, not forgetting to mention the hundreds of spaces that will be devoted to up-to-date equipment in the way of tools, appliances, etc., for garages and repair shops.

Divisions of Departments.

The management has divided the exhibition this year as usual into various departments for better classification of displays and their accessibility to the visitor. Departments A and B on the main floor of Mechanics' building will be occupied exclusively by passenger cars. Departments C and D in the basement will include only commercial vehicles in the former, while in the latter passenger and commercial cars, sundries and machinery will be shown. Department E in the balcony section will house passenger cars and accessories and Departments F and G on this floor will be exclusively devoted to accessory exhibits.

Chester I. Campbell, General Manager Boston Automobile Show.

At the South Armory will be seen both passenger cars and commercial vehicles and their respective accessories.

One ticket will admit the visitor to both buildings, a coupon being provided which will allow admission to either place first at the option of the holder. The general admission price will be 50 cents.

The decorations this year will again be in charge of A. W. Campbell who has presented so many strikingly appropriate settings for this event in the past. While the details of the decorative scheme are not yet made public, it is assured that something entirely novel and pleasing will be presented in the way of a spring time motif.

The doors will be thrown open on Saturday, March 13, at 2 p. m., and will be open every day thereafter, with the exception of Sunday, from 10 a. m. until 10:30 p. m., until and including Saturday, March 20.

As in the past, the management will provide musical entertainment of a high order in the various departments during the show, and many little touches will be noted that will add to the convenience and comfort of exhibitors and visitors, such as the Bureau of Information, located in an office near the main entrance, and telephone service which includes a telephone in every exhibition space, the Back Bay telephone exchange supplying a force of 12 operatives to handle calls from the auto show.

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This event is again held this year under the auspices of the Boston Automobile Dealers' Association, Inc., and the Boston Commercial Motor Vehicle Association, Inc., and the general manager is Chester I. Campbell, who has directed these exhibitions from their inception, and also serves as secretary of both of the organizations sponsoring the show.

An idea of the colossalness of the display may be gained from consideration of the fact that over 11,000 tickets are required for the exhibitors, agents and salesmen who participate in the show during the seven days it is in progress. The decorations alone will cost close to $50,000, while the rent of the two buildings for the time they are used during the period of preparation and the duration of the show would make a big salary even in these days. Manager Campbell will have a staff of over 200 men to manipulate the machinery of the show while it is on. Add to this advertising and other overhead expenses and it foots up to over $100,000.

As is ordinarily the case, show week in Boston will be signalized by many gatherings of a business and social nature by bodies allied with the automotive industries, such as annual meetings, conventions, conferences, banquets, etc., and there is no doubt there will be one of the biggest assemblages of representatives from the eastern section of the country as has seldom been seen at the Hub.

Nor are the activities of the week by any means confined to interests directly concerned in the auto show. It has come to be recognized as Boston's greatest business week, a veritable spring time awakening to the strenuous industrial and commercial life of a new season. Hotels are booked to capacity far in advance, and thousands who will be in Boston that week are forced to resort to lodging houses or rely on the hospitality of friends. Restaurants and theaters, department stores and retail merchants generally do a tremendous business. The visitors come prepared to spend liberally and millions are thus dropped into the coffers of the Boston merchant as a result of the Boston automobile show.

The officials of the organizations under the auspices of which the exhibition is held this year are as follows:

Boston Automobile Dealers' Association, Inc.—Directors: J. H. MacAlman, president; J. S. Hathaway, vice president; F. A. Hinchcliffe, treasurer; J. W. Bowman, C. E. Fay, J. H. Johnson, J. W. Maguire, C. P. Rockwell, F. E. Wing.

Boston Commercial Motor Vehicle Association, Inc.—Directors: J. S. Hathaway, president; J. W. Maguire, vice presdent; E. Day Baker, treasurer; P. S. Aultman, L. B. Sanders, J. L. McKone, N. H. Halliday, J. H. MacAlman, C. P. Rockwell.

The latest revised list of exhibitors, which is given out by the management as only partial, is added herewith.

Mechanics' Building, Huntington Avenue, Boston, Where the 20th Annual Automobile Show Is to Be Held, March 13-20.

Partial List of Exhibitors at Boston Automobile Show

Space	Name	Address
233	Acason Motor Truck Co.	Detroit, Mich
710	Acme Die-Casting Corp.	Boston
234	Acme Truck	Cambridge
839	Advance Automobile Acces. Corp.	Chicago
262	All American Truck Co.	Chicago
426	Allen Car	Boston
816	American Car	Boston
434	American Bosch Magneto Corp.	Springfield, Mass.
545-546	American Chain Co.	Bridgeport, Conn.
527-528	American Motor Equipment Co.	Boston
801	Anderson Car	Boston
836	Anderson Electric Specialty Co.	Chicago
138	Anthony, Frank P.	Boston
617	Apco Manufacturing Co.	Providence, R. I.
115	Apperson Motor Car Co. of N. E.	Boston
Spec. Dept. G	Argonne Car	Boston
605	Arrow Grip Mfg. Co., Inc.	Glens Falls, N. Y.
800AA	Atlas Truck	Boston
558-559	Atwater Kent Mfg. Works	Philadelphia
134-135	Auburn Car	W. Somerville
323-324-325-326	Autocar Sales & Service Co.	Boston
838	Auto Gear Co. of Boston	Boston
605AA	Automatic Air Cushion Co.	Boston
602	Automobile Legal Association	Boston
604	Automobile Mutual Fire Ins. Co.	Boston
603	Automobile Mutual Liability Ins. Co.	Boston
202-203-204	Autowa Car	Boston
200-201	Babcock Sales Co.	Boston
309-310	Baker Motor Truck Co., Day	Boston
336-337	Baker Motor Sales Co., Inc.	Cambridge
834	Bascom, George R.	Boston
408	Bayerson Oil Works	Boston
14-18	Beacon Motor Car Co.	Boston
876B	Bearings Specialty Co.	Boston
423	Becker Bros.	Chicago
22-23	Becker Stutz Automobile Co.	Boston
852	Beckley-Ralston Co., Inc., The	New York
236	Beeman Garden Tractor	Brighton
810	Bethlehem Motors Corp.	Allentown, Pa.
400	Bethlehem Spark Pg. Corp.	S. Bethlehem, Pa.
31	Biddle Car	Boston
619	Bigelow & Dowse Co.	Boston
622-623	Black & Decker Mfg. Co., The.	Baltimore, Md.
525-526	Boice Motor Equipment Co.	Boston
414	Boston Blacking Co.	E. Cambridge
140-144 Inc.	Boston Buick Co.	Boston
216-216a-217-217a	Boston Federal Truck Co.	Boston
146, 333	Boston Oldsmobile Co.	Boston
849	Boston Morris Plan Co., The	Boston
5-9	Bowman Co., The J. W.	Boston
24-25	Brewster Car	Boston
137	Briscoe	Boston

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Space	Name	Address
413	Bristol Mfg. Co.	Boston
308	Britton-Stevens Motor Co.	E. Cambridge
338-339	Brockway Motor Truck Co.	Cortland, N. Y
531-532	Brooks-Skinner Co., Inc.	Quincy Point, Mass.
502-504	Brunner Mfg. Co.	Utica, N. Y.
420	Buda Co., The	Harvey. Ill.
140-144 Inc.	Buick Car	Boston
841	Burditt & Williams Co.	Boston
600	Burton-Rogers Co.	Boston
2	Cadillac Automobile Co. of Boston	Boston
3	Caldwell, Inc., Frederick J.	Boston
606	Campbell Co., A. S.	Boston
301, 302, 522	Campbell Motors Corp.	Boston
24-25	Canterbury, Inc., George W.	Boston
803	Capitol Motors Corp.	Fall River, Mass.
411	Carroll Mfg. Co.	Arlington, Mass.
425	Case Car	Boston
437AA	Cee & Vee Products Co.	New York
702	Central Automobile Tire Co.	Boston
512	Challoner Co.	Oshkosh, Wis.
117-118-132	Chalmers Car	Boston
518-519	Champion Ignition Co.	Flint, Mich.
537	Champion Spark Plug Co.	Toledo, O.
122A-123-124	Chandler Motors of N. E.	Boston
435	Chase & Co., L. C.	Boston
843	Cherry, Inc., A. L.	Boston
116-133-344	Chevrolet Motor Co. of N. E.	Boston
837	Clamert Mfg. Co.	Pittsburgh, Pa.
260-261	Clark Equipment Co.	Buchanan, Mich.
134AA	Class Journal Co.	New York
236	Cletrac Tractor	Somerville
122A-123-124	Cleveland Car	Boston
800AA	Clydesdale Truck	Boston
859	Cobb Electrical Appliance Co.	Forest Hills
439	Cochran Mfg. & Forging Co.	Chicago
36-37	Cole Car	Boston
726-727	Columbia Tire & Top Co.	Boston
113-114	Columbia Car	Boston
253-254	Commerce Truck	Boston
425	Commonwealth Car	Boston
542-543	Connell Co., W. J.	Boston
129-130-131	Connell & McKone Co.	Boston
842	Copithorn Mfg. Co.	Boston
704	Corlew & Co., Frank S.	Boston
510	Cotta Transmission Co.	Rockford, Ill.
815	Cotton Motor Co.	Boston
500-501	Coward Auto Supply Co.	Boston
415	Crew Levick Co.	Cambridge, Mass.
814	Crow-Elkhart Car	Boston
813	C-T Truck	Boston
4-329	Cunningham Son & Co., James	Boston
844	Curtis Pneumatic Mchy. Co.	St. Louis, Mo.
5-9	Daniels Car	Boston
444	Davis & Co., W. E.	Providence, R. I.
425	Davis Car	Boston
410	Davis Chemical Mfg. Co.	Brockton, Mass.
616	Davis-Lynn Storage Battery Co.	Lynn, Mass.
637	Davis-Watson Mfg. Co.	Nashua, N. H.
360	Day-Elder Truck	Boston
707-708	Dayton Steel Foundry Co., The	Dayton, O.
805-812	Denby Truck	Boston
709	Derf Mfg. Co., The	New York
417	Detroit Pressed Steel Co.	Detroit, Mich.
104	Detroit Electric Car	Boston
850	Dickerson, C. A.	Chicago, Ill.
547-548	Dixon Crucible Co., Joseph	Jersey City, N. J.
108-109	Dodge Bros. Car	Boston
313-314	Dodge Bros. Truck	Boston
111-112	Donovan Motor Car Co.	Boston
32	Dort Car	Boston
845	Double Seal Ring Co.	Boston
875	Duby, John F.	Mattapan, Mass.
148, 149, 447	Dunbar, Sanders, Inc.	Boston
255-256	Duplex Truck	Boston
715	Duplex Rim Device Co.	Chicago
134-135	Dutton Motor Co., F. A.	W. Somerville, Mass.
445-446	Dyer Co., The G. H.	Cambridge, Mass.
813	Eastern Electric Vehicle Co.	South Boston
846	Eastern Rubber Co.	Philadelphia, Pa.
713	Easton Machine Co.	South Easton, Mass.
855	Eastern Motor Sales Co.	Boston
847	Economy Timer Co.	Norwalk, Conn.
703	Eisner Lenk Co.	Boston
139-145	Elcar Car	Boston
549-550	Electric Storage Battery Co., The	Boston
825-826	Emery Co., J. W.	Boston
125-126-127b	Essex Car	Boston
210-214 Inc.	Fairbanks Co., The	Boston
29	Falk-Baker Co.	Boston
882	Farm Tractor & Supply Co.	Boston
117-118-132-334 335	Fay-Allen Co., C. E.	Boston
216-216a-217-217a	Federal Truck	Cambridge, Mass.
815	Ferris Car	Boston
608	Flentje, Ernst	Cambridge, Mass.
864-865	Flexume Sign Co., Inc.	Boston

Space	Name	Address
881A	Ford Mica Co., Inc.	New York
100-101-218-219	Ford Motor Co.	Cambridge, Mass.
218-219	Fordson Tractor	Cambridge, Mass.
701	Fracto Specialty Co., Inc.	Boston
406	Franklin, M.	Boston
7-11	Franklin Motor Car Co.	Boston
243-250	Garford Motor Truck Co., Inc.	Boston
624	Gill Piston Ring Co.	Boston
17B	Gilmore Motors, Inc.	Boston
319-320	G. M. S. Truck	Boston
151	Grant Motor Sales Co.	Boston
611	Greb Co., The	Boston
540	Green & Swett Co.	Boston
621	Greene Co., Joseph E.	Boston
610	Grow Tire Co.	Boston
300	Guaranty Motors Co.	Cambridge, Mass.
31	Guertin-De Rochemont Co.	Boston
Special Dept. G.	Hall Motor Co.	Boston
502	Halliday Co., L. P.	Streator, Ill.
401	Harnett Lubricating Co.	Boston
719-720-822-829	Harris Motors Co., Inc.	Boston
26-27-28	Hart Co., A. T.	Boston
507-508	Hartford, Inc., Edward V.	New York
405	Hart & Hutchinson Co., The	Boston
418	Hassler, Inc., Robert H.	Indianapolis, Ind.
38	Haynes Car	Boston
26-27-28	H. C. S. Car	Boston
125-126-127B	Henley-Kimball Co.	Boston
804	Hennigan, Inc., Walter B.	Boston
108-109-313-314	Henshaw Motor Co.	Boston
442-443	Hillman Auto Supply Co.	Boston
121-122B	Hinchcliffe Motor Co., The	Boston
856	High-Volt Transformer Mfg. Co.	Milwaukee
800AA	Holland System Inc., Trading Corp.	Boston
732	Holmes Motors, Inc.	Boston
232-807	Hosmer-Haid Co., Inc.	Boston
409	Houde Co., The	Cambridge, Mass.
125-126-127B	Hudson Car	Boston
517	Hudson Motor Specialties Co.	Philadelphia
232-807	Huffman Truck and Car	Boston
Special Dept. G	Hupmobile Car	Boston
818-833	Indiana Boston Truck Corp.	Cambridge
851	Inside Spot-Light Control Co.	Toledo, O.
237-238	International Harvester Co. of America	Somerville
427	Jackman-Jameson Motor Co.	Boston
719-720	Jackson Car	Boston
822-829	Jackson Four Wheel Drive Truck	Boston
554-555	Jackson, Inc., Charles A.	Boston
236	Jackson Motor Service Co.	Brighton
819	Johnson, Arthur G.	Cambridge, Mass.
121-122B	Jordan Car	Boston
253-254-426	Judd, John L.	Boston
806	Jumbo Truck	New York
711	K-P Products Co., Inc.	New York
844-885	Keith Trailer Co., Sylvester H.	Middleboro
330-331-332	Kelly Springfield Motor Truck Co.	Boston
139-145	King Motors, Inc.	Boston
330	Kinney Mfg. Co., The	Jamaica Plain
428	Kissel Car	Boston
229-230	Kissel Truck	Boston
269-271 Inc.	Kress & Co., O. F.	Lawrence, Mass.
234	Lally Sons Co., Eugene F.	Cambridge, Mass.
835B	Lambert Trublpruf Tire Co.	Waverley, Mass.
255-256	Lampee & Hitchcock, Inc.	Boston
563	Lane Bros Co.	Poughkeepsie, N. Y.
215-215A	Lebon-Kidd Co., The	Boston
147	Leghorn, G. M. Co.	Boston
34-35	Lexington Automobile Co.	Boston
147	Liberty Car	Boston
883	Lincoln Products Co.	Boston
119-120-321-322-327-328	Linscott Motor Co.	Boston.
521	Linscott Supply Co.	Boston
13-17A-235	Locomobile Co. of America, The	Boston
887	Lucia Mfg. Co., Inc.	New York
714	Luthy Storage Battery Co.	New York
861	Lyons Ignition Co.	New York
881B	Lyknu Polish Mfg. Co.	Boston
15-19	MacAlman, J. H.	Boston
303	MacBride Co., Inc., George W.	Boston
308	Maccar Truck	E. Cambridge, Mass.
257-258-259	Mack Motor Truck Co.	Cambridge. Mass.
16-20-263-268 Inc.	Maguire Co., J. W.	Boston
717-718	Maibohm Car	Boston
717-718	Mann Motor Car Co.	Boston
8-12	Marmon Car	Boston
311-312	Martin-Parry Corp.	Boston
888	Marvel Machinery Co.	Minneapolis, Minn.
425	Massachusetts Motors, Inc.	Boston
832	Master Trucks, Inc.	Chicago
117-118-132	Maxwell Car	Boston
334-335	Maxwell Truck	Boston

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Space	Name	Address
138	McFarlan Car	Boston
523	McQuay-Norris Mfg. Co.	St. Louis, Mo.
205-206	Mead Morrison Mfg. C	E. Boston
17B	Mercer Car	Boston
233	Merchants Motors, Inc	Boston
728-731 Inc.	Metz Sales Corp	Boston
30	Middlesex Motor Car Co	Boston
104	Milburn Electric Car	Boston
853-854	Militor Distributing Co. of N. E.	Boston
Paul Revere Hall	Mitchell Car	Boston
402-403	Minard Co	Framingham, Mass.
Paul Revere Hall 811	Mitchell-Lucas Motor Co	Boston
538-539	Mitchell & Smith, Inc	Boston
30	Monroe Car	Boston
448-449-450	Moon Car	Boston
416	Moreton Corp., Walter H	Boston
618	Morgan Mfg. Co., Inc., The	Keene, N. H
102-103	Morse, Alfred Cutler	Boston
557	Mosler & Co., A. R.	Mt. Vernon, N. Y
505-506	Moto-Meter Co., Inc., The	L. I. City, N. Y.
705	Motor Accessories, Inc	Boston
609	Motor Parts Co	Boston
516	Motor Vehicle Publishing Co	New York
	Motor & Accessory Mfrs. Asso'n	New York
239	Mutual Motor Sales Co	Boston
105-106-107	Nash Car	Boston
315-316-317	Nash Truck	Boston
26-27-28	National Car	Boston
224-225	Netco Truck	Fitchburg, Mass.
886	New Britain Machine Co.	New Britain, Conn.
886	New Britain Tractor	New Britain, Conn.
816	N. E. American Motor Car Corp	Boston
866	New England Auto Parts Co	Boston
424	New England Motors, Inc	Boston
224-225	N. E. Motor Truck Co.	Fitchburg, Mass.
857	New England Savold Tire Co	Boston
137-342-343	New England Velie Co	Boston
511	New Era Spring & Specialty Co	Boston
37	New York Lubricating Oil Co	Boston
613	Nielsen Co., V. A	Boston
412	No-Leak-O Piston Ring Co.	Baltimore, Md.
424	Noma Car	Boston
318	Northway Motors Corp	Boston
716	Northwestern Chemical Co., The	Marietta, O.
319-320	Noyes-Buick Co., The	Boston
863	Nu Back Manufacturing Co.	St. Louis, Mo.
625	Nutter Electric Equipment Co	Boston
148-149	Oakland Car	Boston
146	Oldsmobile Car	Boston
333	Oldsmobile Truck	Boston
309-310-831	Oneida Motor Truck Co	Boston
136	Osborn-MacMillan, Inc	Boston
129-130-131	Overland Car	Boston
1-241-242-251-252	Packard Motor Car Co. of Boston	Boston
127A-128-307	Paige-Detroit Co. of N. E.	Boston
802	Paterson Car	Cambridge, Mass.
14-18	Peerless Car	Boston
541	Perrine Co	Boston
438	Pettingell-Andrews Co	Boston
303	Phenix Truck	Boston
16-20	Pierce Arrow Car	Boston
263-268 Inc.	Pierce Arrow Truck	Boston
150	Premier Car	Boston
802	Porter Square Motor Co.	Cambridge, Mass.
868	Postal & Miller	Boston
607	Pressure Proof Piston Ring Co	Boston
601	Presto-Felt Mfg. Co., The	Boston
229-230-428	Proctor Fisher, Inc	Boston
626	Pruyn Bearing Co	Boston
817	Rauch Lang Electric Car	Boston
867	Record Tire Sales Co	Boston
102-103	Renault Car	Boston
119-120	Reo Car	Boston
321-322-327-328	Reo Truck	Boston
215-215A	Republic Truck	Boston
136	Revere Car	Boston
809	Reynolds Motor Truck Co.	Mt. Clemens, Mich.
235	Riker Truck	Boston
33	R. & V. Motors of New England	Boston
102-103	Roamer Car	Boston
105-106-107-315-316-317	Rockwell, Inc., C. P	Boston
817	Rommelfanger, N	Boston
113-114	Ross, Inc., R. R	Boston
440	Ross Gloss Co	Auburndale, Mass.
513-514-515	Rowe Calk & Chain Co., The	Plantsville, Conn.
38-231-801	Russell Co., The, W. L	Boston
611	Salman, John A	Boston
872	Sanderson Co., E. P.	Cambridge, Mass.
341	Sandow Motor Truck Co. of N. E	Boston
255-256	Sanford Truck	Boston
721-722	Sargent & Ham Co	Boston
29	Saxon Car	Boston
432	Schraeder's Son, Inc., A	Brooklyn, N. Y.
340-814	Schuh Motors Co	Boston
723-724-725-800	Scripps Booth Motor Car Co	Boston
336-337	Selden Truck	Cambridge, Mass.
231	Service Truck	Boston
240	Sewell Cushion Wheel Co	Boston
880	Shotwell Pump & Tank Co	Brighton
806	Simmons Co., John	New York
524	Simms Magneto Co., The	E. Orange, N. J.
869	Simplicity Mfg. Co	Grand Rapids, Mich.
871	Sinclair Refining Co	Chicago
36-37	Smith & Sons Co., Bryant G	Boston
222-223	Smith Wheel, Inc	Syracuse, N. Y
407	Specialty Mfg. Co	Arlington, Mass.
419	Splitdorf Electrical Co	Newark, N. J.
207-208-209-800A	Springfield Commercial Body Co.	Cambridge
431	Standard Oil Co. of N. Y. (N. E. Dept.)	Boston
520	Standard Parts Co. of Del., The	Boston
110	Standard Steel Motor Car Co	Boston
560	Standard Thermometer Co	Boston
21	Stanley Motor Carriage Co.	Newton, Mass.
700	Stanley Co., Inc., John T	New York
15-19	Stearns-Knight Car	Boston
870	Steel Products Equipment Co., The	Boston
612	Stenman Elec. Valve Grinder Co.	Worcester
804	Stephens Car	Boston
226-227-228	Sterling Motor Truck Co. of N. E.	Boston
24-25	Stevens-Duryea Car	Boston
304-305-306	Stewart Automobile Corp	Boston
104-345	Stimpson, E. Y	Boston
562	Story Rubber Corp	New York
835A	Storti, Angelo B	Providence, R. I.
111-112	Studebaker Car	Boston
22-23	Stutz Car	Boston
811	Sullivan Truck	Boston
3	Templar Car	Boston
422	Texas Co., The	Boston
566	Tidewater Oil Sales Corp	Boston
877	Tigar Bearings Co., Inc., M. George	Boston
239	Traffic Truck	Boston
830	Traylor Engineering Mfg. Co.	Conwells, Pa.
564	Trexler Co., The	Philadelphia, Pa.
234	Triangle Truck	Cambridge, Mass.
448-449-450	Triangle Motors Co	Boston
706	Triplex Safety Glass Corp. of America, Inc.	New York
315-316-317	Troy Trailer, Inc	Boston
819	Ultimate Truck	Cambridge, Mass.
536	Underhay Oil Co	Boston
712	U. S. Air Compressor Co	Cleveland, O.
436	U. S. Light & Heat Corp.	Niagara Falls, N. Y.
823-828	U. S. Motor Truck Co. of N. E	Boston
874	U. S. Specialty Co	Boston
858	Universal Top & Body Co	Boston
620	U-Sav-Your Mfg. Co	Warren, Mass.
522	Utilitor Tractor	Boston
32	Utterback-Gleason Co	Boston
862	Vacuumeter Selling Co	Boston
433	Vacuum Oil Co	New York
137	Velie Car	Boston
525-526	Vesta Accumulator Co	Chicago
220-221	Victory Motor Co	Boston
824-827	Vim Motor Truck Co. of N. E	Boston
873	Vim Unit Remagnitizer, The.	Paterson, N. J.
561	Walden-Worcester, Inc	Worcester, Mass.
820	Walker-Johnson Sales Co	Boston
346	Walker Vehicle Co	Boston
346	Walker Electric Truck	Boston
820	Walker-Johnson Truck	Boston
808	Walter Transport Sales Co	Boston
551-552	Waltham Watch Co	Waltham, Mass.
345	Ward Electric Truck	Boston
529-530	Weaver Mfg. Co	Springfield, Ill.
150	Wells Motor Co	Boston
427	Westcott Car	Boston
544	Westinghouse Air Spring Co	Boston
430	Wetmore-Savage Co	Boston
244-249 Inc., 269-270-271	White Co., The	Boston
429	White & Bagley Co., The	Worcester, Mass.
887	Whiting & Comstock	Hartford, Conn.
879	Whittredge Portable Steel Bldg. Co.	Lynn
876A	Wight, Austin J	Boston
509	Willard Storage Battery Co	Boston
202-203-204	Will-Hall-Sutherland Motors, Inc	Boston
129-130-131	Willys Knight Car	Boston
534-535	Wilson Co., John V	Boston
553	Wilson, K. R	Buffalo, N. Y.
821	Wilson Motor Truck Sales Co. of N. E.	Boston
8-12	Wing, Frank E	Boston
878	Winsor & Son, Alfred	Boston
825-826	Winther Truck	Boston
6-10	Winton Co., The	Boston
421	Wire Wheel Corp. of America.	Buffalo, N. Y.
805-812	Woodbridge Co., Inc	Boston
404	Wright "Name On" Robe Co.	Waterville, Me.

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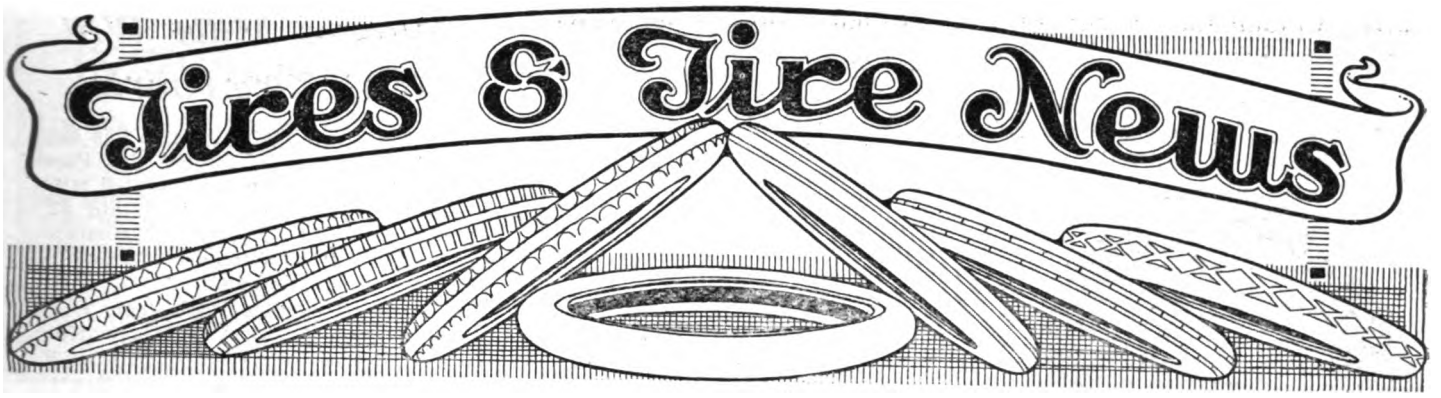


Pennsylvania Rubber Co's Growth

COAST TIRE & RUBBER CO. INCORPORATED IN OAKLAND, CAL.

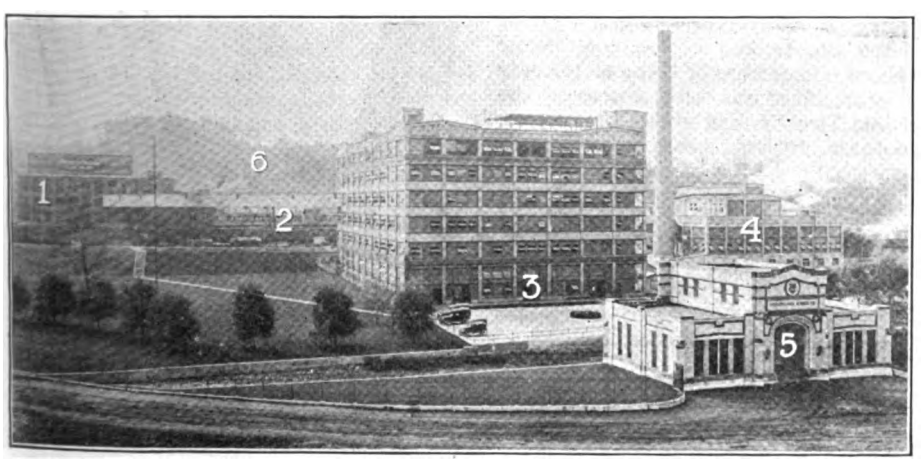
The accompanying illustration of the up-to-date plant of the Pennsylvania Rubber Co. at Jeannette, Pa., shows the extent of the company's activities at the present time. This concern has built up its organization, step by step, from the inside, and has been strengthened by each successive year of its progress by its policy of maintaining its standard of a quality product manufactured by well-paid, self-respecting employees, under a rigid system of inspection, and the adoption of an automatic selling plan guaranteeing protection and profit proportionate to the efforts expended by the dealer.

The growth of the business in 10 years can best be noted from a comparison of the following figures for 1910 with those of today:

1910—Number of employees, 460; daily production of automobile tires, 120; of tubes, 120.

1920—Number of employees, 2849; daily production of automobile tires, 3000; automobile tubes, 5500; bicycle tires, 3000. Claimed to be the largest producer in America of strictly domestic tennis balls. New buildings in course of construction will triple present production.

In order to relieve the congestion in housing conditions, which has accompanied the phenomenal growth of the company, the company acquired a plot of 200 acres of land extending from the factory to the Lincoln highway and has inaugurated a building plan whereby fine homes of brick, stucco and frame construction, supplied with all modern conveniences, are sold to its workmen on a modest monthly payment basis. This section is now known as Paruco park, and the number of houses completed or under construction is 71. The minimum of houses planned is 1200.



Plant of the Pennsylvania Rubber Co. at Jeannette, Pa.: 1, Shipping Building; 2, Original Building; 3, Main Office and Factory; 4, Power House; 5, Time Office and Hospital; 6, Paruco Park Homes-for-Workmen Allotment.

OAKLAND HAS COAST COMPANY.

One of the most recent tire concerns to begin operations in California is the Coast Tire & Rubber Co., which has purchased a factory site in Oakland. Production plans call for a plant having a capacity of 300 tires and 500 tubes per eight-hour day. Its capital is $1,000,000.

The chief organizer of the Coast company is Holmes Ives, formerly secretary and sales manager of the Boone Tire & Rubber Co. Interested with Mr. Ives are Harold Geisse, assistant to the vice president of the Middle West Utility Co. of Chicago; W. D. Forbes, an industrial chemist of many years experience; N. B. Campbell, assistant cashier of the First National Bank, Oakland; N. J. Whelan, industrial commissioner of the Wisconsin-Minnesota Light & Power Co., president of the United States Auto Gear Shift Co., and director of the Gillette Tire & Rubber Co. of Wisconsin; John P. Pancratz, sales manager for eastern Wisconsin of the Boone Rubber Tire Co.

Largest Shipment of Crude Rubber

RECEIVED BY GOODYEAR TIRE & RUBBER CO. AT AKRON.

What is stated to be the largest single shipment of crude rubber in the world has arrived in Akron, O., at the plant of the Goodyear Tire & Rubber Co. This is sufficient to supply the entire world for three days, and its total value is approximately $4,412,200.

The shipment consisted of 39,580 200-pound cases, and filled a train of 53 freight cars, stretching nearly half a mile. Each car contained 200 200-pound cases, and the total weight was 7,916,000 pounds. It took 48 men six days to unload this shipment and more than half a million feet of space is required to store it.

This shipment came 10,000 miles and is equal to a year's production from 1,600,000 trees, or from a yield of 16,000 acres of plantation. Although it is to be used for various purposes, it would be sufficient for 700,000 tires if devoted entirely to that purpose.

The shipment went through various forms of transportation, including human, animal, marine and railroad.

GOODYEAR WELFARE PLANS.

Many of the large companies of the country having the welfare of their employees at heart have promulgated plans for reducing the cost of living. The Goodyear Tire & Rubber Co., Akron, O., recently purchased and sold at low prices to its employees, 10 tons of navy beans, 500 cases of corn, 400 cases of baked beans and 250 cases of corned beef.

This company has also recognized the importance of good physical condition on the part of its workmen, by establishing classes in systematic physical training which are held three times a week.

JOYNES TIRE CO. AT NORFOLK.

The Joynes Tire Co. of Richmond, Va., has taken possession of what is said to be one of the largest and most modern tire stores in the South. This concern handles Goodrich tires and tubes, and also conducts an up-to-date vulcanizing department.

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NEW MANAGER FOR BALTIMORE MCGRAW BRANCH.

L. L. McAnaney, who has been appointed manager of the Baltimore branch of the McGraw Tire & Rubber Co., Cleveland, O., is one of the best known tire men in the country, having been identified with the industry for the past 17 years.

L. L. McAnaney, Manager Baltimore Branch McGraw Tire & Rubber Co.

Mr. McAnaney started as a stenographer in the factory of the B. F. Goodrich Co. at Akron, O., and was rapidly advanced, being at first salesman in the Boston territory, and later manager of the Goodrich Co.'s branch at Cleveland, O., which position he held for nine years. For four years previous to his engagement with the McGraw Co. he was manager for the Republic Rubber Co., Youngstown, O.

He is sure to receive substantial recognition for his company in the Baltimore territory.

GOODRICH DIVIDEND INCREASED.

The directors of the B. F. Goodrich Co., Akron, O., have voted to place the common stock of that company on a six per cent. annual basis. During the past four years this stock has been paying four per cent. A dividend of 1½ per cent. is payable Feb. 16 to stockholders of record Feb. 5, and one of 3½ has been declared on the preferred stock, the first installment of 1¾ per cent. being payable April 1 and the second July 1.

The net sales of the Goodrich company for the year ending Dec. 31 are reported to have been $141,800,000, and the net profits, before provision for federal taxes, were $17,500,000.

PALMER TIRE CO. FORMED.

The Palmer Tire Corporation has been formed under the laws of Delaware to make rubber tires, etc. Capital, $500,000. Incorporators, M. L. Rogers, T. A. Irwin, W. G. Singer, Wilmington, Del.

LAMBERT "TRUBLPRUF" TIRES.

The Lambert Tire & Rubber Co., Akron, O., is now producing what is claimed to be a really troubleproof tire, the invention of H. M. Lambert, formerly of the Pacific northwest, now of Akron. It is stated that this tire is not only punctureless, but can neither blow out nor give tire trouble of any sort.

Its construction is based upon a stretchless cord belt, B, which, with rubber cushions, takes up and distributes road shocks as the air does in pneumatic tires. The actual functioning of the tire is as follows: The cord belts are so tight and stretchless that when touched they vibrate like a violin string along their entire length, in other words, clear around the tire. When an obstruction or bump in the road strikes the tire, at the point of contact, the stretchless cord belt is pushed up and, therefore, becomes shorter at this point. As a result the cords pull down clear around the tire. The pulling down of the belt compresses the rubber cushions which, being resilient, take up the vibrations. The functioning of the belts and cushions in this way is stated to be shown by the fact that the holes in the tire vary from round to elliptical while the tire is in motion, and that this is the secret of the tire's easy riding qualities.

From its original location at Portland, Ore., the Lambert company expanded to Akron a year ago with the hope that a second plant would produce enough tires to meet the demand. But at the present time both plants are working night and day and it has been found necessary to make additions to the Akron factory to double its production.

"Trublprufs" the trade marked name of these tires, are intended for use on both passenger and truck cars. The claim for them is not only that they afford convenience and freedom from tire delays, but also that they carry an unlimited guarantee, double tire life and a lower proportionate cost a mile.

WADLEIGH IS MANAGER OF FISK.

The Fisk Rubber Co., Chicopee Falls, Mass., has appointed Corliss Wadleigh as manager of its Boston branch. Mr. Wadleigh has been identified with the motor industry for many years. Some eight or 10 years ago he was a prominent factor in the merchandising of Knox motor cars and later joined the sales forces of the Republic Tire Co. and at the time he accepted his present position he was in charge of the eastern department of the Youngstown organization.

SEWELL CUSHION WHEEL CO.

The Sewell Cushion Wheel Co., Detroit, announces the production of specially constructed rubber cushion wheel adapted to one-ton Ford trucks.

The Advance Tire Co. has been incorporated at Little Rock, Ark., with capital of $10,000. The officers are: President, Barr L. Smith; vice president, J. M. Boone; secretary and treasurer, Floyd Branscum.

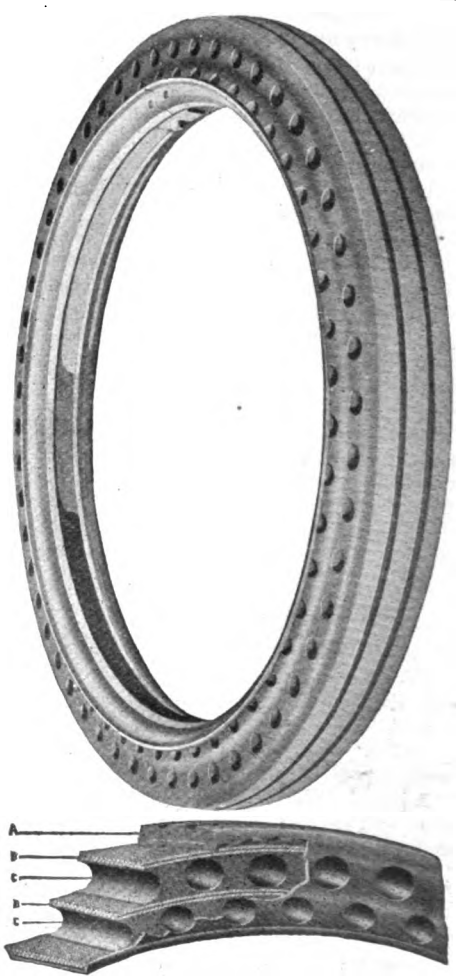
Ninigret Mills Will Make Tire Fabric

The Ninigret Mills Co., which has succeeded the Greene & Daniels Co., Pawtucket, R. I., has been incorporated with a capital of $3,000,000, divided into $2,500,000 preferred and $500,000 common stock, and will manufacture automobile tire yarns and fabrics.

The officers include: President, J. A. Brander, Brander & Curry, Inc., New York City; vice president, Charles F. Broughton, treasurer of the Wamsutta Mills, New Bedford, Mass.; treasurer, H. T. Fiske, Fiske Rubber Co.; first assistant treasurer, Henry Otte; second assistant treasurer, Charles S. Fowler; secretary, Arthur Houghton; clerk, John E. Searle. The Pawtucket plant will be under the management of Mr. Otte.

A second plant, the Ninigret mills, at Westerly, R. I., already equipped with twisting, spooling and weaving machinery, is to have 20,000 spindles added and will be in charge of Mr. Fowler. Both plants are to be overhauled and equipped with up-to-date machinery for tire fabrics.

A tire manufacturing company, to be capitalized at $3,000,000, has been organized by a group of St. Louis and Chicago men and will at once begin the construction of a factory on the site of the Autenreith hotel, St. Louis.



Lambert Trubipruf Tire with Cross Section Showing Construction.

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Promotions Announced by Firestone Tire & Rubber Co.

PRESIDENT H. S. FIRESTONE of the Firestone Tire & Rubber Co., Akron, O., has announced the following promotions:

E. W. BeSaw, who has been western sales manager for three years, with headquarters in Akron, is made general sales manager, succeeding A. B. Partridge; F. K. Starbird, district chief, with headquarters at Minneapolis, Minn., becomes western sales manager; J. E. Mayl, district chief at Boston, is made eastern sales manager.

J. E. Mayl, Eastern Sales Manager, Firestone Tire & Rubber Co.

Mr. BeSaw joined the Firestone forces nine years ago as a salesman in Iowa. In a short time he had become manager of the Des Moines branch and on account of his fine record was called to the general offices, where he soon became manager of the western sales division. Mr. Starbird became associated with the Firestone organization four years ago in the advertising department. Before becoming a district manager a year ago he was sales manager of the pneumatic department. Mr. Mayl started with Firestone in 1911 as a salesman in St. Louis. Four years later he was placed in charge of the Memphis branch. He was manager of the Cleveland branch from the spring of 1917 until he became a district manager last year.

Changes affecting the district manager personnel are as follows:

J. P. Patterson, manager of the Cincinnati, O., branch, has been appointed manager of the south central district, with headquarters in Cincinnati.

J. H. McDonough, district representative of the central district, has been made manager of the southwestern district, with headquarters in Dallas, Tex.

C. L. Mason, western service manager, goes to Akron, O., as manager of the north central district.

L. R. Jackson, manager of the Indianapolis branch, has been appointed manager of the Pacific coast district, with headquarters in San Francisco.

B. R. Leisure, manager of the Baltimore branch, has been made district manager, with headquarters in Philadelphia.

Changes in branch management are announced as follows:

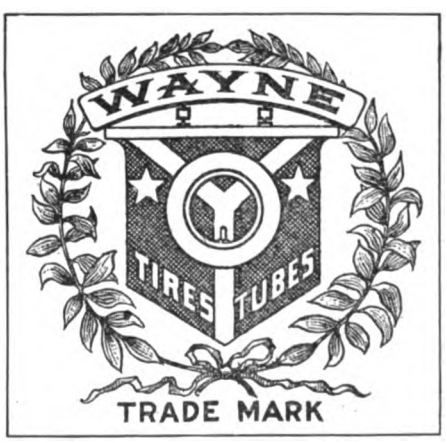
E. W. BeSaw, General Sales Manager, Firestone Tire & Rubber Co.

Cleveland, O., J. M. Bushey, formerly truck tire sales manager at Cincinnati, vice P. M. Pontius, resigned; Washington, E. D. Manley of the same branch, vice W. M. MacNichol, transferred; Baltimore, M. M. MacNichol, vice B. R. Leisure, promoted; Philadelphia, R. L. Harpham, formerly manager of truck tire sales in eastern division, vice W. R. Walton, transferred to manufacturers' sales; Harrisburg, G. C. Bacon, formerly manager of Akron branch, vice J. H. Dutch, transferred to manufacturers' sales; St. Louis, T. J. Barry, formerly district representative, vice F. C. Rudisell, resigned; Denver, G. K. Meeks, formerly manager of Memphis branch; Detroit, G. E. Burkit, formerly manager of Toledo branch, vice R. H. Jeffers, promoted; Toledo, G. F. Guin, formerly trade sales manager of same branch, vice G. E. Burkit, transferred; Indianapolis, C. T. Barnes, formerly trade sales manager of the same branch, vice L. R. Jackson, promoted; Memphis, L. L. Heidacher, formerly district truck tire representative, vice G. K. Meeks, transferred; Cincinnati, J. F. Evans, formerly trade sales manager of the same branch, vice J. P. Patterson, promoted; Duluth depot, J. L. Bain, formerly district representative.

F. K. Starbird, Western Sales Manager, Firestone Tire & Rubber Co.

FORT WAYNE CO.'S NEW TRADE MARK.

The Fort Wayne Tire & Rubber Manufacturing Co., Fort Wayne, Ind., has adopted a new trade mark which will be used on all its products, molded in the tires and printed on the tubes. The design consists of a wreath of the leaves of the rubber tree surrounding the two-starred flag of Fort Wayne, which has been adapted to form a shield, the device signifying the unification of three rivers. An automobile tire holds the center of the design. Surmounting the shield is the word "Wayne" and below on the extreme bottom are the words "Tires" and "Tubes" at the left and right respectively. This is the $100 prize winning design submitted by Walter Johnson of South Bend and A. L. Callahan of Fort Wayne, Ind. This company produces both the Wayne cord and fabric tires. The general manager is Vice President J. C. Brown and the secretary and treasurer is L. E. Kraft.



REMOVAL OF NEEDHAM TIRES.

The Needham Tire & Rubber Co. has moved to 245 West 59th street, New York City. Since the first of the year this company has been appointed metropolitan distributor of Needham tires, made at Needham, Mass.

DAWSON TIRE & SUPPLY.

The Dawson Tire & Supply Co. has been organized at Newark, N. J., for the purpose of manufacturing tires, supplies, etc. Capital, $75,000.

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Sterling Elects New President

At a meeting of the board of directors of the Sterling Tire Corporation, held at its office in Rutherford, N. J., Dec. 26, A. A. Altschuler of Hackensack was elected president to succeed Spencer Welton, resigned. Mr. Altschuler has been a director of the corporation for several years and is also president of the International Fidelity Insurance Co. and a director of the Union Trust Co. of Jersey City.

Succeeding Mr. Welton on the board of directors is Frank A. Ball, vice president of the L. S. Starrett Manufacturing Co., Athol, Mass. The other officials remain as follows: Vice president and general factory manager, Otto Basten; treasurer, Joseph A. Miller; secretary, Bartlett Greene; chairman, executive committee, Charles Austin Bates.

The Sterling Corporation reports that it has just closed the most successful year in its history, having changed its selling policy from retail to wholesale and opened accounts with over 5000 dealers from Maine to California. It has unfulfilled orders and contracts for 1920 delivery amounting to over $2,000,000. During the past year an export department has been developed and Sterling tires are now sold in more than 30 foreign countries. The plant in East Rutherford has been materially enlarged and now has a capacity of 1200 tires a day. Further additions are planned to bring the production to 2000 a day before the end of 1920, which will mean the employment of double the number of men at work in 1919.

RECORD REBUILT TIRES.

The Record Tire Co., New York City, conducts its business on the principal of guaranteeing all the tires put out for 5000 miles, this policy insuring that no tire will be rebuilt unless, after tearing down, the carcass is found to possess sufficient strength to make good on this amount of mileage.

Another way in which the company protects itself is by not selling state manufacturing rights, but by handling all tires to be rebuilt in its own factories and by its own expert workmen.

DUNLOP TO BUILD AT BUFFALO.

The newly incorporated Dunlop, America, Ltd., an extension of the British Dunlop Co., is to erect a tire plant and cotton mills in Buffalo, N. Y., at a cost of about $25,000,000. All the rights of the American Dunlop Tire Co. have been acquired by Dunlop, America, Ltd., but it will be operated by an American executive staff, and the board of directors will be made up of Americans, as well as representatives of the British interests.

KEYSTONE SALES INCREASE.

The gross sales of the Keystone Tire & Rubber Co., New York City, for the past year amounted to $9,806,000, compared to $6,172,000 in 1918.

OLDFIELD TIRE EXPANDS.

On account of the record-breaking growth of the Oldfield Tire Co.'s business, making it impracticable for him to longer discharge the combined duties of president and general manager, Barney Oldfield announces the addition to his organization of H. A. Grubb, a tire industry executive of ripe experience and wide acquaintance. Mr. Grubb's connection with the Oldfield company as vice president and acting general manager, with headquarters at Cleveland, will enable President Oldfield to devote an increased proportion of his time to supervision of production and to the company's sales activities in the field.

The Oldfield company has added to its

H. A. Grubb, Vice President and Acting General Manager, Oldfield Tire Co.

directorate besides Mr. Grubb, O. C. Wagner, credit manager, and C. L. Reely, advertising manager, who also assumes the duties of assistant sales manager.

HOOD RUBBER STOCK.

The Hood Rubber Co. is offering stockholders an opportunity to subscribe to $1,000,000 seven per cent. cumulative preferred stock of the Hood Rubber Co. at $100 a share. A contract has been entered into between the two companies whereby the rubber company agrees to pay a net commission of one per cent. after the payment of all expenses and liability incurred in the conduct of the business.

Based on sales of $25,000,000 for 1918 and 1919, from this one per cent., the Hood Rubber Products Co. would receive $250,000, or three times the requirements of the preferred stock. Under the contract the Hood Rubber Co. guarantees $100,000 annually. All the stock was bought by the Hood Rubber Co., the preferred now being offered to stockholders, while the $500,000 common will be retained. In case of liquidation the preferred is entitled to $110 a share, and is also callable in whole or in part at $115 a share.

New Plant for Kelley Tire Company

The Kelley Tire & Rubber Co., New Haven, Conn., is to build a new factory on a five-acre lot recently purchased at West Haven. It will cost approximately $650,000, will be of concrete construction and will adjoin the main line of the New York, New Haven & Hartford railroad, to which an electrically-equipped spur track will be connected.

The company proposes to concentrate all its manufacturing operations in this new factory, which will afford a total floor space of 65,000 square feet. The first floor will be devoted to shipping and receiving rooms and will contain the heavy machinery such as mills, calendars, etc. On the second floor will be made Kelley Kord tires, and the third will be used exclusively for the manufacture of Kelley "Blue" tubes. The basement will be devoted to storage.

The personnel of the Kelley Tire & Rubber Co. includes the following: President, E. J. Kelley, New Haven, Conn., formerly a prominent railroad official; vice president and treasurer, Charles H. Bortell, Jr., former sales manager of the M. M. Green Co. and National Mileage Co.; secretary and general counsel, William F. Alcorn; factory manager, E. Raymond Thresby.

NEW FACTORY FOR BRUNSWICK TIRES.

When the pneumatic automobile tire first came into use the Brunswick-Balke Collender Co., long before known as a manufacturer of high class billiard tables, gave serious thought to making tires in its plant at Muskegon, Mich., which has been established for making billiard table cushions, and different kinds of hard rubber goods.

The first tires were turned out in 1909, but it was not till 1916 that this branch was put on a basis of actual production, and the following year the Brunswick tire was marketed. Since that time its progress has been rapid and ground is to be broken in the early spring for additions which will quadruple the present output.

INDIA CO. INCREASES CAPITAL TO $5,000,000.

The India Tire & Rubber Co., Akron, O., has increased its capital from $1,500,000 to $5,000,000. Part of this is to be set aside for purchase by employees and expansions to the plant at Megadore will also be provided for.

HANES RUBBER CO. FORMED.

The Hanes Rubber Co. of New York has been incorporated at New York City with capital of $10,000 to deal in pneumatic tires. The incorporators are E. A. Machlin, W. T. H. Reilly and R. L. Delisser, 135 West 79th street, New York City.

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Goodyear Co.'s Relief Association

The system by which the Goodyear Tire & Rubber Co., Akron, O., conducts relief work among the 25,000 employees in its Akron factories, has proved so successful that the company has received many inquiries from other industrial concerns in regard to its method of operation.

Over 15 000 employees, two-thirds of the total enrollment in Akron, carry insurance in the men's relief association. Each member pays dues of $6 a year in return for which he receives a $1000 policy and is entitled to $8 a week when laid up by accident or illness. Without additional cost the policy is increased $500 every five years until it reaches a maximum of $3000. This extra insurance is in reality a bonus for long service.

The woman's branch of the relief association has 1300 members.

An idea of the benefit such a plan is to Goodyear employees and their families may be gained when it is known that in the six months ending Jan. 1, 1920, the association paid out $12,000 for deaths and $11,988 for accidents and sickness.

The membership increased over 7000 in the past five months and it is expected that 1200 more will become members during January.

Engages in Cotton Growing.

Cotton growing in Arizona is no longer in the experimental stage, as thousands of acres are under cultivation, producing large amounts suitable for tire fabric. Irrigation has turned sandy wastes into fertile plantations that produce cotton equal in quality to Sea Island. The Goodyear Tire & Rubber Co., Akron, O., was one of the pioneers in this field, and so successful have been its efforts that it has established connections in the Imperial valley of southern California and construction will soon begin on gins in Calexico, Calapatria and probably El Centro.

To Build $200,000 Dormitory.

The Goodyear Tire & Rubber Co., Akron, O., has let contracts for a $200,000 dormitory to house 175 of its women employees from out of town who would otherwise find it difficult to find suitable places in which to live at a reasonable rental.

WATKINS HEADS GLOBE TIRE.

L. Arthur Watkins, one of Boston's best known automobile accessory men, and especially prominent in the tire trade, has been promoted to be New England district manager of the Globe Tire Co. He will make his headquarters at Boston. Mr. Watkins was, in 1911, chosen president of Motor Accessories, Inc., operating as John & Arthur. In 1916 he resigned from the company and enlisted in the army for the duration of the war. In January, 1919, he returned to Boston and became associated with the Globe Tire Co. as traveling representative. As head of the Globe company for this district he succeeds A. H. Lane, who goes to factory headquarters as distributors' representative.

BATAVIA RUBBER SUES KEYSTONE.

The Batavia Rubber Co. Batavia, N. Y., has brought suit against the Keystone Tire & Rubber Co., New York, dealer in tires, with branches in many cities, for damages for breach of contract. The Batavia company claims that in the spring it contracted with the Keystone company for the sale of its entire output for five years, and the contract was filled until about the middle of November the Keystone company refused to buy any more tires, claiming that they had been made smaller and inferior to what the contract called for.

The Batavia officials allege that the tires have been made according to the specified written requests of representatives of the Keystone Co. The Batavia company also states that in order to fulfill this contract it began to operate its plant with three shifts, 24 hours a day, with the exception of Sundays, until about the first of November, when it changed to two shifts of 10 hours each. The plant was enlarged and land purchased for factory purposes.

STERLING TIRE DISTRIBUTORS.

The Sterling Tire Corporation, Rutherford, N. J., announces the appointment of the following distributors: George L. Watkins of Birmingham, Ala., for the State of Alabama; West Coast Rubber Co. and Oregon Rubber Co., both of Seattle, Wash., for the northwest section; Charles A. Warren, San Francisco, for northern California, with headquarters at 575 Market street. Mr. Warren has appointed the firm of Maundrell & Walfish to care for the distribution in the city of San Francisco.

MUTES IN THE RUBBER INDUSTRY.

Persons who are deprived of speech have been found to be specially adapted to certain classes of work in the rubber industry, and the number employed at Akron alone is nearly 1000. In fact, in some of the larger factories entire departments consist of mutes, and their work is said to be of a high standard.

U. S. RUBBER PURCHASE.

The United States Rubber Co., New York City, announces the purchase of the entire plant, equipment, stock, good will and business of the Dolgeville Felt Shoe Co., Dolgeville, N. Y., manufacturer of felt shoes and slippers.

ASSOCIATED TIRE STORES.

The Associated Tire Stores Corporation has been incorporated at Dover, Del., with capital of $30,000,000, to manufacture tires, etc. The incorporators are T. L. Croteau, M. A. Bruce and S. E. Dill, Wilmington, Del.

The Alling Rubber Co., Albany, N. Y., has increased its capital from $225,000 to $450,000.

Market for Tires in England

It is reported that manufacturers here who are in a position to export motor car and motorcycle tires at the present time will find the British market worthy of attention. Makers of cars and cycles in that country are faced with what might almost be termed a tire famine. While it is realized that the present tire shortage is world wide, it is evidently more acute in Europe than in this country, as central Europe has not yet recovered from the effects of the blockade, which prevented the coming in of both crude rubber and the finished product during the war.

In the United Kingdom it is reported that the output of cars and cycles is seriously impeded by the dearth of tires, with no immediate prospect of relief. The growers of rubber, although otherwise in a position to ease the situation are hampered by the meagerness of shipping facilities, and it is anticipated that many months must elapse before factories can expect appreciable relief in the way of raw material.

Rubber growers, as well as manufacturers, realize that the restoring of production to a pre-war basis will not solve the problem, as the demand for motor cars is so much greater than in 1914, and more raw material must be produced if the supply is to keep pace with the demand.

PERFECTION CO. TO USE OWN BRAND.

It is reported that the Perfection Tire Co. is now concentrating its efforts upon the production of tires and tubes carrying its own brand, having abrogated its contract with the Keystone Co. so as to meet production requirements under its selling arrangement with the Nemours Trading Corporation.

INTERNATIONAL TUBE CORPORATION.

The International Puncture Proof Tube Corporation has been incorporated at Wilmington, Del., to manufacture puncture proof inner tubes for automobile tires, etc., with capital of $5,000,000. The incorporators are Samuel B. Howard, George V. Reilly and Robert K. Thistle, all of New York.

FOREMOST CORD TIRES.

The United Motors Service is now ready to distribute to tire dealers through its branches the Foremost cord tire, which is built to the exclusive specifications of the company.

The United Motors Service maintains branches in 22 cities and has 150 authorized distributors, for handling high grade automotive equipment and furnishing service on Delco, Klaxon and Remy products.

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Goodyear Industrial Republic in Successful Operation

A NEW departure in the method of establishing more friendly relations between the management and employees of a big industry has been successfully tried out for six months by the Goodyear Tire & Rubber Co., Akron, O., where an industrial assembly composed of 20 senators and 40 assemblymen, chosen from the ranks of 25,000 workers, pass all laws affecting the conduct and welfare of the men.

So satisfactory has been the work of this body during its brief existence in settling incipient strikes and improving working conditions of employees in various parts of the company's plant, that plans are now being made to provide a legislative hall in the new million dollar club house that will be finished early in the year.

The new assembly functions in the same manner as state and national legislatures. The seating arrangement in each house will be the same as that in the national and state capitols. Each will have a rostrum, desks and galleries for spectators and members will make all arguments under the rules of parliamentary law.

E. J. Hard is president of the senate and J. B. Long is speaker of the house. Both are from the ranks of the employees. P. W. Litchfield, vice president and factory manager, stands in the same relation to the assembly as the President of the United States to Congress. The power of veto is vested in him, but the assembly can pass any measure over his veto by a two-thirds vote. A measure so passed goes to the board of directors of the company for final decision.

There are many similar plans of handling labor problems in operation in many industrial concerns throughout the country, but the Goodyear plan differs in the fact that members of both house and senate are representatives selected by employees, whereas in many other concerns the senate is composed of repre-

P. W. Litchfield, Vice President of Goodyear Co., Acts as President of Industrial Republic.

sentatives of the employer and the house composed of factory representatives. This tends to a deadlock and no solution of a problem.

Excellent Results Attained.

Commenting on the excellent results so far attained by the assembly, F. A. Seiberling, president of the company, declared in a recent address to employees, "it is hard to conceive that any of the recommendations of the assembly will be denied by the board of directors."

At the time of his address the assembly had already enacted laws providing for Saturday half holidays in all departments. A "tardy" rule which "docked" the men an hour and a half for being late was modified so that they now lose but 15 minutes. Unusual traffic conditions exist and make it difficult to report on time. This latter rule greatly impressed the workers with the efficiency and power of the assembly for proper corrective measures. The assembly's power was evidenced recently when complaints and requests for better trolley service were made by Goodyear to the traction company. No results were obtained. When the assembly representing 25,000 workers made the request immediate action was taken by the trolley company.

Laws making all shifts permanent have been enacted. Legislative action has been taken to adjust several threatened strikes.

When a machinists' strike was called in Akron recently, only 40 per cent. of Goodyear's machinists responded. In a few weeks they returned to work. All were returned to their old jobs by the assembly without being penalized, thereby cementing the relationship between the men and the company.

That the assembly is perhaps the nearest possible approach to an "industrial republic," and that Goodyear has the confidence and interest of its workers was evidenced in the recent sale of the company's preferred stock when 17,101 employees subscribed to $7,700,000 worth of stock. This gives Goodyear the largest number of employee stockholders of any company in the world with the exception of the United States Steel Corporation.

Civic Betterment.

The assembly also participates in movements for civic betterment. Unanimous indorsement was recently given to several bond issues to provide for a tuberculosis sanitarium, a new viaduct and $6,000,000 for improving the city water system.

Election rules governing the assembly provide that the factory be divided into 40 precincts. Each precinct elects one member to the assembly, called a representative. He shall not be less than 21 years old and have a continuous factory record of one year. The term is 12 months.

The precincts are further arranged into 10 districts, each district electing two senators who serve for a two-year period. Candidates for this office must be not less than 25 years old and have a continuous record of five years in the factory.

The voters are called industrians. An industrian must have a continuous record of at least six months in the factory, must speak English and be an American citizen.

Oath of Office.

The industrial republic plan was approved and adopted by a vote of employees in June, 1919, and the first election was held a few weeks later. Each new official, upon entering into office, took the following oath: "I solemnly swear that I will faithfully support the constitution and laws of the United States and the State of Ohio, the industrial representation plan of the factory, and that I will discharge to the best of my ability, faithfully and conscientiously, the duties incumbent on me as a member of the assembly."

Senate of Goodyear Industrial Republic in Session at Company's Plant in Headquarters at Akron, O.

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K. J. Hard, President of Senate, Goodyear Industrial Republic.

The plan also guarantees that there shall be no discrimination against any Goodyearite on account of membership or non-membership in any labor organization, or against any member of the assembly for action taken by him in performance of his duties as outlined in the plan.

It is expressly stated that the assembly shall have the right to change factory rules and regulations which from time to time have been made by the management.

This body has already promoted conferences between committees named from its own bodies and representatives of the management. While the body does not meet until the first Monday of each month, certain of its officers and committees are in weekly conference with the factory manager and executive heads.

Bosses Eliminated.

One noticeable effect in the six months operation of this unique legislative plan has been the elimination of the old-time slave-driving shop boss. The conduct of the harsh foreman is always a subject of review in the assembly upon complaint of an industrian. Where before production was quickened under the watchful eye of a not too lenient overseer, it is now speeded up by the hope of reward and the promotion that follows in the wake of initiative and good work.

Of all plans tried by the company to promote industrial relations the assembly plan is believed by Goodyear to be the best. Frank and open discussion of all things relating to the employees' welfare can be brought before the management at a moment's notice.

The industrial assembly frequently invites the officials of the company to speak to them as well as outsiders. Anyone can attend a meeting, but the sessions are in no way dominated by officials. In fact they seldom attend unless invited. Recently Lillian Russell and Ole Hansen, former mayor of Seattle, spoke to the assembly. The reason for securing these speakers is that the assembly members may keep in touch with the best modern thought for improving the conditions surrounding workers.

SUCCESSFUL MEMBERSHIP DRIVE.

As a result to date of the membership drive the New York Electrical society inaugurated last September, 115 names have been added to the roles. It has never been difficult for this, the oldest organization in this field, to obtain new members, as its meetings have always been well attended and the programmes are carefully planned so as to be neither solely technical nor, on the other hand, strictly commercial, but to preserve an even balance.

The society's membership includes many men noted in the electrical world today. In addition to the 115 new members, 292 have renewed their active interest in the organization. The drive will continue for four months more.

QUALITY METHODS AT PIERCE-ARROW FACTORY.

From 12,000 to 14,000 visitors register at the factory of the Pierce-Arrow Motor Car Co. at Buffalo, N. Y., every year, many of them being users or prospective users of Pierce-Arrow cars and trucks.

Courteous guides are furnished to accompany visitors on trips of inspection through the machine and assembling shops, test buildings, body shops, chemical laboratories, power house, inspection departments and other parts of the factory, and when a visitor sees with his own eyes the kind of materials used. the tests to which they are subjected, the accuracy with which they are machined. the precautions taken to insure this accuracy, the system of inspection followed throughout manufacture. and the thoroughness of final testing, he gains a clear knowledge of what is meant by Pierce-Arrow standards of quality.

"COLUMBIA HOT SHOT."

The second number of the house organ started in November by the National Carbon Co., Inc., Cleveland, O., has made its appearance under the name of "Columbia Hot Shot," this being the title selected out of a large list suggested. The

J. B. Long, Speaker of House, Goodyear Industrial Republic.

board of editors is as follows: Honorary editor-in-chief, N. C. Cotabish, general sales manager; directing editors, H. S. Greene, assistant sales manager; A. Broggini, publicity manager, and S. M. Masse. It is the purpose of the editors to make every item in the paper a hot shot and one that is aimed to hit the mark.

TIRE CHANGED IN 61 SECONDS.

Francis P. Doherty of the Pitts Auto Supply Co., Lowell, Mass., has some ground for claiming the title of "champion" in the tire changing line. Recently, in the presence of competent witnesses, he shifted a Ford tire in exactly one minute and one second, the operation including removing the tire from an iron rim, pulling out the inner tube, replacing the tube, replacing the tire and inflating it to 60 pounds pressure. The size of the tire was 30 by 3½. His record for a 35 by 5-inch tire is two minutes, and it is claimed that he also holds all records for the removal and replacement of solid rubber tires.

The first six-cylinder motor car was produced in England.

Members of the House of Representatives, Goodyear Industrial Republic, Akron, O.

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Personal News of the Industry in Brief

Jay V. Hall Joins Willys Corporation

Jay V. Hall, formerly sales manager and a member of the executive committee of the Olds Motor Works, has been

Jay V. Hall, Vice President in Charge of Car Production, Willys Corporation.

made vice prseident in charge of motor car production of the Willys Corporation, Toledo, O., and will have complete oversight of the new light six-cylinder car. He will be assisted by D. F. Edwards, who for two years was assistant to the president of the General Motors Co.

John H. Johnson, owner of the Buick-Boston Co., has opened his new motor service building just off Commonwealth avenue in Boston's new motor mart section and it is said to be a marvel of completeness, representing an investment of $300,000. These new quarters have enabled Mr. Johnson to divide his extensive business into 18 different departments. each under the supervision of an expert. Here is afforded some 70,000 square feet of floor space all to be devoted to service, as the sales rooms will continue on Massachusetts avenue, and storage is cared for in still another building. Mr. Johnson has been a director of the National Automobile Dealers' association.

Harry Garner of South Orange street, Philadelphia, who recently purchased the property at the northeast corner of State and Plum streets in that city, plans to remodel the building into an up-to-date automobile tire repair shop.

Harry Harmer, for the past seven years connected with the White company in charge of its national users business, has become identified with the Service Motor Truck Co. as Chicago branch manager.

H. F. Clark and C. A. Clark, formerly with the Universal Motor Co., have joined the Yale Automobile Co., Little Rock, Ark.

Howard B. Hall, vice president of the Bethlehem Motors Corporation, and director of the export activities of that corporation, has resigned, to become effective Feb. 1. Mr. Hall was one of the first to join Arthur T. Murray in the organization of the Bethlehem Corporation in 1916, severing his connection with the Brady Murray Motors Corporation to become Bethlehem's assistant sales manager. Mr. Hall later, while retaining his factory interest, organized the Chicago Bethlehem Sales Co. for the distribution of Bethlehem Products in the Middle West. He returned to New York early last year and became actively engaged in the export plans of the company. He has not yet announced his future plans.

Edward W. Keefer, who was with the 28th Division Expeditionary Forces in France, is now back in his former position as eastern traveling representative of the Bearings Co. of America, Lancaster, Pa.

L. L. Newton has resigned his connection with the Parker Motor Truck, where he has been sales manager for the past 15 months.

George W. Barranger has rejoined the Baltimore Republic Truck Co., 131 West North avenue, Baltimore, Md., as salesman.

H. C. Doss has been appointed manager of the Ford Motor Co. of Oklahoma. He was formerly assistant manager of that company.

M. W. Franklin is the new director of the inspection, service and personnel division of the Remy Electric Co., Anderson, Ind., to succeed J. D. Hopper. Mr. Franklin has had an usually wide experience, is a doctor of science, master of arts, electrical engineer and physical chemist, holding degrees from the University of California. Columbia University and the University of Goettingen, Germany.

M. W. Franklin, Promoted to Important Position with Remy Electric Co.

Davies Vice President Seelye & Brown

Maxton R. Davies, vice president and secretary of the Dunlap, Ward Advertising Co., Cleveland, O., and formerly man-

Maxton R. Davies, Vice President Advertising House of Seelye & Brown, Inc.

ager of that agency's Detroit office, has returned to Detroit to become vice president of Seelye & Brown, Inc., advertising agency, where he will serve as counsel on automotive advertising and sales. Mr. Davies is well known in the automobile and allied industries, having been prominently identified with the publicity work in behalf of Chandler, Cleveland and Grant motor cars.

E. A. Bates has accepted the position as president and general manager of the Booty Carburetor & Manufacturing Co., Chicago, Ill. He was formerly connected with Benecke & Kropf.

Earl W. McGookin is now acting as sales manager for the Curatex Co., Newark, N. J., in his former office at 720 Book building, Detroit.

Roy D. Hertz, who recently resigned as general sales manager of the Moreland Motor Truck Co., will take a brief rest before again taking up the automobile industry.

J. W. Locke has joined the force of the W. W. Williams Co. of Columbus, O. Mr. Locke was formerly with the Commerce Motor Car Co. of Detroit.

John H. Dwight has accepted the position of assistant general manager of the Saginaw Products Co., Saginaw, Mich., having been formerly vice president and general manager of the Belle City Malleable Iron Co. and Racine Steel Castings Co., Racine, Wis.

J. E. Iams, manager of the Winton Philadelphia branch, states that the new show rooms and offices at 1404-1406 North Broad street are about ready for occupancy.

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Berlet President Truck Association

E. J. Berlet, president of the Stability Motors Co. of Philadelphia, agent for Atterbury trucks, has been elected president of the Philadelphia Motor Truck Association, the dealer organization of that city. Mr. Berlet is known as one of the most active interests in the trade and keenly concerned in the success of the annual auto show in that city, which took place this month. His company has taken a prominent part in various public promotive movements in Philadelphia.

E. J. Berlet, New President of the Philadelphia Motor Truck Association.

E. E. Seig has been promoted from head of the credit department of the Republic Motor Truck Co., Alma, Mich., to assistant general sales manager. Mr. Seig has been with the Republic company since its organization, and as he has advanced through the various divisions he is thoroughly familiar with the policies of the company. He will be succeeded in the credit department by W. R. Tomlin, who has been his assistant.

R. B. Fisher has been appointed general sales manager of the Buda Co., Harvey, Ill., and will direct all domestic and foreign sales and the advertising department. John P. Mahoney will continue as sales manager of the engine division and S. Gordon Hyde as advertising manager, both under Mr. Fisher's supervision.

R. W. Stovel, who was a lieutenant-colonel in the United States Engineering Corps, has been appointed a consulting engineer with Westinghouse, Church, Kerr & Co. He will devote his entire time to electrical and mechanical features.

V. L. Brown has resigned his position of retail sales manager of the Overland Hanson Co., Waterloo, Ind., and R. A. Doty has succeeded him.

Walter W. Gaskill, 141 Milk street, Boston, Mass., has been appointed by the Roller-Smith Co., New York City, as its agent for Boston and vicinity and other parts of the New England territory.

Wilbur W. Wood, who for many years has been a writer for St. Louis newspapers, has become connected with the Traffic Motor Truck Corporation of that city in the publicity department in charge of local and national advertising. In connection with the duties of his new position Mr. Wood will edit "Horse Sense," the monthly house organ of the Traffic Corporation, as well as the "Weekly Wallop," the internal house organ. During the war Mr. Wood was in the Naval Aviation service and was editor of the "Pauillac Pilot," a weekly publication in France devoted to the interests of the aviation service.

Lloyd J. Bohan, who for the past three years has been connected with the Gurney Ball Bearing Co., Chicago, has joined the Torbensen Axle Co. as sales representative in Chicago and territory west of that point.

E. F. Norelius has opened consulting and designing engineering offices at 430-431 Andrus building, Minneapolis, Minn. He was formerly with the Holt Manufacturing Co. for 10 years in different engineering capacities and during the war was identified with the design and development of artillery tractors.

E. B. Barber has joined the manufacturing forces of the LaFayette Motors Co. at Indianapolis, Ind. He was formerly with the Blodgett Engineering & Tool Co., his position being chief tool engineer and he is widely known in engineering circles.

Austin Parker of New York, who was in the war zone for the New York Tribune, has joined the Packard organization as director of publicity.

E. A. Shelly, who for some time past has been assistant sales manager of the Selden Truck Corporation, Rochester, N. Y., died at his home in that city on Jan. 19 after a week's illness. Prior to his connection with the Selden organization he was for a number of years with the Vim Motor Truck Co., Philadelphia. He leaves a wife and daughter.

E. A. Shelly, Assistant Sales Manager, Selden Truck Corporation.

Storm with Sewell Wheel Company

Fred J. Storm has been appointed assistant general manager of the Sewell Cushion Wheel Co., Detroit. Mr. Storm has been closely allied with the motor truck industry and is therefore well equipped to take over his new duties, which will place him in complete charge of the merchandising of Sewell cushion wheels.

F. J. Storm, Assistant General Manager, Sewell Cushion Wheel Co.

H. C. Carter has been appointed factory manager of the Napoleon Motors Co., Traverse City, Mich. He was for a number of years with the Dort Motor Car Co., Flint, Mich., leaving that concern to organize the inspection department of the Republic Motor Truck Co., Alma, Mich., of which he later became chief inspector. Mr. Carter is a man of broad experience both in the truck field and in all branches of the automotive industry.

A. L. Kimball, formerly chief engineer of the Fulton Motor Truck Co., is now sales engineer for the Pierce Governor Co., Anderson, Ind., having charge of the territory east of Indiana. Mr. Kimball is a man of wide experience in the automotive industry, having previously been experimental engineer with the Hudson, Chalmers and Dodge Brothers car companies. He is a graduate of the University of Michigan and is a member of the Society of Automotive Engineers.

Flavius G. W. Sudrow has resigned his position as zone sales manager of the Chevrolet Motor Co. of Kansas City, Kan., to become distributor for the Gardner Motor Co. in that city and the southwest. He was also formerly treasurer of the St. Louis Body Co.

Ralph N. Soule, who has had a long and very successful enginering experience, has been appointed manager of the service department of the Dort Motor Car Co. of Flint, Mich.

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Randall General Sales Manager, Cadillac

A. E. Randall has been appointed general sales manager of the Detroit Cadillac Motor Car Co. to succeed Hugh T. Porter, who has gone with the Lafayette Co. Mr. Randall has been connected with Detroit Cadillac Co. for 10 years as manager of the Brooklyn, N. Y. branch, and was at one time president of the Brooklyn Motor Vehicle Dealers' association and a member of its show committee for several years. Mr. Randall's New York City headquarters will be at 1881 Broadway, but he will also continue in charge of the Brooklyn branch at Lafayette and Flatbush avenues.

Thomas J. Blick, Ford dealer at 257 Broadway, Buffalo, N. Y., has recently renovated and enlarged his place of business. Mr. Blick put his business on a profit sharing basis last September, since which time his records show a decrease in losses in doing business of 65%. His headquarters, with the new additions, will include 7500 feet of floor space. William E. English is the superintendent of Mr. Blick's service department.

Thomas T. Feeley, Lockport, N. Y., has retired from the position of county clerk and has accepted a position with the General Motors Corporation. Mr. Feeley was county clerk for nine years and declined renomination.

Allan A. Ryan of New York has been elected chairman of the board of directors, Stromberg Carburetor Co. of America.

Gus Menninger of Fort Smith, Ark., has been appointed active manager over all departments of the Creekmore Motor Co. Mr. Menninger was formerly sales manager.

William A. Turner of Baltimore, Md., who served several months overseas with the United States army, has been appointed sales manager of the Brockway Motor Truck Co. of Baltimore, 1921-1927 North Charles street.

Walter Lockhart has opened a garage and repair shop in the building formerly occupied by the Sunshine laundry at 511 North Fifth street, Waco, Tex. Mr. Lockhart was formerly traveling mechanic for the White Motors Co.

Jack Richardson and E. R. Shirley have accepted positions with the Butler-Williams Motor Co. of Oklahoma City, Okla., selling the Patriot truck, both in the retail sales department.

Harry Fosdick has purchased an interest in the Monroe Motor Car Co., Buffalo, N. Y. He was for a long time prominently identified with the Nordyke & Marmon Co., Indianapolis, Ind.

Edwin L. Lewis, who has been a member of the Packard forces since July, 1918, has been appointed to the position of assistant general manager of the Packard Motor Car Co. of Philadelphia.

Joseph F. Downey, dealer in high grade used cars, has opened his new quarters at 651 Beacon street, Boston, which includes sales rooms and a service station.

William A. Kuser has introduced a novel service feature for Lexington owners and other motorists by installing an automobile license bureau in his show room where detailed information on the new and complicated Pennsylvania license law can be secured, thus saving the trouble of sending to the state capital. It is the only bureau of the kind in the city. Mr. Kuser is vice president of the Lexington Motor Co. of Pennsylvania.

Al Adams, the oldest used car dealer in New England, handling all the high grade cars, has moved to the New Charles Street Garage. For the past 15 years he has been located at Park square, Boston, Mass.

A. R. Demory has been elected president of the Timken Detroit Axle Co., Detroit, Mich., the former president being Mr. Timken.

William Luttgen has been made president and general manager of the Mercedes Repair Co., at 218 East 55th street, New York City. The Mercedes car is made by the Daimler Motor Co. of Stuttgart, Germany, and Mr Luttgen has been granted the sole selling rights for America and is now placing agencies throughout the country.

A. G. Ripberger has become chief engineer for the steel and tube department of the main plant of the Timken Roller Bearing Co. at Canton, O. Mr. Ripberger was formerly of the engineering staff of the Illinois Steel Co., Gary, Ind.

Dan Goodman has taken over the Craig garage in Paris, Ill. He has been for the past three years advertising manager of the Ford Motor Co. in Indianapolis, Ind. He will, however, still handle the Ford car in Edgar county.

GROUP OF NEWLY ELECTED VICE

Thomas Clements, Vice President, Firestone Tire & Rubber Co., in Charge of Offices and Purchases.

Mr. Clements joined the staff of the Firestone Co. about two years ago as comptroller, coming from the position of general manager of the Woods Motor Vehicle Co.

J. W. Thomas, Vice President, Firestone Tire & Rubber Co., in Charge of Manufacturing.

Mr. Thomas has been works manager for some time. He has been associated with the Firestone organization for 12 years, having been responsible for production since 1911.

S. P. Shelburne of Enid, Okla., manager of the Shelburne Motor Co., announces the opening of a sales room and service department at 1017-1019 North Broadway, Oklahoma City, for the exclusive distribution of the Dodge Brothers motor cars. Associated with Mr. Shelburne will be Eugene Dwelle as assistant manager; George Fuller, in charge of the service department, both of Enid, and F. M. Lee of Muskogee, in charge of the parts department.

F. H. Howell is the head of the F. H. Howell Sales Co., 1200 Bedford avenue, Brooklyn, N. Y., which has just been appointed distributor by the Plunkett Shock Absorber Co., 323 Washington street, Brooklyn, for the Brooklyn and Long Island territory.

A. E. Guertin and P. E. de Rochmont, who have for some time successfully handled the sales of Biddle cars in the Boston territory, have leased a large portion of the new fireproof building at 740 Commonwealth avenue, where they will maintain a first class service station. The sales department will remain at the Boylston street location and will be in charge of William Crapeau as director of sales.

William L. Edmond has resigned as cashier of the First State Bank & Trust Co., Waco, Tex., to become a member of the firm of Edmond-Penland Motor Co., 217 Washington avenue, which is engaged in the automobile business, having been appointed distributor for the Cleveland car.

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E. M. Hottenstein, Lebanon, Pa., distributor of the Chevrolet Motors Co. for 11 counties in central Pennsylvania, has bought the Ensminger planing mill property at Harrisburg, Pa., which will increase the distribution facilities in that section of farm tractors and other products of the General Motors Corporation.

Garth A. Dodge, formerly connected with the Austin company at its Cleveland headquarters, has joined the Black & Decker Co., Towson Heights, Baltimore, Md., as branch manager for the states of Ohio and Indiana, and will also be in charge of the Cleveland branch.

Charles S. Osterman is the manager of the Sweeten Used Car Clearing House, Philadelphia, which was established by James Sweeten, Jr., local dealer in Franklin cars, and specializes in used cars of high grade.

Walter S. Sawyer, 36 Chestnut street, Malden, Mass., a salesman for the Kissel Kar Co., dropped dead at the show rooms of the company, 1250 Boylston street. Mr. Sawyer was 55 years old, was a native of Portland, Me., but had lived practically all his life in Boston and vicinity. Before becoming affiliated with the Kissel Kar Co. he was a salesman for the Packard Motor Car Co. and was at one time a salesman for the National Cash Register Co. He is survived by a wife and one son.

R. A. Robinson has purchased the interests of his partner, G. M. Starnes, in the Starnes-Robinson Auto Co., 115 Maple street, North Little Rock, Ark., and the concern will now be known as the R. A. Robinson Auto Co. The company operates a garage and service station.

PRESIDENTS OF FIRESTONE CO.

L. G. Fairbank, Vice President and Manager, Firestone Steel Products Co., Subsidiary of Firestone Rubber Co.

Mr. Fairbank became eastern sales manager three years ago, after three years in the advertising department, during the latter two of which he was assistant advertising manager.

A. G. Partridge, Vice President, Firestone Tire & Rubber Co., in Charge of Sales.

Mr. Partridge, who becomes vice president in charge of sales, came to the company in its infancy, growing up to be general sales manager, which position he has held for some time.

Harry V. Taylor of Dover, Del., is the manager of the new accessory store to be opened this month at Wilmington, Del., by the Taylor Auto Supply Co., 11th and Orange streets. Mr. Taylor is a graduate of Delaware college. During the war he was commissioned as a first lieutenant and was stationed at Camp Lee, Va. For eight months following his discharge he was with the Scranton Auto Supply Co., Scranton, Pa.

Major Pemberton Frame has recovered from the effects of being badly gassed while serving in the American army in France and has formed a copartnership with J. P. Keil to engage in the automobile tire business at 220 Olney road, Norfolk, Va., under the firm name of Keil-Frame Co.

W. O. Crabtree, president and general manager of the Graham Brothers Sales Co., distributor for New York City of Bethlehem trucks, has purchased for his company the building on West 57th street, just off Broadway, in that city, 100 by 125 feet, five stories in height. The price paid is said to have been approximately $300,000. This will supply the Graham Brothers Co. with needed larger quarters.

William M. Turnbull is treasurer and manager of the Colonial Auto Co., which is to erect a garage on the east side of Washington street, Hartford, Conn.

James J. Murphy has purchased the storage battery business formerly conducted by Earl Hotchkiss in the McNally garage, Whiting street, Plainville, Conn.

Woman Sells Cars at Baltimore

Miss F. Frances Maguire is one of the successful members of the sales force of the Schall-Crouch Auto Co., 116-118 West Mount Royal avenue, Baltimore, Md., distributor of Paige passenger cars and trucks and Atterbury trucks. Miss Maguire made her first attempt at selling motor cars in her home city, Philadelphia, in 1917, and has continued in the business ever since. She moved to Baltimore five months ago.

George W. Slocum is president of the Slocum Motors Co., which has just been formed to distribute the Mitchell and Chalmers cars in seven counties of Pennsylvania. The company has leased the building on North Washington street, Scranton, Pa., and will occupy the entire structure consisting of three floors. Associated with Mr. Slocum will be Arthur L. Weeks and Arthur Ellis, manager of the Lackawanna Automobile Co.. A three-year lease has been taken by the company.

R. H. Dauterich, formerly the first assistant superintendent of the three-inch gun shop of the Poole Engineering Co., Baltimore, Md., and for 20 years well known in the mechanical field in that city, has formed a company for general machinery and automobile work, to be known as the Crescent Engineering Co., with offices and works at 402-404 West Conway street, Baltimore.

Edgar F. Power, for 30 years a salesman for Chase & Sanborn, has become associated with the Packard Auto Exchange Co., which has leased the building at 33 Brookline avenue, opposite Fenway Park, Boston. Mr. Power is a director of the Metropolitan Trust Co. Howard S. Power, a brother, formerly with the Packard Motor Car Co., has also been admitted to the firm, and will act as general manager.

Frank K. Stehle is president of the Keystone Automobile Sales Corporation, Philadelphia, which has taken over the distribution of the King Eight car, made by the King Motor Car Co., Detroit. Mr. Stehle has long been associated with the automobile business and was also president of the Bearings Co. of Pennsylvania. He maintains a large and well equipped service department at 2120 Fairmount avenue.

Earl E. Beveridge, who was formerly connected with the Westinghouse Electric & Manufacturing Co., Pittsburgh, Pa., has been appointed works manager for the Federal Corporation, Westfield, Mass.. manufacturers of Liberty and Jumbo spark plugs and Syco products.

William R. Mample, superintendent of the Aluminum Castings Co., Fairfield, Conn., has accepted a position as foundry foreman at the Wright-Martin plant, New Brunswick, N. J., now operated by the International Motor Co.

George E. Blakeslee, 2561 Hudson boulevard, Jersey City, N. J., a pioneer dealer in automobiles, and a leader in the Good Road movement, died Jan. 10, aged 46 years.

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Notes of the Industry and Trade

Friend Forms New Corporation

Otis C. Friend, one of the best known personalities in the automobile industry, announces the organization of the Friend Motors Corporation, with factories at Pontiac, Mich. Mr. Friend and his associates have purchased the plant and equipment of the Olympian Motors Co. and will continue to make the Olympian car pending the development of a new model which will embody Mr. Friend's ideals. Mr. Friend recently resigned as an executive of the General Motors Corporation. He has had a unique career as designer, engineer, production manager, sales executive and president, holding the latter position with the Mitchell Motors Co.

BRUNNER CO. OPENS NEW OFFICE.

The Brunner Manufacturing Co. Utica, N. Y., maker of garage air compressors, has opened a branch office in Kansas City, Mo., with H. S. Atherton in charge as district manager. This new office will provide for more intimate contact with the trade in the central territory west of the Mississippi.

The Cincinnati branch has also been enlarged recently to afford better cooperation to its rapidly increasing trade in the central, north central and south central states.

The Brunner products include a complete line of belt and motor driven air compressors for every purpose, high-pressure air tanks and fittings and complete compressed air equipment for garages. It has recently issued a new catalogue, which may be had for the asking.

JORDAN MOTOR CAR CO.

The Jordan Motor Car Co., Cleveland, O., is occupying its new plant, which has increased its capacity to three times its original space. It includes a new power plant, japanning building, a motor test building, a new assembly room and two-story warehouse.

In addition to this the Jordan company has annexed the property of the Metal Parts Manufacturing Co., which adjoins, and the incorporation of this building as a part of the Jordan plant will make possible an increase of more than 30,000 feet of floor space.

Otis C. Friend, President, Friend Motors Corporation.
(Photo by Underwood & Underwood Studios, N. Y.)

ANNUAL MEETING DART TRUCK.

At the annual meeting of the Dart Truck & Tractor Corporation, held at its offices at Waterloo, Ia., Jan. 13, the following officials were elected: Directors, C. C. Wolf, W. H. Johnson, M. D. Herron, E. L. Stover, S. Y. Eggert; president, C. C. Wolf; vice presidents, W. H. Johnson and M. D. Herron; secretary and treasurer, E. L. Stover.

U. S. STEEL GETS FORD ORDER.

It is reported that the lion's share of the $15,000,000 steel contract just placed by the Ford Motor Co., Detroit, has been awarded to the United States Steel Corporation. It will be about 216,000 tons.

Trailmobile Co. Builds New Plant

The Trailmobile Co., Cincinnati, O., is just completing a large, modern factory at Oakley, a suburb of that city, which will be used for the production on a large scale of trailers of a wide variety of types. It is claimed that this will be the largest in the world engaged exclusively in the making of trailers for motor vehicles and has been planned so that extensions can be made rapidly to meet the further increasing demands of the business.

The past year has been a big one in every way for the trailer business, and especially for the Trailmobile Co. Thousands of truck owners, educated in the economies of trailer hauling by the use to which they were put by all the leading armies in the world war, have turned to it for commercial use.

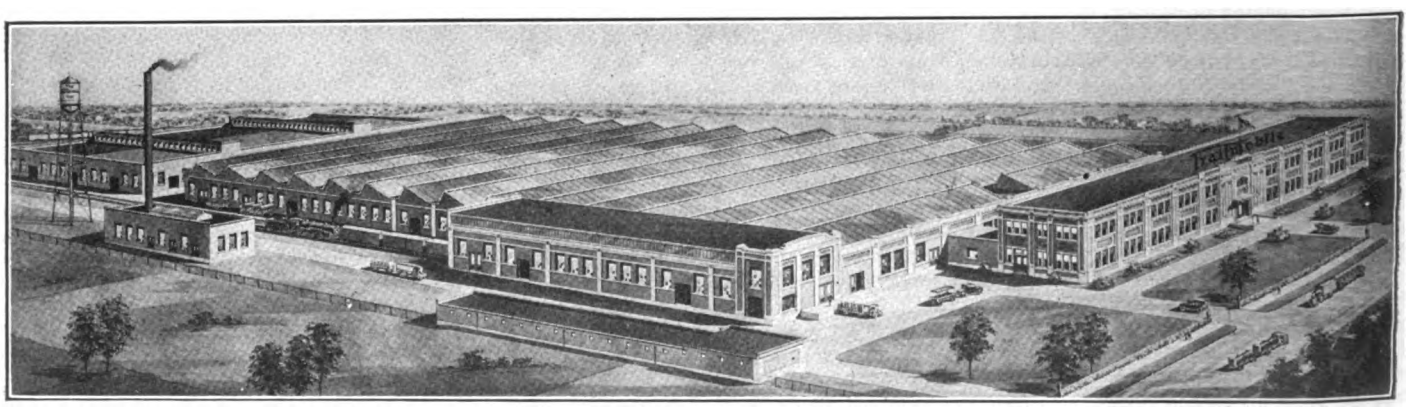
Great corporations, with vast amounts of hauling to do in the cities, have taken up the semi-trailer. Fleets of 150 units or more are now in operation. Statistics in states that require registration indicate increases of as much as 170 per cent. in the use of trailers during the past year.

Since the close of the war, during which it supplied in the neighborhood of 10,000 Trailmobiles to the government, the commercial business of the Trailmobile Co. has been greatly on the increase.

NEW BUILDING FOR G. PIEL & SONS.

G. Piel & Sons, manufacturer of automobile accessories, Long Island City, N. Y., has leased for a term of years a new manufacturing building, just completed by the Steinway Building Co., at Jackson and Steinway avenues, Long Island City.

The Piel company has also filed plans for the erection of a six-story and basement building, 150 by 200 feet, to occupy the block in Long Island City bounded by Seventh, Washington, Eighth and Pierce avenues. It is designed for a modern fire resistant, industrial structure, to be built of reinforced concrete with brick spangel walls and steel sash.



The New Plant of the Trailmobile Co. at Oakley, a Suburb of Cincinnati, O., Which Is to Be Used Exclusively for the Production of Semi-Trailer and Trailer Units, Claimed to Be the Largest Factory of the Kind in the World.

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Rawson-Upshaw Co. Formed

A new firm, the Rawson-Upshaw Co., opened for business on Jan. 1 at 310-314 Marietta street, Atlanta, Ga., for engaging in an exclusively wholesale business in automotive equipment, bicycles and supplies. The president of the new concern is William A. Rawson, who has been connected with the Elyea company of Atlanta for the past four years as active head of the bicycle department.

E. N. Upshaw, Vice President and Treasurer, Rawson-Upshaw Co.

E. N. Upshaw, who is vice president and treasurer, has been associated with the Elyea company since the early part of 1910. He started his business career in 1902 in a wholesale hardware house in Birmingham, Ala. His first connection with the Elyea-Austell company was as a traveling salesman, and he was later made department manager. At the time of his joining the Rawson-Upshaw company he was sales manager and secretary of the corporation.

The Rawson-Upshaw company will operate along well recognized jobbing lines and as they have ample capital and are well known and popular in the section in which they are to be represented, a successful future may be predicted.

GILL PISTON RINGS.

On account of the large amount of reboring and regrinding of scored cylinders which is called for today, a tremendous demand has developed for over-size piston rings. The Gill Manufacturing Co., 351 West 59th street, Chicago, is specializing in over-size rings for this class of work and makes no extra charge. The Gill piston rings are made to fit practically all motors in sizes ranging from two inches to 12 inches. The over-size rings can be obtained through jobbing and accessory houses throughout the United States.

Gasoline is 75 cents a gallon in Buenos Aires.

BUDD COMPANY INCREASES STOCK BY $2,000,000.

Stockholders of the Edward G. Budd Manufacturing Co., Philadelphia, maker of all-steel automobile bodies, have approved an increase of $2,000,000 in the eight per cent. preferred stock of the company, bringing the total amount of authorized stock up to $4,251,700.

The net earnings of this company for 1919, November and December (estimated), are $1,275,470, compared with $1,014,104 for 1918.

During the war the Budd company turned out large quantities of truck bodies for the government, which adopted its model as a standard, and at the time of the armistice it was running 100 per cent. on government work. A few months later the entire plant was switched on to a peace basis again, but unfilled orders on the books now amount to more than $15,000,000. Of the preferred stock just authorized the proceeds of $1,000,000 worth will be used for the erection of an addition to its plant.

JACKSON'S 1920 PROGRAMME.

The Jackson Motors Corporation, Jackson, Mich., plans to turn out 3000 of the new series of Jackson Six cars by July 1, as well as several hundred of the 3½-ton four-wheel-drive trucks.

E. M. Benedict, formerly of the Hayes Wheel Co., is the new works manager of the Jackson Co., and the new advertising manager is Guy C. Core, formerly of the Briscoe Motor Corporation.

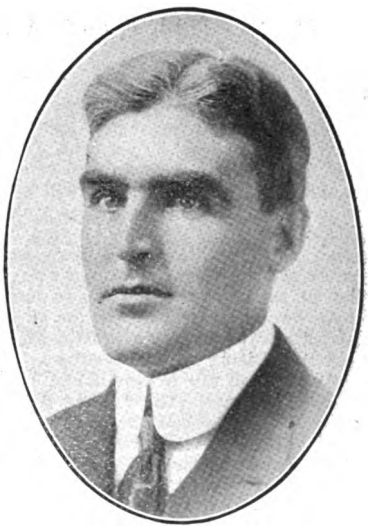
BLACK & DECKER AT CLEVELAND.

The Black & Decker Manufacturing Co., Towson Heights, Baltimore, Md., has extended its permanent organization by the establishment of a branch office at 6523 Euclid avenue, Cleveland, O., in charge of Garth A. Dodge, formerly connected with the Austin Co. at Cleveland, and who recently became branch manager of Black & Decker for the states of Ohio and Indiana.

William A. Rawson, President, Rawson-Upshaw Co., Atlanta, Ga.

Essex to Double Production

Essex Motors, Detroit, has just shipped the 20,000th Essex car from the factory, this event marking the completion of the Essex production programme scheduled for 1919. Less than a year ago the lines on which these cars were to be assembled existed only on paper, although the design of the car itself had been perfected and submitted to every conceivable test for more than a year, when production plans were brought to a standstill by war conditions.



W. J. McAneeny, President, Essex Motors.

When the armistice was signed new equipment had to be purchased and installed and material collected before manufacture could begin. Nevertheless the Essex was in production in December of last year and early in January cars were being shipped to distributors and dealers. Since then the demand has taxed production to the utmost and as a result it is planned to double the number of cars to be made next year, or to turn out 40,000 cars.

The president of Essex Motors is W. J. McAneeny.

FRANKLIN CO. BREAKS RECORDS.

The H. H. Franklin Manufacturing Co., Syracuse, N. Y., reports that 1919, the transitional year between war and peace, broke all production records at the Syracuse factory, 9173 cars being shipped. The best previous year was 1917, when the total number of cars shipped was 8987.

It is reported that on Jan. 1 the Franklin Co. had 3000 unfulfilled contracts on its books, despite the fact that the factory is employing the largest number of workmen in its history, almost 5000, and is running to capacity. Fifty cars are being turned out daily, and this number will shortly be increased to meet the 1920 schedule, which calls for 18,000 cars.

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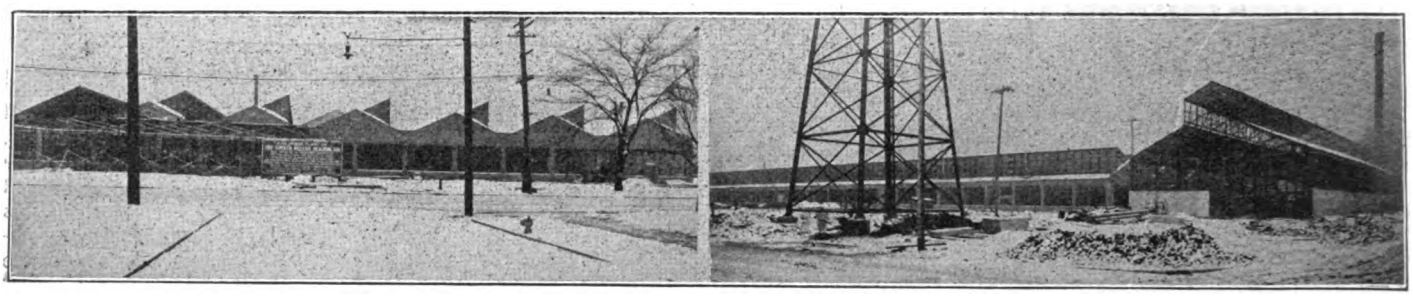


The New Plant of the Timken Roller Bearing Co. at Columbus, O., Now Nearing Completion. At Left, the Front of the Main Building, 500 by 300 Feet; at Right, the End of the Structure for the Heat Treating Department at the Rear.

Timken-Detroit Axle Co. Making Plans for Extensive Expansion

TIMKEN-DETROIT Axle Co., Detroit, is making plans for expansion on a larger scale this year to provide for an increase of at least 50 per cent. in its output in 1921, and to insure this it has been decided that the company will produce in its own factories still more of the important materials which enter into its product, and thus also reduce costs and promote efficiency. It has been the fixed policy of the Timken company to have at least two sources of supply for all of its important requirements, in most cases one of these being its own factories, the exceptions being raw materials and Timken roller bearings. The Timken Roller Bearing Co. is now operating two separate and distinct factories to provide insurance against accident at either one of the factories.

The Timken-Detroit Axle Co. operates its own malleable foundry, steel foundry, forge plant and gear plants, both bevel and worm. This company was organized in 1909 for the purpose of taking over the axle business of the Timken Roller Bearing Axle Co., which was organized in St. Louis over 20 years ago, beginning with manufacture of roller bearings and axles for horse drawn vehicles, later moving to Canton, O., and engaging in the manufacture of axles for automobiles as well as Timken roller bearings.

This business has now grown to a point where the Timken-Detroit Axle Co. furnishes over 120 customers with axles for passenger cars and trucks, the schedule for 1920 being 255,000 sets. The plans, as outlined now, will provide for 400,000 sets in 1921. This increase is necessary in order that the demands of customers may be supplied.

It has been the practise of the company to put back into the business each year about 75% of its earnings, so that the invested capital today is approximately $18,000,000, represented by the present outstanding $3,000,000 of common stock and $5,000,000 of preferred. It is planned to pay cash dividends on the invested capital at the rate of approximately six per cent. during 1920. Of the capital authorized $5,000,000 of the preferred has already been sold and over $2,000,000 of the cash has been invested in plants and equipment.

The principal unit is constructed of structural steel and is a saw-tooth type with seven bays, each about 43 feet wide, and when completed it is maintained that it will be one of the largest, best ventilated, best lighted and best coordinated plants of the country. The main building will be without partitions.

In addition to the main building there is a structure 340 by 60 feet in which will be the heat treating department, which will be equipped with every facility and will be adequate for a very large volume of production.

A meeting was held in Canton O., Jan. 5, at which a board of directors, as follows, was elected: H. H. Timken, chairman; W. R. Timken, A. R. Demory, H. W. Alden, Fred Glover, Heman Ely and Austin Lynch. They in turn elected the following officers: President, A. R. Demory; vice president, H. W. Alden; vice president and general manager, Fred Glover; vice president and secretary, C. W. Dickerson; treasurer and assistant secretary, C. G. Rowlette; sales manager, P. W. Hood; director of purchases, F. H. Maisonville.

AUTOMOTIVE INDUSTRY BOOM IN MILWAUKEE.

The W. S. Seaman Co., Milwaukee, Wis., manufacturer of automobile parts, has acquired 15 acres of land on the North side in that city, where it proposes to erect a plant, the cost of which may ultimately reach $8,000,000.

With the A. O. Smith corporation erecting a $3,000,000 plant for the making of automobile parts, the Nash company building a factory to cost several million dollars for making automobiles, and the Ogren Motorcar Co. also constructing a plant, Milwaukee is experiencing a boom in the automotive field.

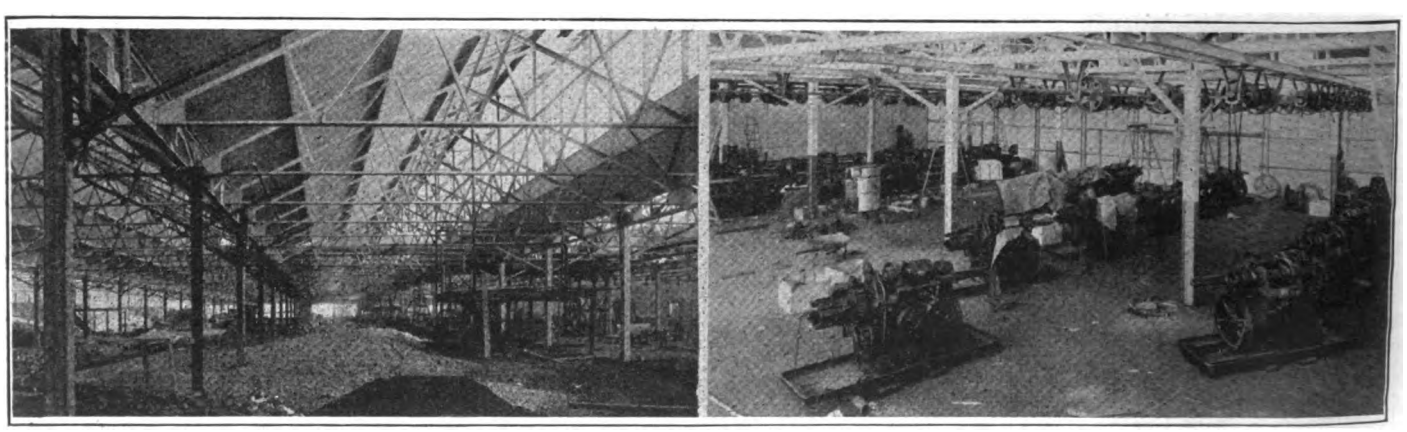
SAVAGE ARMS MAKES AXLES.

The Savage Arms Corporation, Sharon, which during and prior to the war manufactured many three-inch rapid fire guns for the United States navy, will soon complete its contract and the last of these guns is now being turned out. Preparations are being made at the plant for the extensive manufacture of motor truck axles and roller bearings. The works are now operating to capacity and it is said there are many orders ahead for automobile parts.

TIRE COMPANIES CHANGE NAMES.

The Akron Tire Co., New York City, has changed its name to Akron Overland Tire Co. and has increased its capital from $10,000.000 to $10,700,000.

The Rochester Tire & Rubber Co., Buffalo, N. Y., has changed its name to the Powerton Tire Corporation.



Looking Down One of the Seven Bays of the Main Building of the New Timken Roller Bearing Co.'s Plant. At Left, Erecting Machinery for Production While the Building Is Being Constructed.

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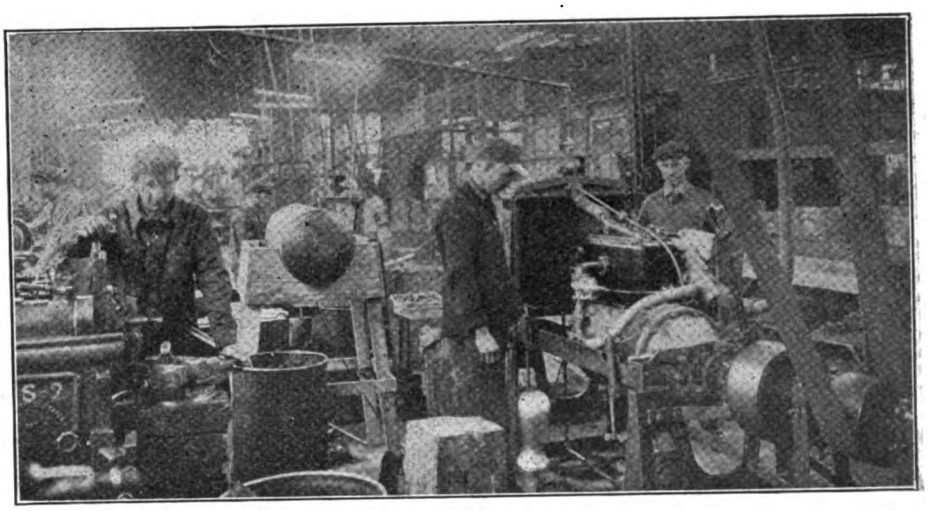
$10,500,000 for New Buick Plants

At the annual meeting of the Buick Motor Co., Flint, Mich., Jan. 19, plans were announced for the erection of new factory buildings and extensions to the plant at Flint to cost approximately $7,500,000, and an additional $3,000,000 for a building and assembling plant at St. Louis where, in addition to assembling 200 cars a day, equipment for turning out 200 finished bodies a day will be installed. The programme includes the construction of nine new buildings and extensions to others with new machinery and equipment, with a view to increasing the total daily production to 750 finished cars.

The directors elected H. H. Bassett president and general manager to succeed Walter P. Chrysler, resigned.



Buda Engine Temporarily Installed to Supply Power at Service Motor Truck Co.'s Plant, Wabash, Ind., During Coal Shortage.

RAUCH & LANG TO BUILD AT CHICOPEE FALLS.

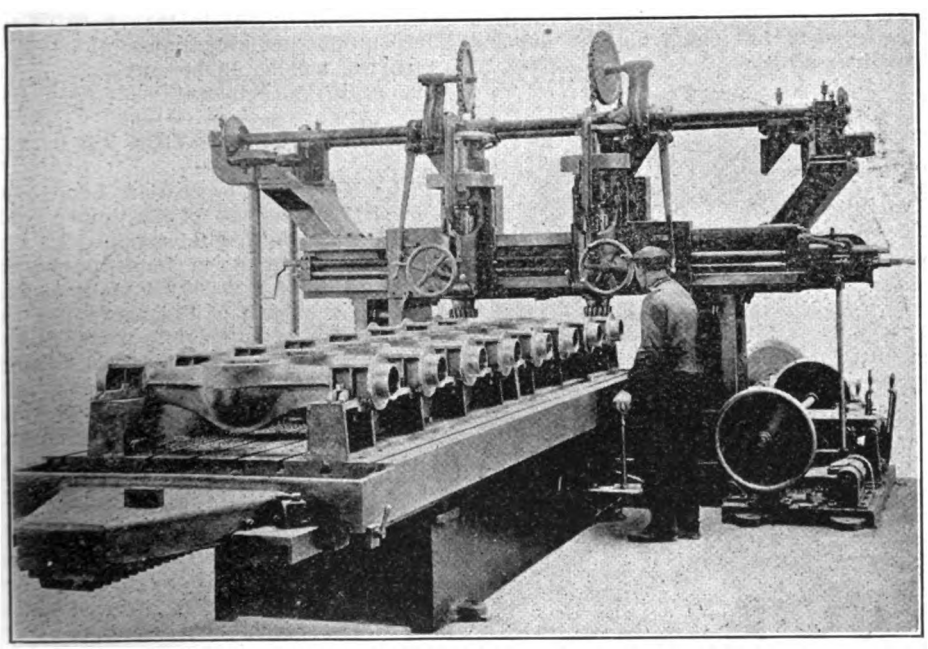
Rauch & Lang, Inc., which has taken over the R. & L. electric interests, has decided to build a factory on the plot of land recently purchased at Chicopee Falls, Mass. No complete personnel of the new organization has yet been announced, but it is understood that men closely identified with Rauch & Lang in the past will head the new concern. The vice president and general sales manager is Harry H. Doering, one of the pioneer electric car men of the country, formerly sales manager of the Ohio Electric Car Co., and for the past seven years with the Rauch & Lang organization as sales manager and in other executive capacities.

The new plant will adjoin the new Stevens-Duryea plant at Chicopee Falls, and will be but a short distance from the new Rolls-Royce works.

NEW RAYFIELD CARBURETOR.

The Beneke & Kropf Manufacturing Co., Chicago, manufacturer of the Rayfield carburetor, is presenting a new type of carburetor for Ford cars, which is the result of experimental work on the part of Rayfield engineers covering a period of three years. The construction is of the venturi type, with accelerating well and multiple jet nozzles, and is said to cover the essentials of easy starting, ample power and acceleration, together with minimum fuel consumption. The important features are its simplicity of construction, the elimination of all moving parts and thermostatic air control. This last mentioned device is patented and is stated to be featured only in the Rayfield; it provides for the operation of the carburetor at the same degree of temperature during all seasons of the year, so that it is not necessary to readjust it for changes in the weather.

The new carburetor is sold complete with all fittings and is designed to replace the regular Ford equipment. An adjustment for control from the dash is provided along with the hot air jacket, tubing, manifold gaskets and cap screws. Price, $18 complete.



Bemmn & Smith Planer with Four Milling Heads, with Which Four Operations Are Made on Eight Axle Housings at One Time in the Plant of the Wisconsin Parts Co., Oshkosh, Wis.

WESTINGHOUSE APPOINTMENTS.

The Westinghouse Electric & Manufacturing Co., East Pittsburgh, Pa., has announced the following appointments:

At East Pittsburgh—Alexander Taylor, for many years manager of works, to be assistant to vice president in general charge, in all plants, of production, stocks and stores; R. L. Wilson, promoted from general superintendent to works manager; E. R. Norris, director of works equipment, in charge of machinery, tools and methods in the various plants; C. B. Auel is made manager of the employees' service department.

G. M. Eaton has been made chief mechanical engineer of the company; C. W. Johnson and H. W. Cope, assistant directors of engineering; C. H. Champlain and E. S. McClelland, assistant works manager; John E. Bonham, assistant to works manager; E. S. Brandt, supervisor of equipment and methods.

Managers of Engineering Departments—A. M. Dudley, automobile equipment; R. P. Jackson, material and process; F. E. Wynne, railway equipment department; G. H. Garcelon, Small motor.

STUDEBAKER'S PROPOSED OUTPUT.

The Studebaker Corporation, South Bend, Ind., according to President Erskine of the company, will produce approximately 80,000 cars during the current year, with net sales close to $150,000,000, as compared with an output of 38,380 in 1919, valued at $80,000,000. In other words, while 1919 was the best year in the company's history, the current year promises to better this record by a big margin.

It is estimated that the annual report will show a balance sufficient to pay about $20 a share on the $45,000,000 common stock outstanding.

The new plant at South Bend will be under production in a short time, when something like 12,000 additional workers will be required.

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Automobile Body Builders Swamped with Business

AS A result of the enormous expansion in automobile production in the United States, the builders of motor car bodies are fairly swamped with business. Only a comparatively few of car manufacturers other than the Ford Motor Co., build their own bodies. An indication of this unprecedented demand for bodies which American builders have been called on to meet is shown when it is stated that the production of passenger cars increased from 926,388 in 1918 to 1,586,787 in 1919, and it is estimated that during the current year more than 2,000,000 more will be turned out. The number of trucks increased from 227,250 in 1918 to 305,142 in 1919, with an estimated output of 425,000 in 1920.

The Fisher Body Corporation, control of which was recently acquired by the General Motors Corporation, has 22 plants in Detroit, one in Canada and operates as a subsidiary the recently organized Fisher Body Ohio Co. with plants at Cleveland. The Ohio company is capitalized at $10,000,000 preferred stock and 20,000 shares no par value common stock. From funds derived from the sale of preferred stock $6,000,000 is being expended on plant and equipment. F. J. Fisher, president of the company, says the Cleveland plant will be the largest of its kind in the world and estimates that within two years the Ohio company alone will be doing a business of $25,000,000 a year. The Detroit company for the year ended April 30, 1919, returned net profits of $1,600,000 after all charges and federal taxes.

The Mullins Body Corporation.

The Mullins Body Corporation was incorporated last year to take over the business and assets of W. H. Mullins Co., Salem, O. In addition to automobile bodies this company turns out automobile parts and small steel boats. Of the authorized capitalization of $1,000,000 preferred stock and 70,000 shares of no par value common stock, all the preferred and 30,000 shares of common were sold at the time the new company was organized. Within four months so much new business was acquired, mainly for automobile bodies, that the remaining 40,000 shares of common stock were sold to secure additional working capital. Net earnings are running at the rate of $72,000 a month before taxes, and unfilled orders total approximately $600,000. On this basis net earnings for the current year will probably exceed $13 a share on the common stock before taxes.

C. R. Williams Body Co.

C. R. Williams Body Co., whose main plant is at Detroit, found its capacity of 500 bodies a day there insufficient to meet its requirements. Consequently it purchased a large tract of land at Bay City, Mich., on which it has erected milling, wood working and dry storage plants, and the Detroit plant is now used for metal work, assembly and delivery. No figures on last year's business have been made public, but it is known that 1919 sales were greatly in excess of the $5,675,000 sales reported for 1918.

The Rubay Co.

The Rubay Co. of Cleveland, an offspring of the original Leon Rubay concern of France, was recently incorporated in Delaware with a capitalization of $1,000,000 preferred stock and 30,000 shares of no par value common stock. With $850,000 derived from the sale of part of the preferred stock extensive plant extensions are being made. It is estimated that the company has unfilled orders on its books of approximately $4,500,000,000.

Lang Body Co.

Lang Body Co. of Cleveland is trebling its capacity through the addition of plants now nearing completion, which will be paid for from the proceeds of the sale of $1,000,000 new preferred stock. When the new buildings are finished the Lang company will be able to handle from $4,000,000 to $5,000,000 worth of business a year.

Superior Body Co.

Superior Body Co., Rahway, N. J., has been capitalized at $500,000, all common stock of $5 par value, to take over an old copartnership of the same name. The company is completing the construction of additional plants which are required to help fill the $8,000,000 worth of orders now on hand.

Other Body Plants.

There are a number of other automobile body builders in the United States of whose activities no details have been given out except the fact that they are all planning increased production and plant extensions. It is the consensus in the automobile industry that the shortage of motor cars cannot be met in less than a year. With every automobile maker working on schedules of from 25 to 100 per cent. increased output this year, the builders of bodies will have their hands full supplying the demand for their product.

J. W. DeCou, Vice President and General Manager, Fairfield Manufacturing Co.

FAIRFIELD MANUFACTURING CO.

Announcement has just been made of the organization of the Fairfield Manufacturing Co., Lafayette, Ind., to manufacture differential and bevel gears for automobiles. The officers, all of whom are prominent in the Ross Gear & Tool Co., maker of Ross steering gears, are as follows:

President, D. L. Ross; vice president and general manager, J. W. DeCou; secretary, Edward A. Ross; treasurer, George C. Kumming; consulting engineer, David E. Ross.

The organization of the Fairfield Manufacturing Co. is the outgrowth of the increase in the business of the Ross Gear & Tool Co. A part of the factory of the latter concern has been devoted to the making of differential gears that will now be produced by the new organization, and the Ross plant will be devoted entirely to the production of steering gears.

All of the patents, machinery, etc., for making bevel gears, formerly owned and controlled by the Ross Gear & Tool Co., have been taken over by the Fairfield Manufacturing Co., which has taken possession of the plant formerly occupied by the Lafayette Engineering Co. and will immediately put it under full production.

BRISCOE CONTROLS BODY PLANT.

The Briscoe Motor Co., Jackson, Mich., has acquired the plant of the John Bohnet Co., Lansing, Mich. The Bohnet company has been one of the largest manufacturers of closed automobile bodies in the country and in taking it over the Briscoe company will have every facility for building all the bodies for the Briscoe closed models. The Briscoe company will make improvements and additions to this plant to take care of the 1920 production programme which, it is reported, will be double any year in the history of the company.

KENNEDY CORPORATION TO BUILD.

The Kennedy Corporation, headed by Joseph P. Kennedy of Baltimore, Md., and financed by capital supplied in that city, is to commence immediately the construction of a $2,000,000 plant at Curtis Bay, a suburb of Baltimore, for the manufacture of automobile parts, this to be the first unit in a $4,000,000 factory, the second to be built before the year is ended. Each unit will employ 1200 workers. The buildings will be of steel and concrete and modern in every respect.

DUFF JACK SALES CO.

The Duff Jack Sales Co., Ltd., has been formed, with headquarters in the Oxford Circus House, 245 Oxford street, London, W. I., England, to represent the Duff Manufacturing Co. of Pittsburgh, Pa., in the British Isles, and has been given the exclusive agency in this territory for Duff and Barrett jacks.

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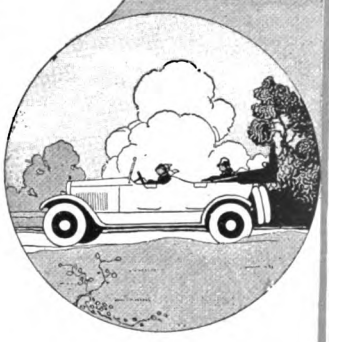
Profit for the dealer

STERLING TIRES have met extreme conditions in many lands. Stand on any public highway in this country—or in foreign countries, and you will see them roll by, each one making a satisfied customer for the dealer who sold it.

A satisfied customer is usually a permanent customer. That is what you want and that is precisely what you will get, when you sell Sterling Tires!



One of the Oldest

THE "Sterling" is one of the oldest tires on the market—although the tire industry as a whole, is comparatively new.

For thirteen years now, we have been building tires of the best materials obtainable—and in accordance with the most scientific principles; we have carefully weighed every opportunity for improvement. Sterling Tires have always been sturdy, but today, they have greater endurance than ever.

We want wholesale distributors and retail dealers to write for full information.

Sterling Tires

STERLING TIRE CORPORATION
Rutherford, New Jersey, U.S.A.

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Comprehensive Business Record for Accessory Dealer

By Walter Engard.

IN THESE days of rising costs and narrow margin of profits, no retail dealer in any line can hope to operate his business successfully without some system of accurate records that will bring to his attention every day all the important facts and figures summarized in such form as to keep him in constant touch with every detail that may aid him in directing it along the most profitable channels. This is as applicable to the dealer in automobile accessories and supplies as to any of the other branches of merchandising.

Most every dealer has some method of keeping an accurate record of all money received and paid out and just what it is paid for, but this is about as far as their records go in many cases. This condition carries with it various undesirable results. In the first place the dealer is unable to determine just what progress his business is making in the way of profit. Profit is the most important element in any business. It is for this one phase that business exists, yet a large majority of retail merchants are content to wait until the inventory period in order to determine whether or not the business has turned them a profit.

Many accessory and supply stores find that after the annual inventory has been footed up the net profits usually fall far short of what they have a right to expect in view of the volume of business done during the year. Profits are the reward of management—the more efficient the management the larger the profits and large sales do not necessarily mean large profits.

In the second place, without accurate records the dealer is unable to determine where the leak is that has caused his profits to fall so far short of what he had expected, and he continues to operate his business year after year under these same conditions because his records do not show him what he can do to better the situation. The result has been that a large number of merchants have been operating their businesses with little or no profit.

Value of Records.

An adequate system of records affords the dealer an accurate means for promptly correcting errors or extravagances in policies and methods, for checking the accumulation of otherwise inevitable losses, and to quickly develop plans which will result profitably. They show him where he may be liberal and where he must run close. If he has his business divided into departments these records will visualize the progress of each department. They will demonstrate what operations are being carried on at a profit and at what margin, so that it may be known which lines are profitable and those lines retained and the less profitable ones discarded.

The retail dealer's system of records should be simple and the detail work necessary to keep them should be reduced as much as possible. But there is such a thing as making them too simple, so simple in fact that what is saved in time is lost in knowledge of the business. This system of records should be more than a mere jumble of figures. Occasionally a merchant will have his figures in such a shape that although theoretically he has every important item in front of him, yet when he is called upon to segregate them so that it will be possible for him to make out a financial statement or a trade report, he is unable to do so. The data should be in such form that he can analyze his business transactions during a certain period and is able to furnish his banker or creditor with a true report of his financial condition in short order.

Requires Only One Form.

The system of store records here described is one that will give the auto or accessory dealer a thorough knowledge of every important detail of his business in the least amount of space and with the least effort. It is composed of but one simple form, yet is complete and will give a true insight into the progress of business and its true financial condition.

The whole thought in devising it is to make it a guide to better retailing instead of a mere matter of record keeping. All the necessary details are cared for in such a simple way that the owner will know every morning exactly how he stands, and no merchant can direct his business properly without having just such facts constantly available. Accurate records are not based upon any element of guess work. Good management is not a matter of guess work and you don't use good judgment when you guess.

To start this system properly the very first thing necessary for the dealer to do is to take a physical inventory of all stock on hand. This is the only way in which he can be sure that the future information shown by the records is to be accurate. The taking of the inventory cannot be too exact and the merchant should impress upon all who may participate in this operation the importance of counting and entering every article correctly.

Necessity of Departmentizing.

If you do not already have your stock departmentized I would advise that the first thing to do is to divide it into departments, especially if conducted on an extensive scale. While this is not absolutely necessary in order to use this system of records, yet the information secured will be much more complete and of infinitely greater value to the dealer.

For instance, here is one phase of this record in which he will find the separate reports of each department of great value to him. This record provides for keeping a perpetual valued stock record of goods on hand and if the store is not departmentized, of course this record will only show the value of the total stock, whereas if the store is thoroughly departmentized and a record of each department is kept the merchant will know the condition of his stock in each and will find this knowledge of great aid to him

RECORD OF BUSINESS

Department _____ Month _____ 19____

Date	Am't of Sales	Cost of Sales	Gross Profit	Am't of Purchases	Operating Expenses: Rent	Salary	Adv	Delivery	Display	Heat & Light	Drayage Freight Express	Taxes Ins Interest	Wrapping	Depreciation	Misc	Total
Expense Ratio to Sales					%	%	%	%	%	%	%	%	%	%	%	%

Perpetual Stock Inventory		Profits		Remarks
Stock on Hand First of Month	$_____	Gross Profit for Month	$_____	
Goods Purchased	$_____	Expenses for Month	$_____	
Total	$_____	Net Profit	$_____	
Cost of Goods Sold	$_____	Percent of Net Profit	_____%	
Balance Stock on Hand	$_____			

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in its operation. There are many other features in this system which will prove of double value to the dealer if acquired for each department separately. Thus if the stock is departmentized the inventory should be taken by departments and each kept separate.

As soon as the inventory is completed the inventory sheets for each department should be totaled and the total amount of stock in each department found and then turning to the "Record of Business" form it will be noted that it provides for the records of one department only, so if the stock is divided into various departments one form must be used for each department, otherwise a single form will be used for the records of the business as a whole.

In describing the working of this system I am proceeding on the theory that all who use it are to departmentize their stock, as this is a step in the right direction towards progressive merchandising. So we will take one form for each department and enter upon it the name of the department and the month for which the records are to be kept.

It will be noted that this form provides for the records for one month only and that a new form must be used for each new month.

After filling in this information it will be noticed that down in the left hand corner of this form space has been provided for the keeping of the perpetual value inventory. Here we will enter the amount of stock on hand in each department as shown by the inventory sheets, using the line marked "Stock on Hand First of Month." As soon as this has been completed for all departments the system is ready for use.

Sales Slip Method.

In presenting this system, or, in fact, any system, it is necessary that it be thoroughly understood that the sales slips method for making a record of every transaction should be adopted. This is very important in the working of this system.

Next the dealer should see to it that every article of merchandise is marked with a price ticket upon which is entered the cost mark and the selling price. This, too, is very essential in the working of this system. Therefore, in taking inventory every article should be marked and thereafter nothing should go into stock without first being ticketed. Now when a salesman makes a sale he will make out a sales slip of a form such as is in common use in retail establishments, providing space for entering the name of the article sold, the quantity, the cost mark as shown by the price ticket and the price received, also entering the name of the department from which the article is sold. In case the salesman makes sales to one customer from more than one department he will make out a separate sales slip for each department, entering the name of the department. This will facilitate the work of the cashier or bookkeeper and will not cause the salesman any great inconvenience. The sales slips should immediately go into the cashier following the sale. The cashier should have a sheet of paper on the desk handy upon which to enter all sales as they come into the desk. This sheet of paper should be so ruled as to provide for the entering of the sales for each department separately, keeping the amount of the sale in one column and the cost of the goods sold in another.

In case of any returned goods the amount of the sale and also the cost should be recorded and deducted from the totals at the end of the day.

Daily Sales Totaled.

At the close of the day the cashier should total the sales for each department, also the cost of the goods sold, and then turning to the "Record of Business" form for each department she should enter these figures under the headings "Sales" and "Cost of Sales" as provided on this form. Subtracting the cost of the goods sold from the total of the day's sales will give the amount of gross profit on the day's sales and this figure will be entered in the column headed "Gross Profit."

Under the heading of "Operating Expense" as provided on this form, space is afforded for keeping an accurate account of all operating expense under separate headings. This method enables the dealer to know how his various items of expenses run in the various departments. All expenses should be apportioned to the various departments according to their size and the volume of sales. Of course any expense incurred directly through the operation of that department should be charged exclusively to it and not apportioned to any of the other departments.

Such items as rent, office expenses, advertising, heat and light, insurance, taxes, salaries, including that of the proprietor, display, etc. should be properly apportioned. It will also be noted that on this form under the heading "Operating Expenses," there is a column for charging off depreciation. The owner should determine at the beginning of the year the amount of depreciation that is to be borne by each department during the year and he should charge off 1/12 of this each month.

As this blank only provides for these records for one month, a column has been provided at the extreme left hand side in which to enter the date for which the figures are entered.

Total Monthly Record.

At the close of the month these various columns should be totaled as provided for by the form, giving the total volume of sales for each department during the month, also the cost of those sales, the amount of purchases and the amount of expenses. It will also be noted that this form provides for entering the expense ratio to sales. Here the dealer may see just what percentage each item of expense bears to the sales, also what percentage of the sales the total expense in that department requires. This will enable him to know that his mark-up percentage is sufficient to cover his cost of operating that department and to leave a fair margin of profit.

As soon as these various columns have been footed the perpetual valued inventory record should be completed as provided in the left hand lower corner of the form by entering the total amount of purchases for the month, using the line marked "Goods Purchased" and subtracting the cost of the goods sold from the total of the purchases plus the stock on hand at first of month, the balance stock on hand at the close of the month is obtained, also the amount of stock with which to begin business the following month, and this figure should be transferred from this form to the form for the new month.

Under the heading "Profit" on the bottom of the form next to the space provided for the perpetual inventory should be entered the amount of gross profit for the month, as shown by the column under the heading "Gross Profit," and also the total expense for the month, entering these figures on the lines as provided. Subtracting the expense from the gross profit gives the amount of actual net profit this department has turned during the month.

Record of Unusual Conditions.

Under the heading of "Remarks" space has been provided in which entry may be made as to the weather conditions, etc. As these records should be filed away for future reference, such notations should prove of value. For instance, during February, 1920, weather conditions may have been such that the department has fallen down in profits, and years to come when this record is referred to it may be wondered why it was that the profits were so small, and then in another year, when comparing the records for this same department for the month of February, 1921, a fair comparison cannot be drawn unless allowances are made for the weather conditions. Or a special sale may be held in one department that may cut the net profits; then this should be recorded so that comparisons may be made with accuracy.

This record enables the manager to know just what progress each department is making.

Comparison of Departments.

This record will also bring to light which department is sapping away the profits of the other departments in plenty of time for the manager to apply a remedy and establish that department upon a profitable basis or to discard it altogether. In short, this record brings before him every important fact and figure of the business that is essential for its successful management. With these records the dealer need not wait until the annual inventory is taken in order to determine whether or not the business is making money.

The accuracy of these records can be quickly proven by taking a physical inventory of any department at any time desired. With this system it is not necessary to take an inventory of the whole store at one time, but of any department when and as often as desired. Instead of inventory taking being a drudgery it should become a pleasure.

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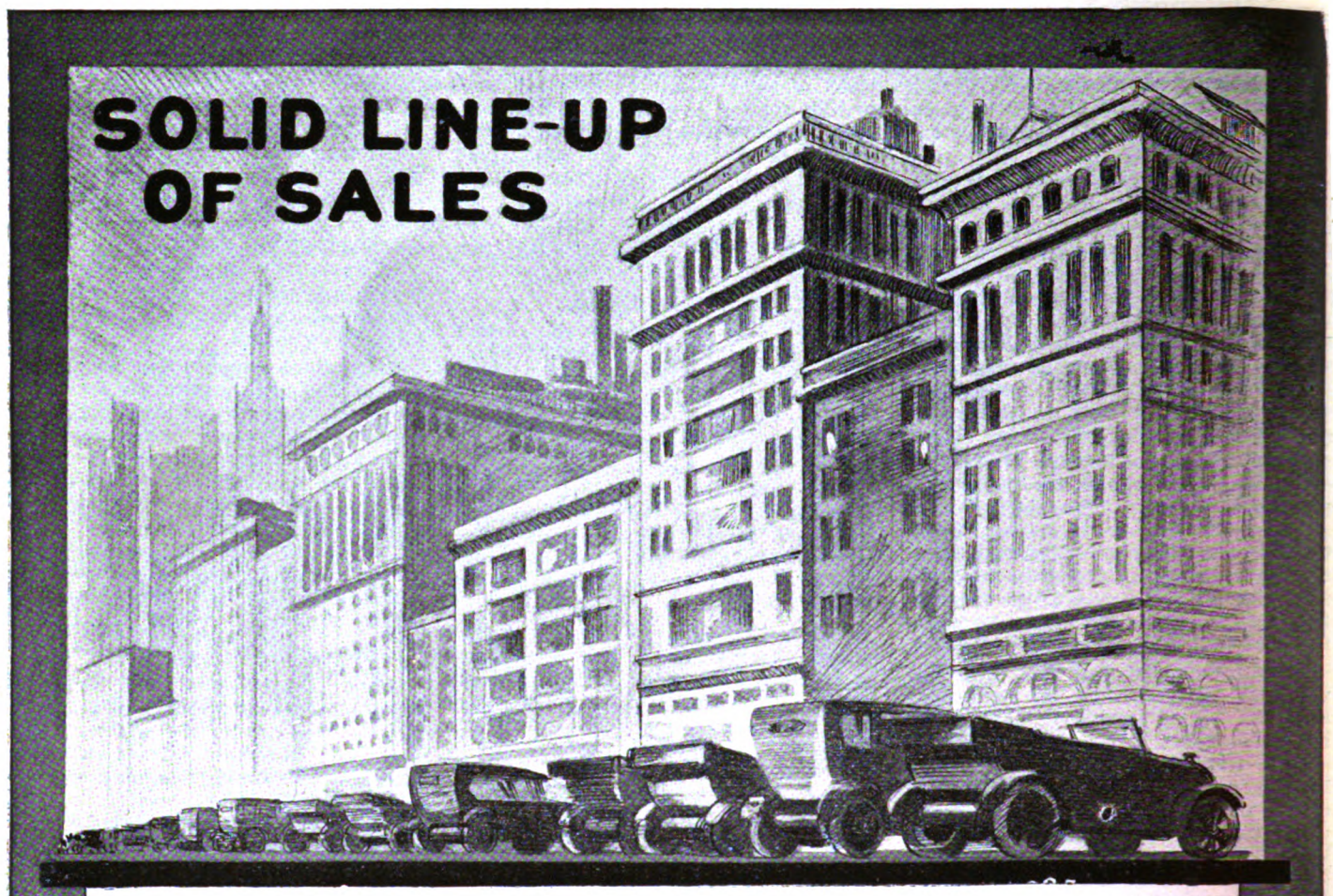


No Loop Holes for Trade Loss

There's only one limit to UNIVERSAL BATTERY business—and that is the total number of battery users in your trade territory. Every battery owner is a prospect—and a live one. The vast majority of them can be sold—and re-sold repeatedly. There is no sales loss—no profit leakage.

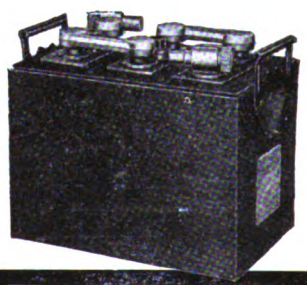
UNIVERSAL business is permanent business. In the first place, UNIVERSAL BATTERIES render the most efficient and economical service.

Thousands upon thousands of tests prove that absolutely. Motorists know the UNIVERSAL. They are familiar with its super-worth. This means prestige—it means patronage—it means ever-increasing profits through increased volume of business.

Next—and this is important—UNIVERSAL BATTERY parts can be employed on all standard makes of batteries. You can serve any battery user. You are not tied down to one particular brand. Your service is UNIVERSAL.

The UNIVERSAL Agency proposition is the most attractive you've ever seen—the most business like in every respect. The dealer who can meet our requirements is assured the biggest, best paying battery trade in his selling zone.

We also manufacture Universal Sealed Glass Cell Batteries for house lighting systems and parts for any make of sealed glass cell Batteries.



Particulars upon request to reliable persons already engaged in the sale of batteries or seriously considering going into the battery business.

UNIVERSAL BATTERY CO.

3420 S. LaSalle Street, Chicago, Ill.

UNIVERSAL Batteries

(When Writing to Advertisers, Please Mention the Accessory and Garage Journal.)

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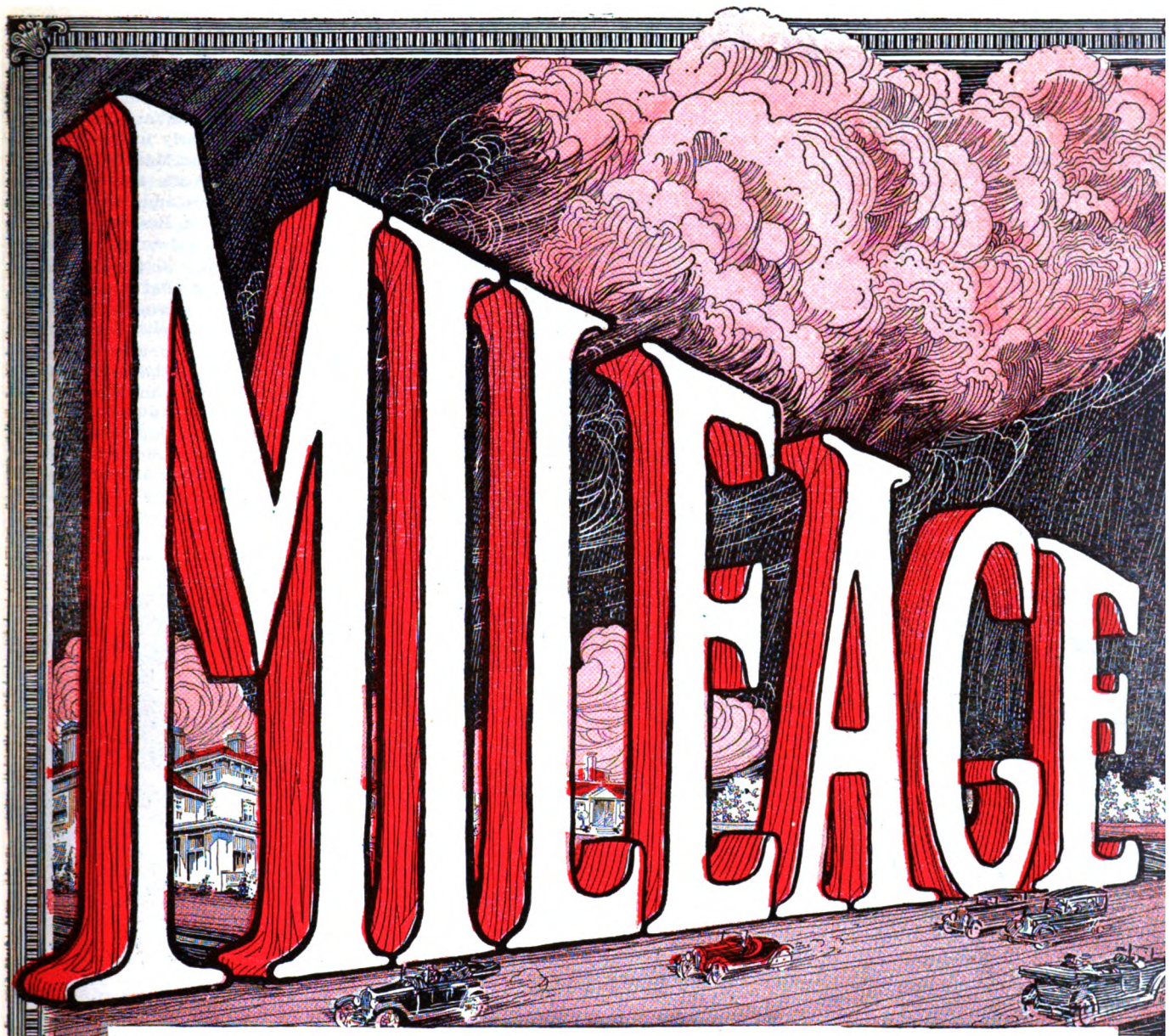

STANWOOD

WHIPPET TREAD

Cord Tires

STANWOOD MILEAGE is of the character demanded by the modern motorist as a right. Mileage that is not only long-drawn-out but **care free.**

Wrought into the substance of STANWOOD TIRES —Cord, Fabric and Truck Pneumatic—is an immense capacity for resisting the forces that punish in service. Essentially the tires for long roads.

Stanwood Contract for 1920 is a document worthy of study by high class Distributors.

NOTE: Also STANWOOD Full Floating Tubes, Red and Gray, and a complete line of Repair Materials.

STANWOOD RUBBER COMPANY, Inc.

Executive Offices: 9 East Fortieth Street, New York City.

Chicago Branch: 1712 So. Michigan Avenue. **Plant: Elizabeth, N. J.**

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Wetmore-Savage Co. Makes Phenomenal Growth

A YEAR ago was recorded the purchase of the Boston branch of the Motor Car Equipment Co., 180 Massachusetts avenue, by the Wetmore-Savage Co., electrical jobber, of 76 Pearl street, Boston.

This energetic and far sighted firm saw the possibilities of the coming years in the automotive equipment line, the advantage of an up-town location in the heart of the automobile district, and the opportunity for a high-grade jobbing house conducted for the New England trade, by New England men, with a broad-minded, aggressive and sound business policy along lines already established in the electrical line down town.

Its plans comprised the conservative building up of an able organization with knowledge of the line and the New England trade, the equipment of adequate quarters with all modern facilities for conducting an efficient jobbing business, and the establishment of business

E. W. Littlefield, Sales Department, Wetmore-Savage Co.

methods founded upon the element of service developed to the highest point possible.

It was expected that at least a year would have to be spent in preparatory work along these lines with volume a more than secondary consideration; but the season was scarcely in full swing before a phenomenal increase in business had rendered the original quarters inadequate and forced new construction to provide for increasing demands.

A second story over the old motor car building was completed in December, but by February still more space was demanded by the growing business and work is now started on further expansion which will eventually extend the Wetmore-Savage plant over an entire city block. This latter addition is to house the extensive Gould storage battery department, which will be moved to the up-town branch. This department is administered by M. F. Robbins, Jr., a storage battery expert, for 12 years connected with the sales and service organization of a prominent electrical manufacturer.

The entire New England territory is covered by a corps of 30 salesmen, of which the group traveling the territory outside of the local field is under the general direction of E. E. Warfield who for nine years was district salesman in Connecticut and Western Massachusetts

V. C. Bruce Wetmore, One of the Founders of Wetmore-Savage Co.

for the Motor Car Equipment Co., traveling both from the New York and Boston offices. Elmer W. Littlefield, for nine years prominent in the automotive equipment trade in Maine, and for three years in the sales end of the Wetmore-Savage automobile department at 76 Pearl street, has direct supervision of sales in the metropolitan district.

The office administration of sales and service is in charge of John C. Lane, who has served in the same capacity at

Hanson Savage, General Manager, Wetmore-Savage Co.

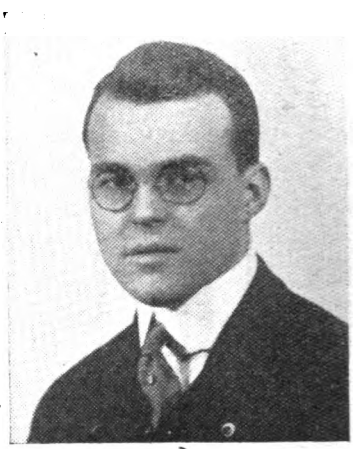
the down town office since the automobile department was started.

The purchasing department is in the hands of R. P. Greene, well known to the trade through his connection with the Motor Car Equipment Co. in the same position. Credits are handled by H. T. Watkins, formerly in the advertising department of the Motor Car Equipment Co. in New York and later connected with the sales and credit end of the same company in Boston.

The growth of the Wetmore-Savage company in the automotive equipment line has been rapid. but along sound, conservative lines. Swinging into the field as a practically new organization, it has emphasized the idea of service as a basis for its entire business fabric. This implies a complete and carefully selected stock of representative lines, carefully kept up to date, ample capital to insure facility of operation, efficiency of personnel and courteous attention at all times to individual wants of customers.

Service is the aim of the entire organization.

The Wetmore-Savage Co., under the



E. E. Warfield, Sales Department, Wetmore-Savage Co.

management of V. C. Bruce Wetmore and Hanson M. Savage, started in the electrical supplies business about 14 years ago in a modest way. Since then it has developed a business second to none in its line in New England. Mr. Savage is the general manager.

The Wetmore-Savage Co. does an exclusively wholesale business and among the well known lines for which it is the New England distributor are Gould storage batteries, Holophane lenses, Auburn tires, Hart-Bell pumps, F-W automatic windshield cleaners, automatic extension reel lights, H & D shock absorbers, Ajax and Red Devil jacks.

The Wetmore-Savage Co. will exhibit at the Boston show the week of March 13-20, in space 430, Department E, Mechanics' building, where a representative showing of the lines handled by the company will be demonstrated.

MULLINS CO.'S DIVIDEND.

The W. H. Mullins Co., Salem, O., manufacturer of automobile bodies, reports net profits for the seven months ending Dec. 31 sufficient for a dividend of $2.32 a share on common stock.

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HAYES WHEEL CO. FORMS COALITION.

The Hayes Wheel Co., Jackson, Mich., has formed a consolidation with the Pioneer Pole & Shaft Co., Piqua, O., and a number of southern branches, which is stated to be merely the logical outgrowth of a long existing relationship. The Pioneer Co., which has been a large stockholder in the Hayes Co. for a considerable period, is the largest operator in hickory wood in the United States, and has supplied the wheel company with material, and the reported merger is formed largely to insure for the Hayes Co. a supply of hickory for its product. The new arrangement will also render available sufficient working capital to carry large stocks of material which the proportions now attained by the organization requires. How great these requirements have become may be judged from fact that consolidated concerns expect to do a business of $25,000,000 in 1920.

H. T. Watkins, Credits Department, Wetmore-Savage Co.

With a production running around 4,000,000 wheels a year, including wire and steel felloe types, the Hayes company is recognized as one of the big factors in this industry.

STERNO CORPORATION TO BUILD PLANT.

The Sterno Corporation, Baltimore, Md., recently incorporated with a capital of $500,000 by interests connected with the United States Industrial Chemical Co., the United States Industrial Alcohol Co. and the Curtis Bay Copper & Iron Co., all of Curtis Bay, is planning the erection of a large plant in the vicinity of Baltimore for the manufacture of alcohol burning devices for automobile service, electric heating and cooking devices, to cost, with equipment, in excess of $400,000.

The incorporators are Patrick H. Loftus, William D. Tucker and Stewart M. Seymour. Carl Haner, Jr., of the United States Industrial Alcohol Co., is also active in the new concern.

R. P. Greene, Purchasing Department, Wetmore-Savage Co.

HEADQUARTERS OF NEW HANDLEY-KNIGHT CO.

The recently organized Handley-Knight Co. has established temporary engineering and purchasing headquarters at 1402 Madison avenue, Toledo, O., pending the completion of the factory buildings at Kalamazoo, Mich.

President J. I. Handley announces the following additions to the personnel of the company: A. E. Schaaf will have direction of engineering and production. He is a recognized authority on high grade motor vehicles, having been until recently the operating head of the F. I. A. T. Co., Poughkeepsie, N. Y. Harry L. Dunn, for many years assistant purchasing agent of the Willys-Overland Co., is to be purchasing agent. Walter A. Olson, formerly division manager in charge of production of the Willys-Overland factory, becomes works manager.

BOWER BEARING BUSINESS SHOWS SURPLUS.

The annual statement of the Bower Roller Bearing Co., Detroit, Mich., recently made public, shows a surplus of $380,872 Jan. 1, before reserves for federal taxes. Assets amounting to $1,043,975 include $275,083 in plant and machinery before the allowance of $129,103 for depreciation; $263,237 in inventories; $150,000 in certificates of deposit; $116,830 in cash and $106,837 in accounts receivable.

The capital stock remains at $600,000 authorized and outstanding, the par value of which is $10 a share.

GOODYEAR ISSUES RACING RESUME.

A booklet giving a resume of the 1919 automobile racing season has been issued by the Goodyear Tire & Rubber Co., Akron, O. It is gotten out in attractive form and is profusely illustrated. It is dedicated to "those courageous young men who drive the racing cars" to whom it is stated "the automobile industry and the great motoring public owe a debt of gratitude for the part they have played in contributing the valuable lessons of the speedways to the advancement of automobile development."

The subject is treated under the following heads: "The Place of Racing in Automobile Development," "Racing Tires," "How Automobile Races Are Timed," "The Pits," "Goodyear Service at the Speedways," "The World's Fastest at Speedways," "World's Fastest Mile on Tires 150 Miles an Hour on Goodyears," "Durant's Triumph at Santa Monica," "Sarles' Ride to Victory at Ascot," "Milton's Drive at Uniontown," "Howard Wilcox's Triumph at Indianapolis—Goodyears First in the American Classic," "New Record at Sheepshead Bay," "Louis Chevrolet's High Score at Tacoma," "Gaston Chevrolet Wins at Sheepshead," 'Milton Repeats at Uniontown," "Milton

M. F. Robbins, Jr., Battery Department, Wetmore-Savage Co.

Leads Revived Elgin Classic," "Boyer Takes Labor Day Event—First Three Cars Goodyear Shod," "Gaston Wins Chevrolet Duel," "Boyer Ends Season with Victory" and "Post Season Racing Review."

This is a compilation that will appeal particularly to the automobile racing enthusiast and any one interested may receive a copy by applying to the Goodyear Co.

ADDITION TO CLEVELAND FACTORY.

The Cleveland Automobile Co, Cleveland, O., will have a factory addition ready for occupancy about March 15 This extension, 200 by 80 feet, four stories high, will increase the total dimensions of the plant to 1000 by 80 feet, containing 320,000 square feet. The factory is located on a 19-acre site on the main line of the Nickel Plate railroad and when the annex is finished will enable the company to reach its desired schedule of 150 cars a day.

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Machined to CENTERS is Your assurance of Absolute Accuracy

Another of the Many Details that Make "SPENCER" Stand for Quality

BEFORE we machine a steel bar into an axle or drive shaft, it is center drilled at both ends by machinery. All work on the shaft is then absolutely accurate and the bearing surfaces are sure to be in perfect alignment, because every operation is performed from these centers.

This sort of workmanship means that when you sell a SPENCER guaranteed and trademarked drive or axle shaft, you're taking no liberties with your reputation among the car owners—that you can be dead sure that the "SPENCER" part is equal in quality of the part it replaces.

We are jealous of the "Spencer" Trademark. Any article that bears the "Spencer" name must be at least the equal of any article made by anyone for the same purpose.

That is the policy upon which we have built up our world-wide business and modern, highly efficient factory.

But that quality must not be attained at the dealer's expense. We have made factory efficiency pay for extra quality. Result—Spencer guaranteed products cost no more than any replacement parts. Spencer guaranteed products are sold through jobbers exclusively.

Insist that your jobber fills your orders with Spencer products.

Axle shafts and drive shafts for all popular makes of cars.
Connecting rods, radius rods, fans and mufflers for Fords.
Gilliam take-down taper roller bearings for light cars and commercial trucks.

THE SPENCER METAL PRODUCTS COMPANY

Factory; Spencer, Ohio.

624 S. Michigan Avenue, Chicago and 16 to 24 W. 61st St., New York

Spencer Quality Costs You No More

THE SPENCER METAL PRODUCTS CO. SPENCER SPENCER, OHIO.

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Native collecting rubber "milk" or latex.

Amazon Quality Boosts Sales

The goodness of upper Amazon River rubber vigorously asserts itself in the long life of Amazon tires.

Buyers of Amazon tires become more than converts to their use—they become enthusiastic boosters.

This accounts for the ease with which Amazon dealers make Amazon sales. It explains the success of Amazon dealers in all sections of the country.

An Amazon sales franchise is a highly prized asset.

DISTRIBUTORS: We have increased our production and are opening new territory.

DEALERS: If Amazon tires are not sold in your town write us immediately for name of distributor.

THE AMAZON RUBBER COMPANY
AKRON, OHIO

New York Office: 269 *Amsterdam Avenue, at 72nd Street*

AMAZON

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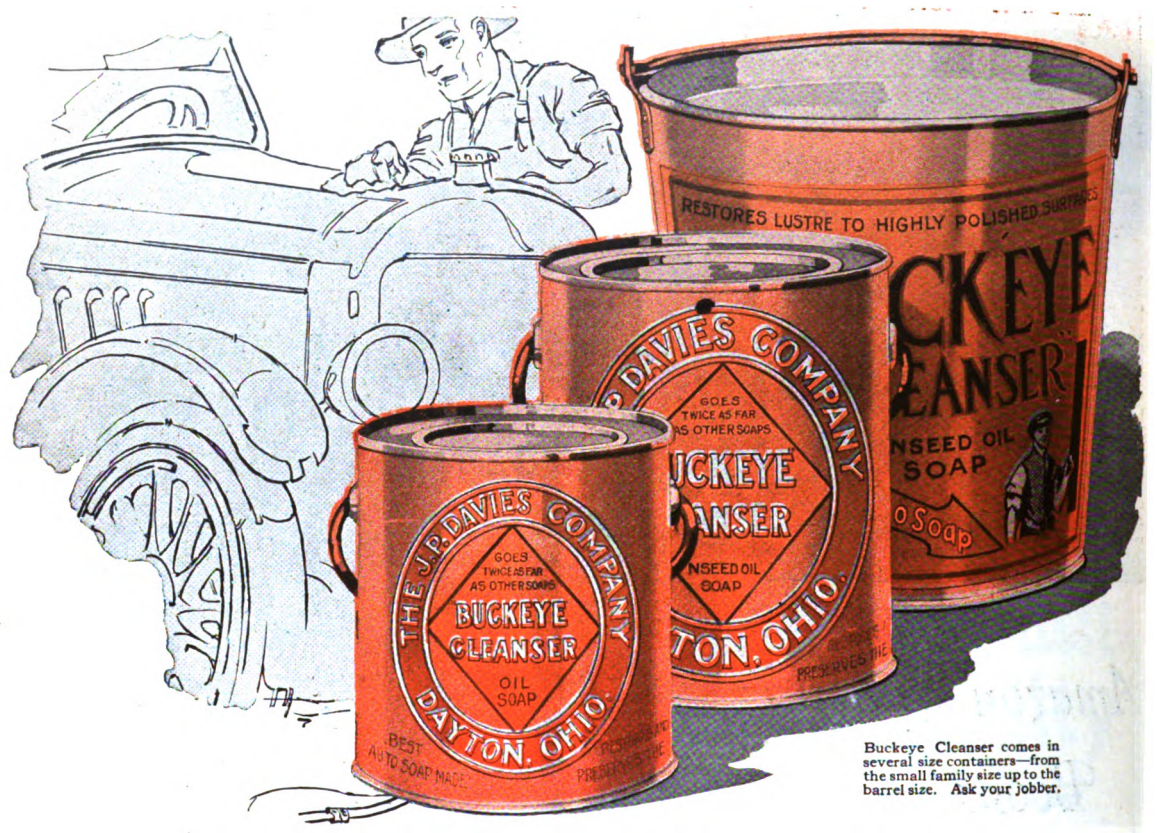

Buckeye Cleanser comes in several size containers—from the small family size up to the barrel size. Ask your jobber.

Keep the Auto Bright and Shiny

An auto that is spic and span—bright and shiny—is a real asset to the owner.

Furthermore, his pride prompts him to keep his car looking its best all the time.

The best way to keep it looking like new is to have it cleaned and polished with

BUCKEYE CLEANSER

A soap that is specifically made for delicate and highly polished surfaces—no alkali or grit or other substance that dulls the lustre or brings the checks and cracks.

You render a real service to your customers when you recommend Buckeye Cleanser. Leading jobbers have it in stock Progressive dealers sell it.

THE DAVIES-YOUNG SOAP COMPANY
DAYTON, OHIO

BUCKEYE CLEANSER THE AUTO SOAP THAT— CLEANS AND POLISHES

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Automotive MOSCO Equipment

DEPENDABLE PRODUCTS

FRONT APRON FOR FORD CARS

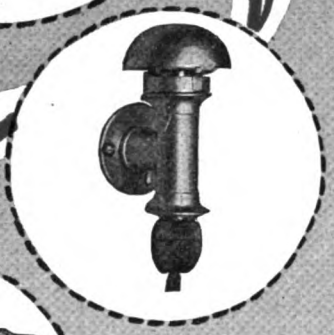
For 1917-18-19-20 Models Only.

This apron makes a wonderful improvement in the appearance of the Ford Car, and for that reason alone is worth the cost, but it does more than that.

Induces a Larger Volume of Air to Pass Through Radiator.
Prevents Mud from Clogging Radiator.
Reduces Risk of Overheating.
Keeps Lamps Clean
Prevents Vibration of Mud Guards.

Made of heavy steel, finished with two coats black enamel and baked. Furnished complete with bolts, nuts and washers. Easy to attach.

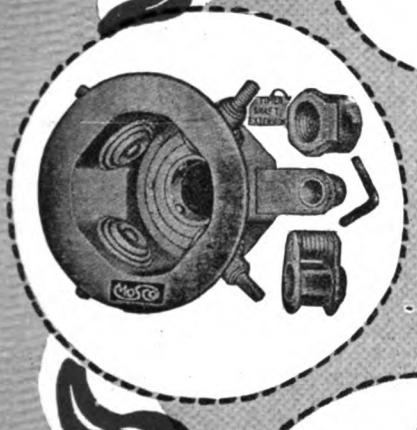
PRICE $6.50



"TUWAY" COMBINATION DASH LAMP and PLUG SOCKET

The "TUWAY" dash lamp affords a combination of refinement and utility. Its pleasing design makes it an ornament to any car, and this design has the added advantage of giving a greater distribution of light from the same candle power bulb than any other lamp made. In addition it has the exclusive feature of a socket into which to plug trouble lamp, cigar lighter, etc., without interfering in any way with the light of dash lamp. The switch is very conveniently placed in the lamp bracket.
The Tuway is made of brass heavily nickel plated and comes complete with bulb and all necessary screws, bolts and nuts for attaching to either wood or metal dash.

PRICE, $2.50 EACH.

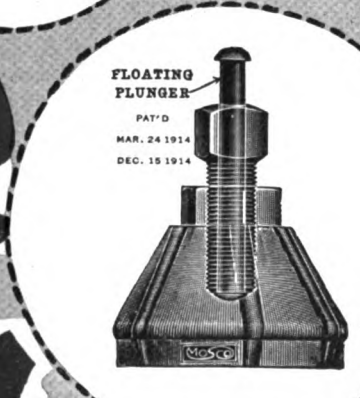


IMPROVED BEMUS BALL CONTACT TIMER FOR FORD CARS

EASIER STARTING—SMOOTHER RUNNING—
LONGER LIFE—SAVES COIL POINTS.

The IDEAL TIMER for the Ford high speed, short stroke engine because form contact is the only one which is correct both electrically and mechanically. This is made by a hardened tool-steel brush coming in contact with steel balls, which are kept in proper position by means of a spring with plug on the end pressing against them. The impact of the brush causes the balls to turn so that a fresh surface is presented for each contact. The brush comes in contact only with the four balls, touching no fibre or insulation. This is a decided improvement over the ordinary type timer, where the roller is constantly wearing grooves in fibre ring which holds contacts. The balls are so located that each has a track of its own on the brush, this insuring a maximum amount of wear.

PRICE, $3.00.



FLOATING PLUNGER WHEEL PULLER

Starts a "Frozen" or "Stuck" wheel instantly. Strike the plunger, turn the screw, strike again and the wheel comes off without injury to hub threads, spokes or axle.
Made for 200 models of 45 popular makes of cars.

MOTOR SPECIALTIES CO., Mfr.
WALTHAM, MASSACHUSETTS.

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Flexedge

SELF-SEATING

LAMINATED VALVES

Sensible-Logical-Inevitable

A Valve Seat Carbon Remover at Work While You Drive

SHOW YOUR CUSTOMERS EXACTLY HOW VALVE CARBONIZATION AFFECTS MOTORS

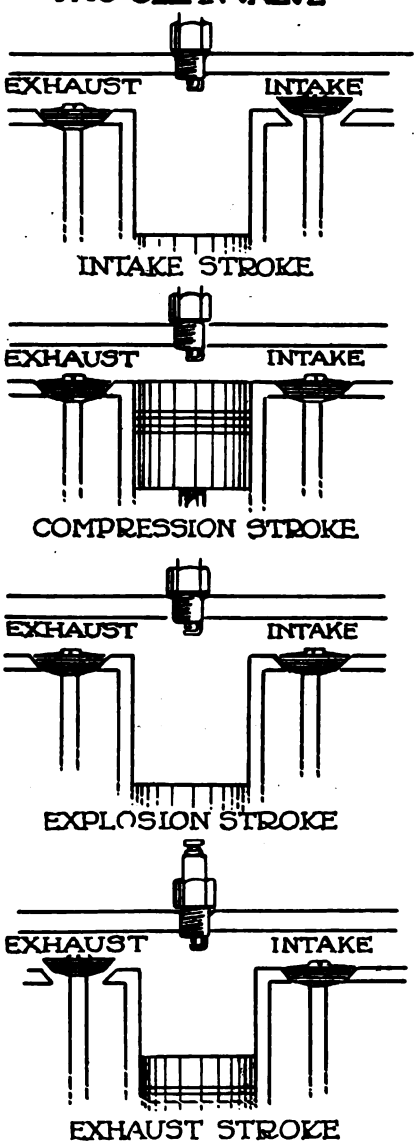
As the piston goes downward, a partial vacuum is created. A leaking exhaust valve, during the intake stroke, draws back from the exhaust manifold burned gases, which dilutes the fresh gas from the carburetor. Burned gases not only have no power value, but tend to smother combustion, thus lowering the horse power of the motor.

If the valves are imperfectly seated, unburned gas will be pumped into the exhaust manifold, compression will be lowered and the horse power thereby decreased.

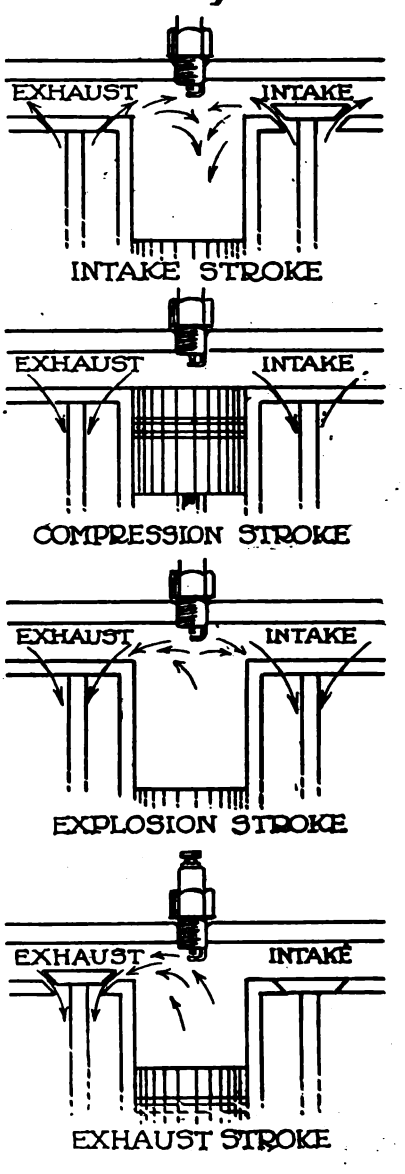
During the first half of the explosion stroke the interior of the cylinder contains a burning gas with temperatures running from 3000 deg. to 4000 deg. Fah. and with pressures running from 400 to 700 lbs. per sq. in. If the exhaust valve is imperfectly seated a flame with the intensity of the hottest blow pipe is shot through the tiny opening with a destructive effect and warpage of the valve results. In addition to the destruction of the valves the leakage of pressure causes a lowering of horse power.

In general, carbon deposits are caused by excessive lubricating oil in cylinders, and valve stem guides. Some of this excess oil is of necessity carried to the valve seat. During the exhaust stroke tiny particles of carbon from the burned gas are deposited on the wet seat. Soon the valve is leaking, permitting the escape of flame. Immediately the oil on the seat is burned and more carbon is thus formed. Flexedge valves with their gentle scraping action continually remove these carbon deposits.

FLEXEDGE
The Clean Valve



The Dirty Valve



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Flexedge
SELF-SEATING
LAMINATED VALVES
Sensible-Logical-Inevitable
A Valve Seat Carbon Remover at Work While You Drive

FLEXEDGE VALVES ARE SELF SEATING AND SELF GRINDING—THEY PREVENT THE ACCUMULATION OF CARBON

It's in their design and construction—a perfected and developed use of the laminating and damascening processes known for many years. FLEXEDGE Valves are built up of paper-thin, highly tempered steel discs clamped together under tremendous pressure. They are rigid, except on seating face—elastic only at edges—rapid heat radiators snapping silently but tightly into their seats.

TESTED AND PROVED BY OVER 5,000 DEALERS

Flexing along their elastic edges, like the leaves of a spring, they grind away the carbon as fast as deposited. And they last as long as the motor they are used in, keeping the valve seats clean and bright all the while.

Installed just like other valves, but they soon pay for themselves by ending valve grinding. Order your sample set now and put FLEXEDGE on trial.

The FLEXEDGE principle is shown below with the motion greatly exaggerated in the cuts. In figure (1) you see the valve as it rests in seat during the compression stroke with the discs perfectly flat.
In figure (2) the valve is shown with the edges of the discs curved slightly upwards as the pressure of the explosion causes a minute deflection.
In figure (3) the discs are shown curved slightly downward as happens when the cam strikes its powerful blow. The entire movement is so small as to measure only a tiny fraction of a thousandth part of an inch.

SELF SEATING VALVE CO. CHICAGO

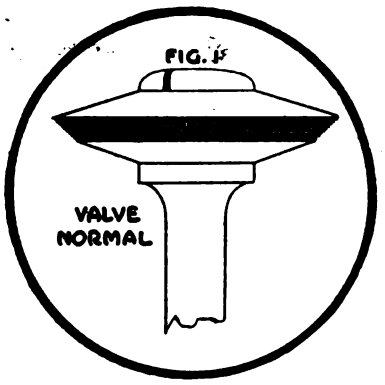
FLEXEDGE JOBBERS

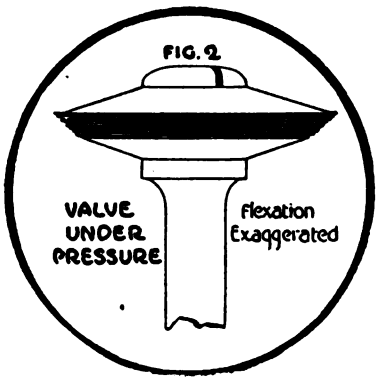
HERRING MOTOR CO., Des Moines, Ia.
THE GIBSON CO., Indianapolis, Ind.
MOTOR & MACHINISTS' SUPPLY CO., Kansas City, Mo.
REINHARD BROTHERS, Inc., Minneapolis, Minn.
REPASS AUTOMOBILE CO., Waterloo, Ia.
CHICAGO AUTO SUPPLY HOUSE, 1349-53 Michigan Ave., Chicago.
MOTOR CAR SUPPLY CO., 1451-5 Michigan Ave., Chicago, Ill.
WESTERN MOTOR SUPPLY CO., Milwaukee, Wis.

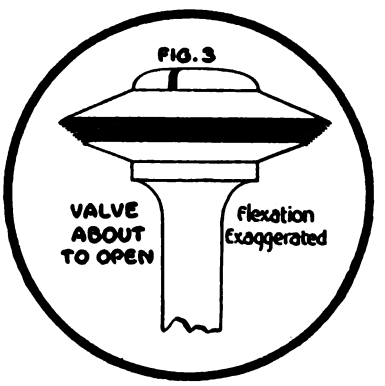
CHANSLOR & LYON CO.
San Francisco, Seattle, Los Angeles, Tacoma, Spokane, San Diego, Portland

THE BECKLEY-RALSTON CO.
New York, Detroit, Chicago, Kansas City, Pittsburgh, San Francisco

The Automobile Supply Co. Detroit
Electric Appliance Co. Chicago
The Auto Equipment Co. Denver
Nicols, Dean & Gregg St. Paul







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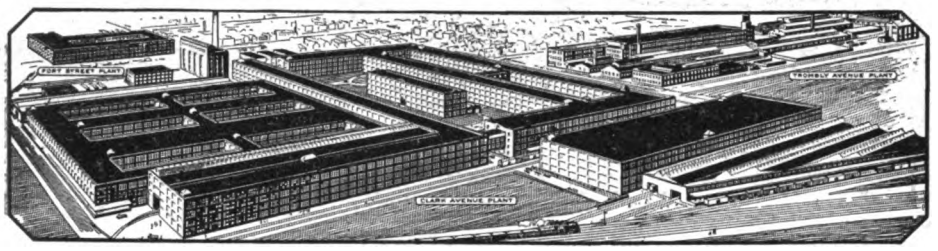
Cadillac's Modern Plant in Detroit

Engineers describe the new plant now being erected for the Cadillac Motor Car Co. in Detroit as the "most modern automobile factory in the world." From the standpoint of railroad facilities the site could hardly be surpassed, as it comprises 46 acres, with the main line of the Michigan Central railroad on one side and the freight tracks of the Lake Shore and Michigan Southern on the other.



New Modern Factory of the Cadillac Motor Car Co., Detroit, Mich.

The buildings of this new plant will contain 2,100,000 square feet, or 48 acres, of floor space. They will all be four stories in height, but are to be so designed that two additional floors can be added at any time. To the eye all the buildings will be seen as a harmonious combination of exposed concrete columns, horizontal bands and red brick walls forming the vast areas of steel sash.

Of the eight buildings comprising the factory, the largest is the manufacturing building, 800 feet long and 600 feet wide, with a total floor space of 1,750,000 square feet when it is carried to its ultimate height of six stories. The courts between the wings will be covered with glass roofs at the height of the first floor ceiling. This will give an area on the first floor 800 feet long and 600 feet wide, or 480,000 square feet.

Conveniently located near the manufacturing building will be the heat treat building, 500 feet long and 80 feet wide.

The assembly building will be the second largest building in the plant, 800 feet long and 360 feet wide, with a total floor area of 620,000 square feet. As in the manufacturing building, the court will be covered with a glass roof, giving an unbroken area on the ground floor of 188,000 square fete. A considerable portion of the assembly building will be devoted to painting operations on chassis, wheels, bodies and metal parts. The body will be upholstered and trimmed in this building, which will also contain the enameling equipment.

The storage building for finished cars and service stock parts, adjoining the assembly building, will be 480 feet long and 140 feet wide. Directly adjoining the storage building will be the "loading dock" with trackage for the placing at one time of 50 railroad cars.

In the administration building, 225 feet long and 50 feet wide, will be located the executive offices.

From the power plant fronting on Clark avenue will be delivered steam, electricity, compressed air, water and the heat required for the operation of the factory. Near the power plant will be located the oil store house with a modern and complete system for the receipt, storage and delivery of the many kinds of oil required throughout the factory. A separate building is also being provided to collect all of the scrap iron, aluminum and brass, and all other materials to be salvaged.

In one wing of the assembly building will be located a welfare department, with first aid rooms, in which doctors and nurses will be in attendance during all working hours. In general, every provision is being made for the comfort and safety of the Cadillac workmen.

ADDITIONS TO JENKINS SPRING CO. PERSONNEL.

T. B. Jenkins, president of the Jenkins Vulcan Spring Co., Richmond, Ind., announces the following additions to the personnel of the organization:

D. T. Hersey, formerly assistant general sales manager for the Splitdorf Electrical Co., Newark, N. J., becomes sales manager with office at Richmond; A. L. Ellis of the spring division of the Detroit Steel Products Co. is production manager.

Direct factory branches are maintained in the following cities: Richmond, Ind., Sixth and Washington avenue; Minneapolis, Minn., 1206 Hennepin avenue; Atlanta, Ga., 48 Auburn avenue; Reading, Pa., 538 Franklin street; Richmond, Va., 2043 West Broad street; Boston, Mass., 819 Boylston street; Kansas City, Mo., 1312 McGee street; Dallas, Tex., 2216-2218 Commerce street.

Stocks at these branches are replenished from the reserve of 100,000 springs at the factory.

PIERCE-ARROW'S RECORD TRIP TO MIAMI.

Driving a Dual Valve Six Pierce-Arrow car, 38 horsepower model, A. A. and F. W. Anderson of Minneapolis, Minn., accompanied by A. G. Seiler, touring manager of the American Automobile association, recently made a 2075-mile trip from Buffalo, N. Y., to Miami, Fla. The journey was accomplished in nine days and 12 hours, part of the route being over primeval roads. The gasoline consumption averaged 12 miles to the gallon and only 11 quarts of lubricating oil were required. The only trouble experienced was a slight radiator leak which was quickly repaired in Jacksonville, Fla.

CLARK EQUIPMENT CO. TO BUILD.

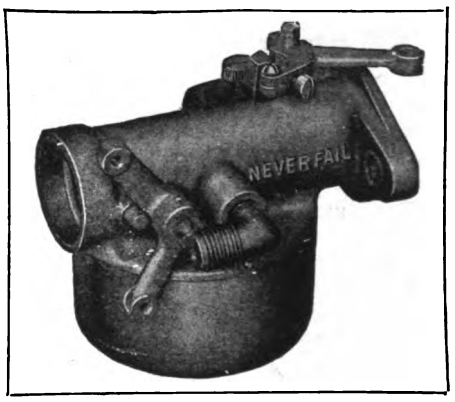
The Clark Equipment Co., Buchanan, Mich., is to build a plant at Battle Creek, Mich., for the exclusive manufacture of axles, on a tract comprising 23 acres with half mile frontages on the Michigan Central and Battle Creek & Interurban railroads. The first units are to be 100 by 450 and 50 by 450 feet respectively, together with a power house and two-story office building. Construction is to be of the daylight type, of steel and brick. It will employ 500 hands when completed.

NEW PARENTI CAR.

The new Parenti passenger car, made by the Parenti Motors Corporation, Buffalo, N. Y., will be placed on exhibition at the automobile show in that city in March. This car will be featured by its light weight and will be equipped with a three by 4½-inch Cameron air cooled engine and, it is stated, will make over 30 miles a gallon of gasoline. The price of the car is $1685. The company is planning a production of 5000 cars for 1920.

NEVERFAIL CARBURETOR.

The Neverfail Carburetor Co., Long Island City, N. Y., has brought out a new carburetor, known as the Neverfail, which is constructed on the principle of a perfect vacuum at all speeds. There are incorporated in the construction no springs, no air valves, no venturi tubes; in fact, no moving parts of any kind except the throttle and the float. The fuel bowl works on a hinge and is designed



The Neverfail Carburetor.

to be easily detachable without the necessity of removing the component from the car.

The Neverfail carburetor is made in various sizes for all makes of passenger cars, motor trucks and tractors, and a special model for Fords is also to be sold through jobbers and distributors.

The officers of the Neverfail company are as follows: President, J. Herbert Ballantine; vice president and general manager, John H. Ballentine; treasurer, J. Bayard Kirkpatrick; vice president and engineer, B. Volkmar; secretary, S. Asch.

The company maintains branches in Detroit and Los Angeles, Cal. The factory address is 192-200 Jackson avenue, Long Island City, N. Y.

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American Cars Popular in Chile

It is stated by a bulletin recently issued by the Latin-American division of the United States Bureau of Foreign and Domestic Commerce that American automobiles have become remarkably popular in Chile during the last five years. This has not been wholly due to the elimination of European sources of supply during the war period, but largely the result of a growing familiarity with the conveniences of motor driving combined with the discovery that these advantages are possible for people of moderate means through the comparatively low prices of certain American cars. And, moreover, the high grade American makes have been demonstrated with success to the class of Chileans that can afford expensive machines. In the social life of the cities the motor car has become an essential, replacing the family coach or carriage, it is said.

Outside of the cities the lack of good roads in Chile seriously affects the use of automobiles, for two mountain chains extend the 2500 miles of the country's entire length and in the mountainous regions road construction is a problem. Between the mountain ridges are level areas, but even here the scarcity of good roads prevents much touring.

War restrictions on the manufacture and shipment of automobiles reduced the exports of cars from the United States to Chile in 1919 to one-third the number and less than one-half the value of the cars shipped in 1918. The largest item in this trade in 1919 was passenger cars, and the second automobile tires. The second item was the only one that did not fall off in the 1919 period; on the contrary, imports of tires increased about 50 per cent. The roads of Chile are specially severe on tires, and this explains why shipments of tires to that country show such a tremendous increase in the period from 1913 to 1919. Exports of motor trucks, the number of which had increased over 300 per cent. in 1918, dropped about 30 per cent. in 1919, but indicated a rapidly growing tendency toward the adoption of motor freight transportation. While imports of motorcycles and automobile parts in 1919 showed slight declines from the 1918 figures, they were much larger than in any other previous year.

Shipments of automobiles from the United States to Chile have represented practically all of Chile's trade in this line since 1916, but the United States' share of this business in 1913, the last pre-war year, was but little more than eight per cent.

NEW CAR DESIGNED EXCLUSIVELY FOR FOREIGN TRADE.

American Motors, Inc., is manufacturing a new car designed exclusively for foreign trade, to comply with existing conditions abroad. The maker claims for this product that it breaks away from the former practise of American automobile manufacturers who have made no particular effort to meet actual conditions abroad, but have built up their export trade on their ability to undersell the market.

None of the cars will be held in the home market, the manufacturer claims, and thus the foreign purchaser will be enabled to get the car that meets his requirements at a lower cost than would be possible if the car were bought in his own country. In the design of the car American Motors claims to have chosen only the best features of the standard American cars.

RAINIER TRUCKS IN INDIA.

The New York Overseas Co. has recently shipped to India 50 Rainier worm-driven delivery trucks, made by the Rainier Motor Corporation, Flushing, Long Island, N. Y., the last shipment including two for Bombay and six for Calcutta.

In some sections of that country the automobile is rapidly supplanting elephants, which have for centuries been one of the principal means of transportation.

DUTCH EAST INDIES.

Among the principal articles listed as demanded and imported into the Dutch East Indies are low-priced motor cars and accessories. Export restrictions on these have generally been lifted.

A new chamber of commerce for the Netherlands and the Netherlands East and West Indies is being organized to further the trade between these countries and the United States.

Exports of manufactures from United States in 1919 were $10,000,000 a day.

Small Cars Preferred in Japan

In Japan it is reported that small or medium types of passenger cars are preferred, as the narrow streets and congested traffic place a large car at considerable disadvantage. Closed cars are preferred, especially for private use, on account of the dust in the streets and also because the Japanese women do not wear hats, and their carefully arranged coiffures suffer considerably in open cars. A closed car also offers a better means of crowding in an extraordinary number of passengers without attracting undesirable attention. An imported chassis is often fitted with a Japanese made body in order that the seats may be of the size and height most suitable to the Japanese, and also to provide seating arrangements for a larger number of passengers than is usual for cars of the same make in the United States. In general cars of types suited for city use in the United States are suited for the Japanese market. There is, however, a demand for automobiles at mountain summer resorts where engine power and safety of control are the chief requisites.

MARKET IN THE PHILIPPINE ISLANDS.

American motor vehicles continue to predominate in the Philippine market. In 1918, 4318 passenger cars with a total capacity of 22,817 were registered. The five-passenger car is the most popular, according to the registration figures, with a total of 2153 cars, while seven-passenger cars stand second with 1171 registrations. Two-passenger cars total 459, four-passenger cars 181, eight-passenger cars 108, three-passenger cars 107, six-passenger cars 94, 10-passenger cars 37, and nine-passenger cars 16.

The total number of trucks registered in 1918 was 567, with a tonnage capacity of 1052 and a passenger capacity of 6345. Due to the lack of railroads and the need to transport agricultural products, motor trucks are beginning to play an important part in the country's commerce.

DEMAND FOR CARS IN SWEDEN.

The present demand for automobiles in Sweden is 300 per cent. greater than that prevailing in 1914.

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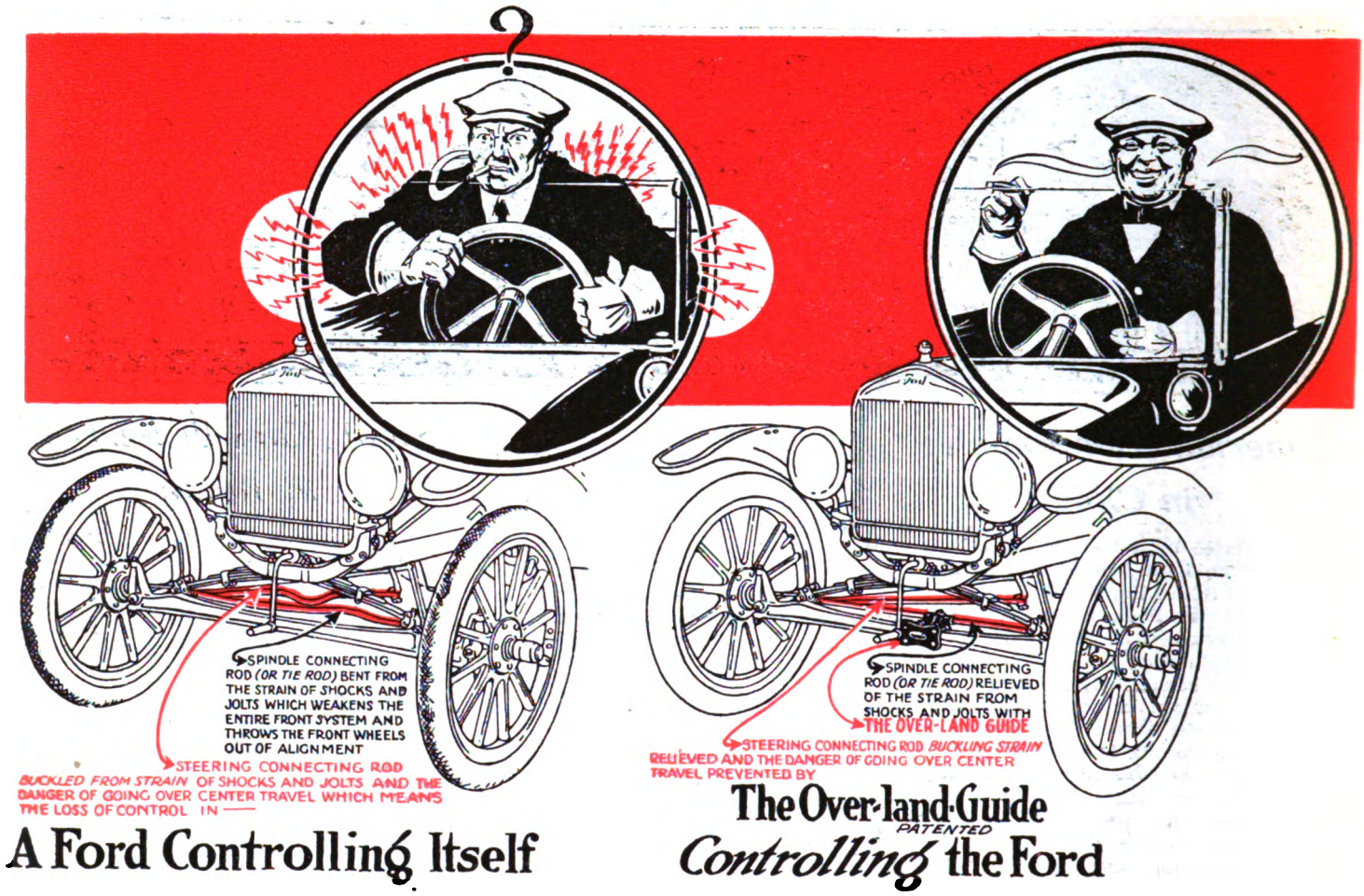


A Ford Controlling Itself

The Over-land-Guide PATENTED **Controlling the Ford**

Just What We Guarantee

The Over-Land Guide is an over the counter business getter. A wonder seller wherever shown. Winter or summer the demand is the same.

THIS BROAD GUARANTEE PROTECTS USERS OF THE OVER-LAND GUIDE. Send us retail price, and we will send you parcel post, one Over Land Guide. Use it 20 days, and if at the end of that time you are willing to part with it, full purchase price will be refunded upon its return. **$8.50**

WITH AN OVER-LAND GUIDE

The driver of a Ford car or truck can steer the machine with the tips of his fingers.

The wheels will always keep in alignment over rocky, rutty or hilly roads, through sand, gravel, mud holes or washouts.

Even though the steering gear be broken or fails to work, the Over-Land Guide will continue to keep the Ford car or truck on a straight course.

It protects the entire front system and steering mechanism from undue wear and breakage. The Over-Land Guide absorbs all shocks and stresses.

It eliminates all danger from a blow out of a front tire at any speed, as the Over-Land Guide will hold the Ford car or truck to its course.

It Stops All Wabbling, Scooting and Creeping

It eliminates all strain in driving. It will save in time and car service. It is car insurance of the highest order. It insures against ditching of the car, which oftentimes proves fatal to the occupants.

The Over-Land Guide cannot fail to work or get out of order. It is finely made, sightly and will last for years.

Estimate the worth of an Over-Land Guide from any viewpoint—safety, service and dependability.

It will add generally to car efficiency, convenience, pleasure and comfort, and assures the longest possible service life to a Ford car or truck.

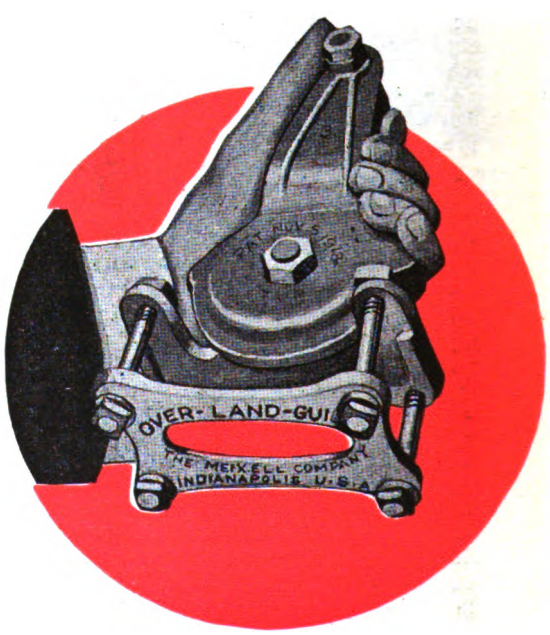
The Over-land Guide Protects These Parts

Spindle connecting rod (or tie rod). Spindle body arms and bushings. Spindle body and bushings. Ball and roller bearings and hub. Steering connecting rod and ball joints. Steering gear ball arms. Steering post bracket, bushing and bolts. Steering post. Steering gear pinion. Steering gear drive pinions. Steering gear internal gear case and bushings.

Also helps to keep axle from breaking or bending—and may save the entire car from destruction.

Jobbers and Dealers—We offer a 100% utility attachment. All Ford car and truck owners will buy at sight. Sales are limited only to the number of Fords in use. The market is everywhere. Our proposition is liberal and the discounts will satisfy you.

Write or wire for full particulars.



The OVER-LAND GUIDE bolts to the center of the front axle and the center of the spindle connecting rod (or tie rod), securely relieving the vibration and strain in the spindle connecting rod (or tie rod) and the entire front system, and the steering mechanism up to the steering wheel. Can be attached in a few minutes by anyone.

THE MEIXELL COMPANY

216 Board of Trade Building, INDIANAPOLIS, IND.

(Automobile Sundries Co., 18 Broadway, New York, N. Y. Sole Foreign Agents.)

(When Writing to Advertisers, Please Mention the Accessory and Garage Journal.)

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A New Standard—

the Hand-Built Madison

We wish we could show you the hands that lay on—carefully—each ply of the rubber-filled fabric; the hands that pull and test—carefully—every inch of each layer as the tire is built; the hands that find and reject—instantly—every flaw that might have remained hidden until the wear of the road found it out, too late.

Madison

SUPERB ENDURANCE

Tires

Superb Endurance, no less than cotton and rubber, enters into the very structure of the ***Hand-Built*** Madison Tire.

The six buildings of the Madison factories at Buffalo, N. Y., total a quarter million square feet of floor space, with complete modern equipment. The demand for a better tire has been so great that the output capacity is being constantly increased. At the same time the moral obligation in craftsmanship, which has made the ***Hand Built*** Madison the new standard of tire endurance, is rigidly upheld.

We have an unusual proposition for the RIGHT KIND of dealer—the dealer who can see far enough ahead of the crowd to realize what it will mean to him to SELL the HAND-BUILT Madison.

Madison Tire and Rubber Company, Inc.

254 West 57th. St., City of New York

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Motor and Accessory Makers' Officers

AT ITS 16th annual meeting the Motor and Accessory Manufacturers' Association elected three new members to its board of directors. The full board is as follows:

C. E. Thompson, Steel Products Co., Cleveland, O.; E. H. Broadwell, Fisk Rubber Co., Chicopee Falls, Mass.; Christian Girl, Standard Parts Co., Cleveland, O.; W. O. Rutherford, B. F. Goodrich Co., Akron, O.; L. M. Wainwright, Diamond Chain & Manufacturing Co., Indianapolis, Ind.; G. Brewer Griffin, Westinghouse Electric & Manufacturing Co., New York; E. E. Allyne, Aluminum Manufacturers, Inc., Cleveland, O.; E. W. Beach, Ferro Machine & Foundry Co., Cleveland, O.; G. W. Yeoman, Continental Motors Corporation, Detroit, Mich.; E. P. Hammond, Gemmer Manufacturing Co., Detroit, Mich.; J. M. McComb, Crucible Steel Co. of America, Pittsburgh, Pa.; A. W. Copland, Detroit, Gear & Machine Co., Detroit, Mich.

Messrs. Allyne, McComb and Griffin succeeded C. W. Stiger, president of the Stromberg Motor Devices Co., Chicago. Ill.; J. H. Foster, president of the Hydraulic Pressed Steel Co., Cleveland, O., and T. J. Wetzel, president of the Precision Die Castings Co., Syracuse, N. Y.

The officers for 1920 are:

President, C. E. Thompson, president of the Steel Products Co., Cleveland, O.; first vice president, E. H. Broadwell, vice president of the Fisk Rubber Co., Chicopee Falls, Mass.; second vice president, Christian Girl, president of the Standards Parts Co., Cleveland, O.; third vice president, W. O. Rutherford, vice president of the B. F. Goodrich Rubber Co., Akron, O.; treasurer, L. M. Wainwright, president of the Diamond Chain & Manufacturing Co., Indianapolis, Ind.; secretary and assistant treasurer, G. Brewer Griffin, manager of the Automobile Equipment department of the Westinghouse Electric & Manufacturing Co., New York.

Mr. Griffin succeeds Thomas J. Wetzel.

The committees are as follows:

Executive: Messrs. Thompson, Broadwell, Girl, Rutherford, Hammond, Griffin and Copland.

Finance: Messrs. Broadwell, Thompson, Girl, Rutherford, Yeoman, McComb and Copland.

Show and Allotment: Messrs. Girl, Rutherford, Yeoman, Griffin and Allyne.

Auditing: C. E. Thompson, president; G. Brewer Griffin, secretary; L. M. Wainwright, treasurer.

Membership: Messrs. Rutherford, Beach and Wainwright.

Banquet: Messrs. Rutherford, Girl, Yeoman, Hammond and McComb.

The New England Mills Co., wholesale jobber and distributor of automobile and truck accessories, 1219-1221 Michigan avenue, Chicago, Ill., announces that its new spring catalogue is now ready for distribution and that dealers interested in automotive supplies will receive a copy on application.

PIERCE-ARROW TESTS ENGINES WITH MODERN DEVICES.

The Pierce-Arrow Motor Car Co., Buffalo, N. Y., has just installed what is claimed to be one of the most effective pieces of motor testing apparatus employed in any automotive plant in the country. This improved method is as follows:

Each engine passes through three stages. It first is driven electrically until the moving parts are worn in, whereupon the engine is run for a number of hours under its own power at various speeds. Throughout this entire period instruments reveal accurately the internal friction of the engine, its speed and the horsepower developed.

The engine then is disassembled and the parts inspected by experts, who rebuild it after making adjustments or corrections.

In the final stage, the engine is coupled with a dynamometer in a silent room. At this stage of the test are recorded complete data as to power, gasoline consumption, internal friction and other vital facts. Here, too, the tester adjusts ignition, carburetion, valve action, etc., so that when the final "O K" is given, a perfect engine is ready for the chassis.

LANE VISITS PACIFIC COAST.

Ralph S. Lane, president of the United Motor Service, Inc., and the Bearing Service Co., Detroit, is making a tour of inspection of the Pacific coast branches of those companies, located at San Francisco and Los Angeles, Cal.; Portland, Ore., and Seattle, Wash.

The United Motor Service, Inc., is the official service department of Delco, Klaxon and Remy products, and has 22 branches and 137 authorized distributors. The Bearings Service Co. is the national service department of the Hyatt, Timken and New Departure companies, and has 26 direct branches and more than 900 authorized distributors.

Ralph S. Lane, President of United Service, Inc., and Bearing Service Co., Detroit.

ANNUAL EARNINGS OF MAIBOHM MOTORS.

According to the annual report just issued by the Maibohm Motors Co., Sandusky, O., the earnings for the year past totaled $139,745, of which $89,714 was charged off to cover depreciation and taxes. The gross earnings amounted to 16 per cent. and sales in 1919 showed an increase of 247 per cent. over 1918. These results were obtained despite restricted production and increased expenses during the year due to the destruction by fire of the plant at Racine, Wis., just before the first of 1919, and the moving of the organization to Sandusky in the spring.

The company is now on a production schedule of 25 Maibohm Sixes a day and for 7500 during 1920, all of which have already been sold to the Maibohm dealer organization.

GEMCO 1920 CATALOGUE.

One of the most interesting of the 1920 automobile supply catalogues is that just issued by the Gemco Manufacturing Co., Milwaukee, Wis., which illustrates and describes a large number of popular and successful devices for motor cars. Especially notable is the complete line of bumpers for all cars.

It contains a double cross reference index, which renders the finding of either descriptive matter or illustrations a very simple matter, as the makes of automobiles are listed alphabetically and opposite the names appear the numbers of the pages on which the bumpers for the cars are shown. This catalogue will be sent free to anyone interested.

GENERAL ELECTRIC TO MAKE CAPITAL $175,000,000.

The stockholders of the General Electric Co., Schenectady, N. Y., will take action at a meeting called for March 16 on a project to increase the capital of the company from $125,000,000 to $175,000,000 and to issue $15,000,000 of six per cent. 20-year debenture bonds.

Total sales of the General Electric Co. for 1919 are reported to have been $230,750,010 as against $216,815,277 in 1918. Of these sales the net income for 1919, before charges for interest, etc., was $38,685.067. On Dec. 31 assets other than cash were in excess of $236,000,000, and $31,000.000 in cash. Total liabilities on that date were $50,000,000 making the balance $217,000,000 in favor of assets, or $190,000,000 in excess of all debentures, including the present issue.

The Western Electric Co. also proposes to increase its stock from 15,000 shares of no par value to 500,000 also of no par value, and to issue $50,000,000 of seven per cent. cumulative preferred stock. This will add more than $30.000,000 to the company's working capital.

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NORTHWESTERN CHEMICAL'S ANNUAL SALES CONVENTION.

The annual sales convention of representatives of the Northwestern Chemical Co. Marietta, O., opened Monday, Feb. 16, with R. M. Tusing, general sales supervisor, presiding. The addresses, all of which were helpful to a degree in stimulating the activities of the organization, included the following: Opening address, "Destructive Unrest," Fred Hall, president and general manager; "The Relation of the Accounting Department to the Success of the Organization," H. A. Fordham, secretary-treasurer in charge of the accounting department; "Keeping Raw Material Coming in and Finished Goods Going Out," O. W. Morgenstern, purchasing agent and production manager; A. S. Isaacs, chief chemist, spoke of the strict laboratory supervision all Norwesco products were obliged to undergo; "Selling the Dealer," V. V. Casey, eastern sales supervisor; "What Is Necessary of a Salesman," L. D. Speed, central sales supervisor; "My 10 Years' Experience with Norwesco," I. D. Gross, western sales supervisor; "Getting the Good Will of the Buyer," S. E. Samuels, New England salesman; "The Man Who Came Back," M. P. McGee, Metropolitan district salesman; "Bumps of a New Salesman," L. G. Meredith, Ohio district salesman.

The programme for Tuesday included a session in the morning in which the various Norwesco utilities were described by President Hall and in the afternoon Chief Chemist Isaacs gave some interesting and convincing laboratory tests. In the evening the convention attended the Hippodrome theater in a body, where the company also had as guests the Advertising club of Marietta, the Parkersburg and Marietta Credit Men's association and the Marietta Purchasing Agent association.

Wednesday morning was taken up by Mr. Tussing, general sales supervisor, in exploiting the Norwesco line, the policy of the house, its past record and plans for 1920. The afternoon was spent in going over the advertising campaign. Wednesday evening the company gave a love feast at which it had as guests the outside and inside sales organizations, the department heads and directors of the company.

Thursday was particularly devoted to "Se-ment-ol," one of the principal products of the concern, and an addition to this line, Boiler Se-ment-ol, was exploited. The convention came to a close Thursday night.

CADILLAC METAL PARTS COMPANY FORMED.

The Cadillac Metal Parts Co. has been formed at Cadillac, Mich., to make tanks, hoods, fenders and other parts for automobiles. The incorporators are L. J. Deming, C. F. Williams and E. J. Morgan. The manufacturing activities of the Cadillac Plumbing & Heating Co., in which the incorporators are interested, will be taken over by the new concern.

Eaton Becomes Head of Standard Parts

Christian Girl, organizer and president of the Standard Parts Co. of Cleveland, O., one of the largest independent producers of automobile parts in the world, has been deposed from office under pressure from certain banks, and is to be replaced by J. O. Eaton, formerly of the Torbensen Axle Co., now head of the Eaton Axle Co. Associated with Mr. Eaton in the new management of the Standard Parts Co. will be, it is understood, John Younger, formerly truck engineer of the Pierce-Arrow Motor Car Co., and Charles S. Dahlquist, sales inspection engineer of the Timken-Detroit Axle Co.

It is stated that Mr. Girl's enforced retirement was the price demanded by certain financial interests for the refunding of the corporation necessitated by the exigencies of its reconstruction. The underlying refinancing operation is being handled entirely by and through interests in Cleveland, and will take the form

J. O. Eaton, New President Standard Parts Co. of Cleveland, O.

of a $25,000,000 merger involving the consolidation of the Eaton Axle Co. with the Standard Parts Co. It is implied, however, that the real cause of this action lies in the fact that Mr. Girl, as the advocate and exponent of the standardized war truck, incurred the animosity of powerful financial interests in his home city.

Mr. Girl came into prominence in the automotive industry in 1906 as the founder of the Perfection Spring Co. and piloted that concern through its development to an organization with a capital of $1,500,000, doing a business of some $5,000,000 a year. This concern was merged with the Standard Parts Co. in 1916, other concerns included being the Standard Welding Co., the Western Spring & Axle Co., the American Ball Bearing Co. and the Bock Bearing Co.

In 1918 he became director of the Military Truck Production section of the Quartermaster General's office in Washington and as such organized the parts makers for the manufacture of the famous class B truck. Later he was mentioned as the probable head of the Motor Transport Corps, then forming, but it was finally decided to select its personnel from the regular army.

The latest development of the Standard Parts Co., which is stated to be in every respect a normal process and in no wise casting any reflection on its past conduct or present stability, was formally announced in Cleveland on Feb. 11 by Cyrus S. Eaton of Otis & Co. The capital of the revised enterprise will probably be about $35,000,000, and it is expected that the consolidated companies will be doing a business of $60,000,000 annually by 1921. The present activity may be judged from the statement that unfilled orders on the books now are in excess of $23,000,000.

ANDERSON ELECTRIC CO. CHANGES NAME.

The stockholders of the Anderson Electric Specialty Co., Chicago, Ill., manufacturer of the well known Anderson "Autoreelite" spot light and "Reelite" extension garage portable light, have sanctioned a resolution authorizing the change in name of the company to Anderson Electric & Equipment Co.

This includes no change either in the company's officers or organization, and has been made solely to render the corporate name more descriptive of the character of the products manufactured by the company and to eliminate the word "specialty," which did not properly describe the Anderson lines, which are staple articles and known throughout the automotive market.

HENDRICK'S COMMERCIAL REGISTER.

The new 28th annual edition of Hendrick's Commercial Register of the United States for Buyers and Sellers has just been issued. It has been thoroughly revised and contains many new listings, together with several new features. This has come to be recognized as one of the most valuable works of reference for the business man being especially devoted to the architectural, engineering, electrical, mechanical. railroad, iron, steel and kindred industries, and contains, in a comprehensive form much interesting information that can be found in no other work of similar character.

The publisher is the S. E. Hendricks Co., Inc., 2 West 13th street, New York City, and the list price is $12.50.

BIG ORDER FOR HAYNES CARS.

Harold Oppenheimer, president, and E. M. Tharp, manager, of the Midwest Haynes Automobile Co., Kansas City, Mo., have recently filed orders with the Haynes Automobile Co., Kokomo, Ind., for 129 Haynes cars of both open and closed models, totaling over $250,000.

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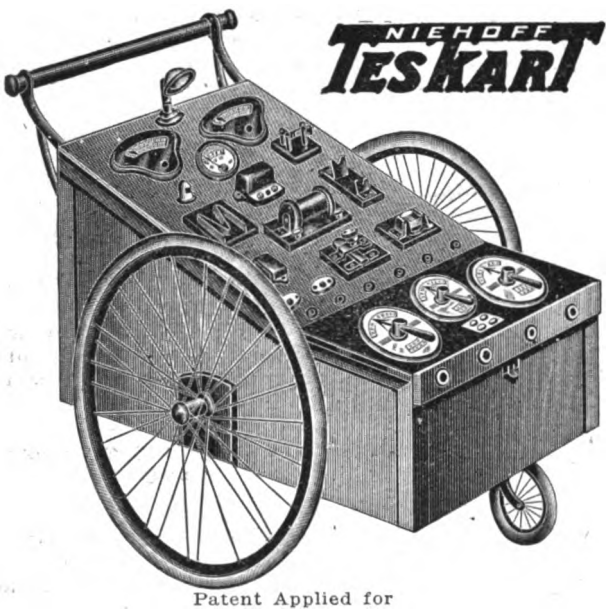
Niehoff Automotive Repair Shop Equipement



Patent Applied for

The NIEHOFF TEST KART is the latest achievement in the way of a complete Testing Outfit for locating all electrical trouble in the ignition, starter, generator, battery, wiring, relays, meters, in fact anything in connection with the electrical mechanism of an automobile. It will also recharge Ford magnets on the car. This outfit is a necessity in every repair shop. With it you can render a service to the motorist that will insure you increased business. It will enable you to inform the motorist intelligently, just what has to be done and give him an estimate as to the approximate cost.

The NIEHOFF TEST KART is the ideal rig for the general automotive garage service station. Price, **$350.00.**

We list below a few other important testing outfits.

Niehoff Defectometer—For testing magnetos and coils. Price, **$50.00.**

Niehoff Generometer—For locating shorts in starting and generator armature. Price, **$55.00.**

Niehoff Mag-Charger and Testing Outfit for Fords—Will recharge Ford magnets on the car, burn out shorts, test coils, spark plug, voltage of magneto, etc. Price, **$60.00.**

Niehoff Growler—To test armatures. Price, **$30.00.**

Niehoff Laminated Magnetizer—To recharge all sizes of magnetos for automobiles.
Storage Battery model. Price, **$25.00.**
110 D. C. Current model. Price, **$30.00.**

Niehoff Power T. B. Test Bench—To test generators and magnets after assembled.
Complete with motor. Price, **$550.00.**

PAUL G. NIEHOFF & CO. INC.

232-242 E. Ohio St. Chicago, Ill.

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Madison Tire & Rubber Co	65
Marvel Machinery Co	28
McCord Mfg. Co	16
McCulloch Mfg. Co	109
Meixell Co., The	64
Merchant & Evans Co	109
Metal Hose and Tubing Co	110
Miller, Chas. E	111
Modine Mfg. Co	11
Motor Specialties Co	59
Mueller Electric Co	98
Mutty, L. J., Co	98
National Automotive Co	96P
National Carbon Co	12
National Products Co	98
New Departure Mfg. Co	111
New England Mills Co	98
New Era Spring and Specialty Co	79
New York Coil Co	108
Niehoff & Co., Paul G., Inc	68
Ohio Carbon Co	96P
Oldfield Tire Co	110
Osgood Lens & Supply Co	5
Paro Co., H. G	103
Paterson Co., W. A	17
Pep Spark Plug Co	112
Piston Ring Co	100
Powrlok Co	4
Premier Motor Products Co	111
Puritan Machine Co	104
Quinn, Nelson J	23
Reflex Ignition Co	96O
Ross-Gould List and Letter Co	98
Scaife, Wm. B. & Sons Co	111
Schrader's Son, Inc., A	96J
Security Auto Lock Co	107
Self-Seating Valve Co	60-61
Shaler Co., C. A	96O
Specialty Mfg. Co	104
Spencer Metal Products Co	56
Spring Leaf Lubricator Co	99
Standex Mfg. Co	101
Stanwood Rubber Co., Inc	53
Star Wing Co	108
Stephens Rubber Co., A. J	106
Sterling Tire Corp	49
Storm Mfg. Co	3
Suffolk Mfg. Co., Inc	99
Syracuse Rubber Co	Cover
Thomas-Armstrong Co	96F
Tire Re-Tread Co	96N
Trade Circular Add. Co	104
Twin Fire Spark Plug Co	110
Union Lathe Works	107
United Motors Service, Inc	6
Universal Battery Co	52
Universal Mfg. & Sales Co	96P
Universal Tool Co., The, Inc. of Detroit	24-25
Van Briggle Motor Device Co	108
Vanderpool Co., Wm	112
Victor Mfg. and Gasket Co	96H
Walden-Worcester, Inc	Cover
Walker Mfg. Co	20
Wakefield, C. E	2
Weston Electrical Instrument Co	103
Wilkes-Barre Welding Co	104
Williams, A. F, Mgr	104

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Here's Another Fast Selling KHK Accessory

"When Your Oil is Low Your Horn Will Blow"

Automatically starts horn blowing when oil supply is low. Insurance against burned out bearings, scored pistons and cylinders. Fits all cars. A novel, practical accessory that sells on sight. Popular price. It's the only practical automatic oil signal on the market. Easily attached and no complicated parts to wear or get out of order. Be the first dealer in your town to show this new accessory. It will pay you.

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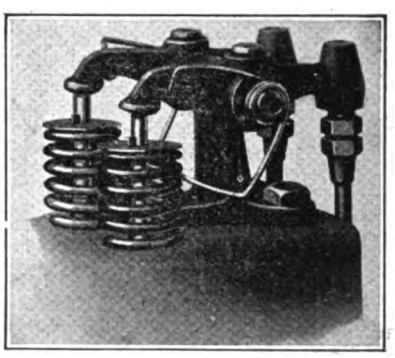

Guaranteed to eliminate from 75% to 90% of that clacking noise caused by the action of push rods and rocker arms in Buick, Chevrolet, Oakland, Oldsmobile, Scripps-Booth motors. Adds pep to motor. Eliminates continual tappet adjustment. Dealers say it is the fastest selling accessory they ever saw.

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967 Woodward Ave. Detroit, Mich.

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Where "Orphan" Car Parts May Be Obtained

List of Cars Now Out of Manufacture and Names of Dealers Who Supply Equipment

ABBOTT.
Auto Parts Co., 116-18 Olive St., St. Louis, Mo.
Auto Salvage Co., 1701-03 Main St., Kansas City, Mo.
Auto Salvage & Exchange Co., 1317-19 Locust St., Des Moines, Ia
Bone Yard, The, Washington, Ia.
Puritan Machine Co., 422 Lafayette Boulevard, Detroit, Mich.
Standard Motor Parts Co., Detroit, Mich.

ADAMS.
Longaker Co., V. A., 448-50 N. Capitol Ave., Indianapolis, Ind.

AEROCAR.
Auto Gear & Parts Co., 291-93 Marietta St., Atlanta.
Auto Salvage & Exchange Co., 1317-19 Locust St., Des Moines.

ALCO.
Alco Service Co., 155-62 N. 22nd St., Philadelphia.
American Locomotive Co., Providence.
Auto Salvage Co., 1701-03 Main St., Kansas City.
International Motor Co., West End Ave. and 64th St., New York.
Levene Motor Co., 2200-18 Diamond St., Philadelphia.
Puritan Machine Co., 422 Lafayette Boulevard, Detroit.

ALDEN-SAMPSON.
Puritan Machine Co., 422 Lafayette Boulevard, Detroit.
Standard Motor Parts Co., New Castle, Ind.

ALLIS-CHALMERS.
Puritan Machine Co., 422 Lafayette Boulevard, Detroit.

ALMA.
Dayton Auto Parts Co., 1777 Broadway, New York.

ALPENA.
Auto Gear & Parts Co., 291-93 Marietta St., Atlanta.
Auto Salvage & Exchange Co., 1317-19 Locust St., Des Moines.
Puritan Machine Co., 422 Lafayette Boulevard, Detroit.

ALTER.
American Motors Parts Co., 430 N. Capitol Ave., Indianapolis.
Auto Gear & Parts Co., 291-93 Marietta St., Atlanta.
Puritan Machine Co., 422 Lafayette Boulevard, Detroit.

AMERICAN.
American Motors Parts Co., 430 N. Capitol Ave., Indianapolis.
Longaker Co., V., 448-50 N. Capitol Ave., Indianapolis.
Purt Motor Car Co., W. J., Pico and Hope Sts., Los Angeles.

AMERICAN MORS.
St. Louis Car Co., 8000 N. Broadway, St. Louis.
Wichita Auto Wrecking Co., 805-809 W. Douglas Ave., Wichita.

AMERICAN UNDERSLUNG.
American Motor Parts Co., 430 N. Capitol Ave., Indianapolis.
Auto Gear & Parts Co., 291-93 Marietta St., Atlanta.
Auto Salvage Co., 1701-03 Main St., Kansas City.
Longaker Co., V. A., 448 N. Capitol Ave., Indianapolis.
Puritan Machine Co., 422 Lafayette Boulevard, Detroit.

AMES.
Auto Gear & Parts Co., 291-93 Marietta St., Atlanta.
Auto Salvage & Exchange Co., 1317-19 Locust St., Des Moines.

AMPLEX.
Gillette Motors Co., Mishawaka.
Gorey & Co., Jos. C., 354 W. 50th St., N. Y.

ANCHOR.
Gustin Automobile Co., 18-20 E. Mitchell Ave., Cincinnati.

ANHUT.
Puritan Machine Co., 422 Lafayette Boulevard, Detroit.

ARBENZ.
Auto Gear & Parts Co., 291-93 Marietta St., Atlanta.

ARGO.
Puritan Machine Co., 422 Lafayette Boulevard, Detroit.

ARGO ELECTRIC.
Puritan Machine Co., 422 Lafayette Boulevard, Detroit.

ATLANTIC.
Auto Gear Co., 844 Eighth Ave., New York.
Puritan Machine Co., 422 Lafayette Boulevard, Detroit.

ATLAS.
Auto Gear & Parts Co., 291-93 Marietta St., Atlanta.
Auto Parts Co., 4116-18 Olive St., St. Louis.
Gorey & Co., Jos. C., 354 W. 50th St., N. Y.
Puritan Machine Co., 422 Lafayette Boulevard, Detroit.

AUSTIN.
Puritan Machine Co., 422 Lafayette Boulevard, Detroit.

BABCOCK.
Auto Gear & Parts Co., 291-93 Marietta St., Atlanta.
Dayton Auto Parts Co., 1777 Broadway, New York.

BADGER.
Auto Gear & Parts Co., 291-93 Marietta St., Atlanta.
Auto Salvage & Exchange Co., 1317-19 Locust St., Des Moines.
Puritan Machine Co., 422 Lafayette Boulevard, Detroit.
Schultz & Harder, Columbus, Wis.

BARNES.
Puritan Machine Co., 422 Lafayette Boulevard, Detroit.

BAUER.
Bauer Machine Co., 109 W. 18th St., Kansas City.

BEAVER.
Auto Parts Co., 4116 Olive St., St. Louis.

BENHAM.
Dayton Auto Parts Co., 1777 Broadway, New York.
Gorey & Co., Jos. C., 354 W. 50th St., N. Y.
Puritan Machine Co., 422 Lafayette Boulevard, Detroit.

BENZ.
Gorey & Co., Jos. C., 354 W. 50th St., N. Y.

BERGDOLL.
Auto Gear & Parts Co, 291-93 Marietta St., Atlanta.
Auto Parts Co., 4116 Olive St., St. Louis.
Gorey & Co., Jos. C., 354 W. 50th St., N. Y.
Levene Motor Co., 2200-18 Diamond St., Philadelphia.
Puritan Machine Co., 422 Lafayette Boulevard, Detroit.
Schober, G. M., 3339 Market St., Philadelphia.

BERKSHIRE.
Auto Gear & Parts Co., 291-93 Marietta St., Atlanta.
Belcher Engineering Co., 43 Ames St., Cambridge, Mass.
Dayton Auto Parts Co., 1777 Broadway, New York.
Puritan Machine Co., 422 Lafayette Boulevard, Detroit.

BERLIET.
American Locomotive Co., Providence, R. I.

BESSEMER.
Puritan Machine Co., 422 Lafayette Boulevard, Detroit.

BIMEL.
American Motor Parts Co., 430 N. Capitol Ave., Indianapolis

BLACK CROW.
Crow-Elkhart Motor Co., 1100 N. Main St., Elkhart, Ind.

BLOMSTROM.
Puritan Machine Co., 422 Lafayette Boulevard, Detroit.

BORLAND.
Puritan Machine Co., 422 Lafayette Boulevard, Detroit.

BRIGGS-DETROITER.
Levene Motor Co., 2200-18 Diamond St., Philadelphia.
Midland Motor Co., 2029 Michigan Ave., Chicago.
Puritan Machine Co., 422 Lafayette Boulevard, Detroit.

BROC ELECTRIC.
Puritan Machine Co., 422 Lafayette Boulevard, Detroit.

BRODESSER.
Puritan Machine Co., 422 Lafayette Boulevard, Detroit.

BROWN.
Bone Yard, The, Washington, Iowa.
Great Western Automobile Co., Kalamazoo.

BRUSH.
Auto Parts Co., 4116-18 Olive St., St. Louis.
Auto Salvage & Exchange, 1317-19 Locust St., Des Moines.
Auto Salvage Co., 1701-03 Main St., Kansas City.
Davidson Repair Shop, 227 W. 64th St., New York.
Puritan Machine Co., 422 Lafayette Boulevard, Detroit.
Standard Motor Parts Co., New Castle, Ind.

BURG.
Wichita Auto Wrecking Co., 807 W. Douglas Ave., Wichita.

BUSH.
Victor Motor Co., York, Pa.

CALIFORNIA.
Puritan Machine Co., 422 Lafayette Boulevard, Detroit.

CARHARTT.
Auto Gear & Parts Co., 291-293 Marietta St., Atlanta.
Dayton Auto Parts Co., 1777 Broadway, New York.
Gorey & Co., Jos. C., 354 W. 50th St., N. Y.
Puritan Machine Co., 422 Lafayette Boulevard, Detroit.

CAR-NATION.
Auto Gear & Parts Co., 291-93 Marietta St., Atlanta.
Car-Nation Motor Co., Detroit.
Puritan Machine Co., 422 Lafayette Boulevard, Detroit.
Standard Motor Parts Co., Detroit.

CARTERCAR.
Puritan Machine Co., 422 Lafayette Boulevard, Detroit.
Wichita Auto Wrecking Co., 807 W. Douglas Ave., Wichita.

CARTHAGE.
Puritan Machine Co., 422 Lafayette Boulevard, Detroit.

CAVAC.
Puritan Machine Co., 422 Lafayette Boulevard, Detroit.

CENTURY.
Puritan Machine Co., 422 Lafayette Boulevard, Detroit.

CHADWICK.
Auto Salvage Co., 1701-03 Main St., Kansas City.
Berkholz, Louis, 223 N. Fourth St., Philadelphia.

CHASE.
Auto Parts Co., 4116-18 Olive St., St. Louis.

CINCO.
Auto Salvage Co., 1701-03 Main St., Kansas City.
Puritan Machine Co., 422 Lafayette Boulevard, Detroit.
Queen City Auto Parts Co., 633 Main St., Cincinnati.

CINO.
Northway Auto Parts & Sales Co., 223 Kearney St., Cincinnati.

CLARK.
Puritan Machine Co., 422 Lafayette Boulevard, Detroit.
Wichita Auto Wrecking Co., 807 W. Douglas Ave., Wichita.

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CLARK-CARTER.
Erbes, L. C., 2654 W. University Ave., St. Paul.
Puritan Machine Co., 422 Lafayette Boulevard, Detroit.

COATES-GOSHEN.
Coates, J. S., Goshen, N. Y.

COLBURN.
Colburn Automobile Co., 416 E. 10th Avenue, Denver.
Puritan Machine Co., 422 Lafayette Boulevard, Detroit.

COLBY.
Auto Gear Co., 1404 Hennepin Ave., Minneapolis.
Harper, E. V., 306 S. Federal St., Mason City, Iowa.
Puritan Machine Co., 422 Lafayette Boulevard, Detroit.

COLUMBIA (Old).
Columbia Auto Repair Co., 19 Buckingham St., Hartford.
Standard Motor Parts Co., Detroit.
Standard Motor Parts Co., New Castle, Ind.

COLUMBIA KNIGHT.
Columbia Auto Repair Co., Hartford.
Standard Motor Parts Co., New Castle, Ind.

COLUMBUS ELECTRIC.
Butler Mfg. Co., Knightstown, Ind.
Columbus Buggy Parts Co., Dublin Ave., Columbus.

CONTINENTAL.
Auto Parts Co., 4116 Olive St., St. Louis.
Continental Auto Parts Co., Knightstown, Ind.
Puritan Machine Co., 422 Lafayette Boulevard, Detroit.

CORBIN.
Puritan Machine Co., 422 Lafayette Boulevard, Detroit.

COURIER.
Auto Gear & Parts Co., 291-93 Marietta St., Atlanta.
Dayton Auto Parts Co., 1777 Broadway, New York.
Gorey & Co., Jos. C., 354 W. 50th St., New York.
Puritan Machine Co., 422 Lafayette Boulevard, Detroit.

COURIER-CLERMONT.
Puritan Machine Co., 422 Lafayette Boulevard, Detroit.
Standard Motor Parts Co., New Castle, Ind.

CRESCENT.
Auto Gear & Parts Co., 291-93 Marietta St., Atlanta.
Puritan Machine Co., 422 Lafayette Boulevard, Detroit.
St. Bernard Garage, St. Bernard, Ohio.

CROW.
Auto Gear & Parts Co., 291-93 Marietta St., Atlanta.
Crow-Elkhart Motor Co., 1116 N. Main St., Elkhart, Ind.

CROXTON.
Puritan Machine Co., 422 Lafayette Boulevard, Detroit.

CROXTON-KEETON.
Auto Salvage & Exchange Co., 1317-19 Locust St., Des Moines.
Dayton Auto Parts Co., 1777 Broadway, New York.
Puritan Machine Co., 422 Lafayette Boulevard, Detroit.

CUTTING.
Auto Salvage & Exchange Co., 1317 Locust St., Des Moines.
Bone Yard, The, Washington, Iowa.
Erbes, L. C., 3654 W. University Ave., St. Paul, Minn.
Gorey & Co., Jos. C., 354 W. 50th St., New York.
Puritan Machine Co., 422 Lafayette Boulevard, Detroit.

DART.
Auto Salvage Co., 1701-03 Main St., Kansas City.
Puritan Machine Co., 422 Lafayette Boulevard, Detroit.

DAVIS.
Dayton Auto Parts Co., 351-55 W. 52nd St., New York.

DEARBORN-DETROIT.
Huron Motor Car Co., Dearborn, Mich.
Puritan Machine Co., 422 Lafayette Boulevard, Detroit.

DECAUVILLE.
Gorey & Co., Jos. C., 354 W. 50th St., New York.

DE KALB.
Dayton Auto Parts Co., 1777 Broadway, New York.

DE LUXE.
Puritan Machine Co., 422 Lafayette Boulevard, Detroit.

DE TAMBLE.
American Motors Parts Co., 430 N. Capitol Ave., Indianapolis.
Puritan Machine Co., 422 Lafayette Boulevard, Detroit.
Shepard Auto Co., 106 Pennsylvania Ave., Brooklyn.

DETROITER.
Bone Yard, The, Washington, Iowa.
Detroiter Motor Car Co., Detroit, Mich.

DOLSON.
Dayton Auto Parts Co., 1777 Broadway, New York.

DRAGON.
Gorey & Co., Jos. C., 354 W. 50th St., New York.
Philadelphia Machine Works, 61-71 Laurel Ct., Philadelphia.
Puritan Machine Co., 422 Lafayette Boulevard, Detroit.

DREXEL.
Auto Gear & Parts Co., 291-93 Marietta St., Atlanta.

DRUMMOND.
Auto Gear & Parts Co., 291-93 Marietta St., Atlanta.

DUPONT.
Victor Motor Co., York, Pa.

DUROCAR.
Auto Gear Co., 1044 Hennepin Ave., Minneapolis.
Auto Parts Co., 4116-18 Olive St.. St. Louis, Mo.

EDWARD-KNIGHT.
Dayton Auto Parts Co., 1777 Broadway, New York.
Willys-Overland, Inc., Toledo.

ELMORE.
Auto Gear & Parts Co., 291-93 Marietta St., Atlanta.
Auto Parts Co., 4116-18 Olive St., St. Louis, Mo.
Auto Salvage Co., 1701-03 Main St., Kansas City.
Gorey & Co., Jos. C., 354 W. 50th St., New York.
Puritan Machine Co., 422 Lafayette Boulevard, Detroit.

E. M. F.
Bone Yard, The, Washington, Iowa.
Gorey & Co., Jos. C., 354 W. 50th St., New York.
Studebaker Corp. of America, Piquette Ave. and Brush St., Detroit.

E-M-F THIRTY.
Carey & Davis, 486 Louisiana Ave., Washington, D. C.
Puritan Machine Co., 422 Lafayette Boulevard, Detroit.

ENGER.
American Motors Parts Co., 430 N. Capitol Ave., Indianapolis.
Erbes, L. E., Motor Car Co., 2654 W. University Ave., St. Paul.
Wichita Auto Wrecking Co., 807 W. Douglas Ave., Wichita.

EVERETT.
Auto Gear Co., 1404 Hennepin Ave., Minneapolis.
Auto Parts Co., 4116-18 Olive St., St. Louis, Mo.
Dayton Auto Parts Co., 1777 Broadway, New York.
Gorey & Co., Jos. C., 354 W. 50th St., New York.
Puritan Machine Co., 422 Lafayette Boulevard, Detroit.
Standard Motor Parts Co., New Castle, Ind.

EWING.
Gorey & Co., Jos. C., 354 W. 50th St., New York.
Puritan Machine Co., 422 Lafayette Boulevard, Detroit.

F. A. L.
Auto Salvage Co., 1701-03 Main St., Kansas City.
Auto Salvage & Exchange Co., 1317 Locust St., Des Moines.
Puritan Machine Co., 422 Lafayette Boulevard, Detroit.

FALCAR.
Wichita Auto Wrecking Co., 807 W. Douglas Ave., Wichita.

FARMACK.
Auto Gear & Parts Co., 291-93 Marietta St., Atlanta.

FLANDERS.
Auto Parts Co., 4116-18 Olive St.. St. Louis, Mo.
Bone Yard, The, Washington, Iowa.
Dayton Auto Parts Co., 1777 Broadway, New York.
Levine Motor Co., 220 Diamond St., Philadelphia.
Puritan Machine Co., 422 Lafayette Boulevard, Detroit.
Standard Motor Parts Co., New Castle, Ind.
Studebaker Corp. of America,. Piquette Ave. and Brush St., Detroit.

FIRESTONE COLUMBUS.
Columbus Buggy Parts Co., Dublin Ave., Columbus.

FLANDERS ELECTRIC.
Levene Motor Co., 2200-18 Diamond St., Philadelphia.

FULLER.
Jackson Automobile Co., 1203 E. Main St., Jackson, Mich.
Wichita Auto Wrecking Co., 807 W. Douglas Ave., Wichita.

GAETH.
Gaeth Motor Car Co., 2103 Lorain Ave., Cleveland.

GARFORD.
Auto Parts Co., 4116-18 Olive St., St. Louis. Mo.
Elyria Belting & Machinery Co.. Elyria, O.
Puritan Machine Co., 422 Lafayette Boulevard, Detroit.

G-J-G.
Grossman Auto Parts Co., White Plains, N. Y.

GLEASON.
Auto Salvage Co., 1701-03 Main St., Kansas City.
Bauer Machine Works Co., 109 W. 18th St., Kansas City.

GRABOWSKY.
Dayton Auto Parts Co., 1777 Broadway, New York.
Gorey & Co., Jos. C., 354 W. 50th St., New York.
Puritan Machine Co., 422 Lafayette Boulevard, Detroit.

GRAMM.
Auto Salvage Co., 1701-03 Main St., Kansas City.
Puritan Machine Co., 422 Lafayette Boulevard, Detroit.

GRAMM-LOGAN.
Garford Motor Truck Co., Wapaka Road, Lima, O.

GREAT EAGLE.
Auto Salvage Co., 1701-03 Main St., Kansas City.

GREAT SMITH.
Auto Salvage Co., 1701-03 Main St.. Kansas City.

GREAT WESTERN.
Auto Salvage & Exchange Co., 1317-19 Locust St., Des Moines.
Great Western Automobile Co., Kalamazoo, Mich.
Puritan Machine Co., 422 Lafayette Boulevard, Detroit.

GROUT.
Red Arrow Auto Co., E. River St., Orange, Mass.

HATFIELD.
Auto Gear & Parts Co., 291-93 Marietta St., Atlanta.

HAVERS.
Auto Salvage & Exchange Co., 1317-19 Locust St., Des Moines.
Dayton Auto Parts Co., 1777 Broadway, New Ysrk.
Gorey & Co., Jos. C., 354 W. 50th St., New York.
Puritan Machine Co., 422 Lafayette Boulevard, Detroit.

HAZARD.
Puritan Machine Co., 422 Lafayette Boulevard, Detroit.

HENDERSON.
Auto Salvage Co., 1701-03 Main St., Kansas City.
Buda Co., Harvey, Ill.
Gorey & Co., Jos. C., 354 W. 50th St., New York.
Henderson Motor Car Co., Detroit.
Puritan Machine Co., 422 Lafayette Boulevard, Detroit.
Smith Corp., A. O., Milwaukee.

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The Problem of Car Production

By W. O. Rutherford, Vice President, the B. F. Goodrich Rubber Co.

IT HAS always seemed to me that there is a good deal of sound philosophy in Benjamin Franklin's statement that we should beware of croakers. This advice is as sound today as it was 100 years ago. All industry has been confronted with menacing conditions during the months and years just past, but I am optimistic enough to believe that every major development in our international growth, in our civic reforms and in our economic readjustments will lead us to bigger and better things for the future. Every one of us should be an optimist, there is no room for pessimism.

By referring to one of my charts I notice that in 1905 there were 150,000 automobiles in the country; 15 years later we have passed the 7,000,000 mark. Now I hear much about the "saturation point" and that other indefinite period when we shall have "diminishing returns." Automobiles come in the "consumption" class of commodities; i. e., they are used, worn out—and replaced as an essential part of life just as clothing is. I forecast that we shall be able to absorb not only the present automobile production, but we shall even sustain the greater growth which ambitious manufacturers are meditating.

Hence it is a problem of production and every citizen, from the management to the worker at the bench, should do his share toward keeping an uninterrupted flow of raw materials and finished goods going through the mills, warehouses and stores of this country and every man has a right to share in the fruits thereof. In no other line of industry are the relations between capital and labor on a friendlier or sounder footing than in the automotive field, hence there should be no cause for apprehension.

So far as passenger vehicles are concerned we are now at the crest of a buying market. Production does not equal demand and personally I expect this condition to exist for some time to come. I recall being told at one of the New York shows way back in 1907 that the then annual production of 60,000 cars marked the peak point in automobile manufacture and that the number of cars to be made annually would lessen rather than increase. Just as that prophet of gloom was suffering from brain storm so will I also classify those who today are refusing to advance with the times. The proposed car production for 1920 is 3,000,000 cars. An analysis of the market, at home and abroad, shows an ability to absorb even greater production, hence the possibility of a shortage of cars is imminent.

Rural Districts Disappearing.

The average reader may say, "Well, this growth of the automobile industry is all very nice, but wherein does it affect me?" Anything relating to the third largest industry in the country affects everyone. Thus within the past 10 years our cities have undergone a wonderful transformation. A decade ago Chicago boasted that it was 40 miles from one side of the city to the other. We marveled. But today cities having a population of only 2000 or 3000 spread themselves over as large an area. In some of our states the country is no longer rural, it is interurban. Think what this means for health and culture; again think what it means for real estate values.

(A certain authority estimates that for every million dollar's worth of automobiles produced there is produced another million dollar's worth of property values). Now consider how important it is that we should have a net work of highways in every community for freight and passenger traffic. Someone has said that highways are the measure of civilization. I believe this implicitly. So in the final summary my conclusion is that

W. O. Rutherford, Vice President, B. F. Goodrich Rubber Co.

the number of cars produced during the years to come does not rest with a group of manufacturers in the central west, but lies rather in the hands of the general public. Authorize the building of suitable highways and the manufacturers will motorize them, greatly to the advantage of the community and the individual.

SAN FRANCISCO NATIONAL AIR CRAFT SHOW.

The first national aeronautic exposition to be held on the Pacific coast will take place at the Exposition Auditorium in San Francisco, April 21-28. This will be one of the three big national expositions of air craft to be held in America this season, and this San Francisco showing will include the displays made earlier in Chicago and New York and will be supplemented by new designs which could not be assembled in season for exhibition at the earlier shows.

The San Francisco exposition has the sanction of the Manufacturers' Aircraft association.

The town of Islesboro, Me., has voted against the repeal of a law prohibiting the use of motor cars within its limits.

ANNUAL MEETING, FULLER MANUFACTURING CO.

The Fuller & Sons Manufacturing Co., Kalamazoo, Mich., maker of transmissions, controls and multiple-disc clutches for motor trucks, at its recent annual meeting re-elected the old board of five directors. The following officers were elected:

President, Frank D. Fuller; vice president and chief engineer, L. C. Fuller; secretary and sales manager, W. P. Fuller; treasurer, W. E. Upjohn.

Actual shipments for 1919 were reported to be 82 per cent. in excess of 1918, totaling almost $2,500,000. Shipments for January were far above the average for 1919 and the volume of business booked will tax the facilities of the company to the utmost. Another four-story reinforced concrete building, 60 by 100 feet, has been contracted for, which will replace the old factory. A steel warehouse, 30 by 100 feet, is also to be erected to replace the temporary wooden one, and a gray iron foundry is being put in which is expected to begin operations by March 1.

The company has purchased 10 acres of land north of its present plant to provide room for future extensions, which is bounded by the Grand Rapids & Indiana railway on the west side and an extension of the Grand Trunk on the east. It is planned to erect a large modern office building on this land and probably add another large unit to the main factory early in 1921.

NO CHANGE IN DODGE POLICY.

Definite assurance that there will be no change in the policies of Dodge Brothers, maker of the Dodge car at Detroit, as a result of the recent death of its president, John F. Dodge, has been given in the form of a letter addressed to Dodge dealers by Horace E. Dodge, who is now the head of the company. This announcement states in part:

"The business will be conducted in the future exactly as it has been in the past—the same principles of honor, honesty and integrity that dominated his life will continue to dominate the business of Dodge Brothers. There will be no change and you can safely make your plans for the future in reliance upon the same whole-hearted support of Dodge Brothers that has been given to you in the past."

GILLIAM CO. ADDS TWO DIRECTORS.

The Gilliam Manufacturing Co., Canton, O., maker of Gilliam bearings, has voted to increase its board of directors from seven to nine members. It is made up as follows: President-treasurer, B. T. Steiner; vice president, P. K. Davis; vice president and assistant treasurer, W. H. Steiner; secretary, S. G. Zimmerman; general manager roller bearing division, George Lee Miller and M. S. Milbourne, H. B. White, W. L. Malotte and Clarence G. Herbruck.

The executive board consists of Messrs. B. T. and W. H. Steiner, Miller, Zimmerman and White.

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Business Builders

You sell goods that have quality. Please customers and bring them back to your store. Simple in their application.

Attractive lithographed cans with complete directions printed on back of each can.

Well advertised in leading Trade and Farm Papers.

Peerless Automobile Specialties

Make Old Cars Look Like New

Notice:—Dealers and Jobbers

You receive cooperation and are furnished with selling helps, such as Window Display Materials—Inslips—Catalogs, etc. The selling policy is right—therefore the goods will sell and repeat.

PEERLESS MOHAIR TOP DRESSING

Waterproofs and dresses mohair, canvas and duck tops with one application. Dries over night, leaving top soft and pliable. About one pint for runabout; quart for five-passenger car top.

PEERLESS CUSHION DRESSING.

Without danger of washing or rubbing off, it brightens and renews the finish on leather seats and cushions. Dries in about thirty minutes. About one pint for cushions of small car; one quart for large car.

PEERLESS BLACK JAPAN—Extra Fine.

A fine product for all around use on wood, metal and old painted or enamelled parts. Will cover solid with one coat and air dries with a fine black gloss finish.

PEERLESS GASKET SHELLAC.

A high grade product for gaskets, cork carburetor floats and such parts of an automobile. Put up in all size cans and 2-oz. bottles.

PEERLESS RIM PAINT.

Made for recoating automobile rims to keep them from rusting, which causes tires to stick, which is injurious to rubber. It is not affected by water.

About one pint for rims of a car.

PEERLESS TOUCH-UP BLACK.

Made to dry quickly for touching up all parts of automobiles, on wood and metal where paint has chipped off or where you desire to coat some special part to improve its looks and as a protection from dust.

PEERLESS LEATHER TOP DRESSING.

An oil dressing to renew the finish and keep leather, rubber and pantasote tops and curtains soft and pliable. About one quart for five-passenger car top.

PEERLESS LINING DYE.

A very strong dye that will make all water-stained, grease spotted and faded linings a dark uniform color and will not wash or rub off. Will not harden or stiffen the cloth.

About one quart for five-passenger car top.

PEERLESS FORD TOP DRESSING.

Made to dress Ford Top Material that has become dull and make the top look like new. Will dry over night and wear indefinitely.

One pint for a runabout; one quart for a touring car.

PEERLESS TIRE PAINT.

A waterproof coating for tires containing nothing injurious to rubber and keeps tires looking bright and new.

One pint will cover five regular casings.

PEERLESS FENDER JAPAN—Jet Black.

An air drying jet black enamel for finishing fenders of an automobile. Will cover solid with one coat over new metal or old enamelled fenders.

PEERLESS COLOR FINISHINGS

Enables an owner to paint the body, wheels and chassis of his car his favorite color. The goods are high grade solid covering colors, made with a finishing varnish so that it is not necessary to finish over them.

The continued use by over 8000 leading Automobile Painters endorses the Quality.

Made only by

THE COLUMBUS VARNISH COMPANY

COLUMBUS, OHIO **U. S. A.**

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Dayton Auto Parts Co., 1777 Broadway, New York.
Pathfinder Co., The., Indianapolis, Ind.
Pathfinder Motor Co. of America, 1136 Division St., Philadelphia.

PENN.

Buda Co., Harvey, Ill.

PENNSYLVANIA.

Central Auto Supply Co., Philadelphia.
Dougherty, 1845 N. 19th St., Philadelphia.
Gorey & Co., Jos. C., 354 W. 50th St., New York.
Puritan Machine Co., 422 Lafayette Boulevard, Detroit.
Stehle, Remy W., 1523-25 Brandywine St., Philadelphia.

PENN-THIRTY.

Puritan Machine Co., 422 Lafayette Boulevard, Detroit.

PERU.

Puritan Machine Co., 422 Lafayette Boulevard, Detroit.

PETREL.

Filer & Stowell, Milwaukee.

POPE-HARTFORD.

Auto Salvage Co., 1701-03 Main St., Kansas City.
Boulevard Motor Co., Cambridge, Mass.
Hartford Motor Car Co., 410 Main St., Hartford, Conn.
Puritan Machine Co, 422 Lafayette Boulevard, Detroit.
Rosenfield, J., 521 Sixth St. (S. Boston), Boston.
Walker & Barkman Mfg. Co., Hartford.

POPE-TOLEDO.

Auto Salvage Parts Co., 1436 Wabash Ave., Chicago.
Connecticut Auto Parts Co., 583 Franklin Ave., Hartford, Conn.

POPE-TRIBUNE.

Auto Salvage & Exchange Co., 1317-19 Locust St., Des Moines.
Hartford Motor Car Co., 410 Main St., Hartford, Conn.
Walker & Barkman Mfg. Co., Hartford, Conn.

POSS.

Auto Parts Co., 1777 Broadway, New York.

PULLMAN.

Auto Gear Co., 1404 Hennepin Ave., Minneapolis.
Gorey & Co., Jos. C., 354 W. 54th St., New York.
Levene Motor Co., 2200-18 Diamond St., Philadelphia.
Pullman Motor Car Co., York, Pa.
Puritan Machine Co., 422 Lafayette Boulevard, Detroit.

QUEEN.

Auto Parts Co., 1416-18 Olive St., St. Louis.
Auto Salvage & Exchange Co., 1317-19 Locust St., Des Moines.
Gorey & Co., Jos. C., 354 W. 50th St., New York.
Johns Auto Machine Works, W. H., 908 W. Pico St., Los Angeles.
Philadelphia Machine Works, 69-71 Laurel St., Philadelphia.
Puritan Machine Co., 422 Lafayette Boulevard, Detroit.

RAINIER.

Garford Motor Truck Co., Wapaka Road, Lima, O.
Gramm Motor Truck Co., Lima, O.
Puritan Machine Co., 422 Lafayette Boulevard, Detroit.

RAMBLER.

Auto Salvage & Exchange Co., 1317-19 Locust St., Des Moines.
Nash Motors Co., Kenosha, Wis.
Wichita Auto Wrecking Co., 807 W. Douglas Ave., Wichita.

RANDOLPH.

DeKalb Wagon Co., DeKalb, Ill.
Puritan Machine Co., 422 Lafayette Boulevard, Detroit.

RAYFIELD.

Auto Parts Co., 4116-18 Olive St., St. Louis.

READ.

American Motors Parts Co., 430 N. Capitol Ave., Indianapolis.

REGAL.

Auto Salvage & Exchange Co., 1317-19 Locust St., Des Moines.
Bone Yard, The, Washington, Iowa.
Levene Motor Co., 2200-18 Diamond St., Philadelphia.

RELIABLE-DAYTON.

Puritan Machine Co., 422 Lafayette Boulevard, Detroit.

REPUBLIC.

Republic Motor Car Co., Youngstown, O.

RIDER-LEWIS.

American Motors Parts Co., 430 N. Capitol Ave., Indianapolis.
Auto Parts Mfg. Co., Detroit.
Longaker Co., V. A., 448-50 N. Capitol Ave., Indianapolis.
Wichita Auto Wrecking Co., 807 W. Douglas Ave., Wichita.

ROSS.

Dayton Auto Parts Co., 1777 Broadway, New York.
Puritan Machine Co., 422 Lafayette Boulevard, Detroit.
Standard Motor Parts Co., Detroit, Mich.

ROYAL TOURIST.

Auto Parts Co., 4116-18 Olive St., St. Louis.

RUSH.

Diehl Motor Truck Works, 30th & Montgomery Aves., Philadelphia.
Levene Motor Co., 2200-18 Diamond St., Philadelphia.

SAMPSON.

Standard Motor Parts Co., New Castle, Ind.

SCHACHT.

Buda Co., Harvey, Ill.
Puritan Machine Co., 422 Lafayette Boulevard, Detroit.

SCRIPPS-BOOTH CYCLE CAR.

Gorey & Co., Jos. C., 354 W. 50th St., New York.
Puritan Machine Co., 422 Lafayette Boulevard, Detroit.

SELDEN.

Auto Gear & Parts Co., 291-93 Marietta St., Atlanta.
Puritan Machine Co., 422 Lafayette Boulevard, Detroit.
Shepard Auto Co., 106 Pennsylvania Ave., Brooklyn, N. Y.

SOUTHERN.

Puritan Machine Co., 422 Lafayette Boulevard, Detroit.

SPEEDWELL.

Auto Gear & Parts Co., 291-93 Marietta St., Atlanta.
Green Engineering Co., 4th and St. Clair Sts., Dayton, O.
Kany, A. S., 251 Boyer St., Dayton, O.
Northway Auto Parts & Sales Co., 223 Kearney St., Cincinnati.
Puritan Machine Co., 422 Lafayette Boulevard, Detroit.

SPHINX.

Dayton Auto Parts Co., 1777 Broadway, New York.

SPRINGFIELD.

Haas Electric & Mfg. Co., 305-07 E. Monroe St., Springfield, Ill.

STAFFORD.

Auto Salvage Co., 1701-03 Main St., Kansas City.

STANDARD.

St. Louis Car Co., 5200 N. Second St., St. Louis.

STANDARD SIX.

St. Louis Car Co., 5000 N. Broadway, St. Louis.

STAR.

Mier Carriage & Buggy Co., Ligonier, Ind.

STAVER.

Dayton Auto Parts Co., 1777 Broadway, New York.

STERLING.

Puritan Machine Co., 422 Lafayette Boulevard, Detroit.

STEVENS-DURYEA.

Boulevard Motor Co., 276 River St., Cambridge, Mass.
Colwell, F. C., 807-9 Race St., Philadelphia.
Frank Co., Paul, 2349 Michigan Ave., Chicago.
Walk Hill Garage, 726 Walk Hill St., Mattapan, Mass.

STODDARD-DAYTON.

Boulevard Motor Co., 276 River St., Cambridge, Mass.
Dayton Auto Parts Co., 1777 Broadway, New York.
Standard Motor Parts Co., New Castle, Ind.
Warshawsky & Co., 1915 S. State St., Chicago, Ill.

SUBURBAN.

Dayton Auto Parts Co., 1777 Broadway, New York.
Puritan Machine Co., 422 Lafayette Boulevard, Detroit.

SULTAN.

Auto Gear & Parts Co., 291-93 Marietta St., Atlanta.
Puritan Machine Co., 422 Lafayette Boulevard, Detroit.

THOMAS.

Gorey & Co., Jos. C., 354 W. 50th St., New York.
Jahns, W. H., 908-12 W. Pico St., Los Angeles.
Rosenfield, J., 521 Sixth St. (So. Boston), Boston.

THOMAS-DETROIT.

Jahns Auto Machine Works, W. H., 908-12 W. Pico St., Los Angeles.

TOLEDO.

Dayton Auto Parts Co., 1777 Broadway, New York.

TOURAINE.

Gorey & Co., Jos. C., 354 W. 50th St., New York.

TOURIST.

Burt Motor Car Co., W. J., Pico & Hope Sts., Los Angeles.

TRAVELER.

Single Center Buggy Co., Fifth & Locust Sts., Evansville, Ind.

TRUMBULL.

Levene Motor Co., 2200-18 Diamond St., Philadelphia.
Puritan Machine Co., 422 Lafayette Boulevard, Detroit.

VICTOR.

Auto Gear & Parts Co., 291-93 Marietta St., Atlanta.

VIRGINIAN.

Auto Salvage & Exchange Co., 1317-19 Locust St., Des Moines.

VULCAN.

Savage Arms Corp., Sharon, Pa.

WAGENHALL.

Puritan Machine Co., 422 Lafayette Boulevard, Detroit.

WAHL.

Puritan Machine Co., 422 Lafayette Boulevard, Detroit.

WARREN.

Davis, Carey A., 486 Louisiana Ave., Washington, D. C.
Dayton Auto Parts Co., 1777 Broadway, New York.
Gorey & Co., Jos. C., 354 W. 50th St., New York.
Puritan Machine Co., 422 Lafayette Boulevard, Detroit.

WASHINGTON.

Davis, Carey A., 486 Louisiana Ave., Washington, D. C.

WAVERLY ELECTRIC.

Longaker Co., V. A., 448-50 N. Capitol Ave., Indianapolis.

WAYNE.

Auto Salvage Co., 1701-03 Main St., Kansas City.
Puritan Machine Co., 422 Lafayette Boulevard, Detroit.

WELCH-DETROIT.

Auto Salvage & Exchange, 1317-19 Locust St., Des Moines.
Puritan Machine Co., 422 Lafayette Boulevard, Detroit.

WELCH-PONTIAC.

Puritan Machine Co., 422 Lafayette Boulevard, Detroit.

WHITING.

Auto Gear & Parts Co., 291-93 Marietta St., Atlanta, Ga.
Chevrolet Motor Co., 1764 Broadway, New York.
Chevrolet Motor Co. of N. Y., Tarrytown, N. Y.
Puritan Machine Co., 422 Lafayette Boulevard, Detroit.

WOODWORTH.

Puritan Machine Co., 422 Lafayette Boulevard, Detroit, Mich.

YALE.

Brown-Lipe Gear Co., Syracuse, N. Y.

YALE EIGHT.

Puritan Machine Co., 422 Lafayette Boulevard, Detroit.

ZIMMERMAN.

Auto Gear Co., 844 Eighth Ave., New York, N. Y.
Auto Gear & Parts Co., 291-93 Marietta St., Atlanta.
Auto Salvage & Exchange, 1317-19 Locust St., Des Moines.
Council Bluffs Auto Parts Co., Council Bluffs, Ia.

ZIP.

Bauer Machine Works, Kansas City, Mo.
Wolf Auto Parts & Tire Co., 619 N. Illinois St., Indianapolis, Ind.

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FISK
TIRES

THE dealer who wants to make money and to *keep on* making it will weigh each of these eight factors carefully before choosing a tire line—

The ability to deal *direct* with the manufacturer; the *quality* of the tires; the *appearance* of the tires; the *completeness* of the line; the *attitude of the public* toward the product; the manufacturer's advertising; the manufacturer's *distribution* facilities; and, most of all, the attitude of the manufacturer toward the dealer.

Actual investigation along these lines will lead to the choice of Fisk.

The Fisk ideal is: "To be the best concern in the world to work for, and the squarest concern in existence to do business with."

Next Time—BUY FISK

Time to Re-tire?
(Buy Fisk)

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HENRY.
Gorey & Co., Jos. C., 354 W. 50 St., New York.
Puritan Machine Co., 422 Lafayette Boulevard, Detroit.

HERFF-BROOKS.
Auto Salvage Co., 1701-03 Main St., Kansas City.

HERESHOFF.
American Motors Parts Co., 430 N. Capitol Ave., Indianapolis.
Auto Parts Co., 4116-18 Olive St., St. Louis.
Gorey & Co., Jos. C., 354 W. 50th St., New York.
Puritan Machine Co., 422 Lafayette Boulevard, Detroit.

HEWITT.
International Motor Co., 64th St. & West End Ave., New York.

HOUPT ROCKWELL.
New Departure Mfg. Co., Bristol, Conn.

HUDSON FRANKLIN.
Boston Auto Parts Co., 1221 Dorchester Ave., Boston.

IMPERIAL.
Auto Gear Co., 1404 Hennepin Ave., Minneapolis.
Auto Gear & Parts Co., 291-93 Marietta St., Atlanta.
Erbes, L. C., 2654 W. University Ave., St. Paul, Minn.
Imperial Auto Parts Co., Detroit.
Puritan Machine Co., 422 Lafayette Boulevard, Detroit.
Standard Motor Parts Co., Detroit.

INDIANA.
Dayton Auto Parts Co., 1777 Broadway, New York.

JACKSON.
Auto Salvage Co., 1701-03 Main St., Kansas City.
Jackson Automobile Co., Jackson, Mich.

JEFFERY.
Auto Parts Co., 4116-18 Olive St., St. Louis.
Nash Motors Co., Kenosha, Wis.

JENKINS.
Dayton Auto Parts Co., 1777 Broadway, New York.

KEETON.
Car-Nation Motor Car Co., Detroit.
Puritan Machine Co., 422 Lafayette Boulevard, Detroit.
Standard Motor Parts Co., Detroit.

KERMATH.
Puritan Machine Co., 422 Lafayette Boulevard, Detroit.

KERMET.
Keith Bros., Elkhart, Ind.
Knox Motor Co., 53 Wilbraham Rd., Springfield, Mass.
Puritan Machine Co., 422 Lafayette Boulevard, Detroit.

KNOX.
Alco Service Co., 158-62 N. 22nd St., Philadelphia.
Boulevard Motor Co., 276 River St., Cambridge, Mass.

KREBS.
Dayton Auto Parts Co., 1777 Broadway, New York.

KRIT.
Auto Parts Co., 4116-18 Olive St., St. Louis.
Auto Salvage Co., 1701-03 Main St., Kansas City.
Connecticut Auto Parts Co., 583 Franklin Ave., Hartford, Conn.
Krit Motor Car Co., Detroit, Mich.
Motor Corporation, rear 1309 Race St., Philadelphia.
Puritan Machine Co., 412 Lafayette Boulevard, Detroit.
Schober, G. M., 3339 Market St., Philadelphia.
Standard Motor Parts Co., Detroit.

LAMBERT.
Lambert Auto Service Co., 430 N. Capital Ave., Indianapolis, Ind.
Wichita Auto Wrecking Co., 807 W. Douglas Ave., Wichita.

LANSDEN-ELECTRIC.
Kelland Motor Car Co., 58 Elm St., Newark, N. J.

LENOX.
Puritan Machine Co., 422 Lafayette Boulevard, Detroit.

LEWIS.
Longaker Co., V. A., 448 N. Capitol Ave., Indianapolis.
Puritan Machine Co., 422 Lafayette Boulevard, Detroit.

LION.
Gorey & Co., Jos. C., 354 W. 50th St., New York.
Levene Motor Co., 2200-18 Diamond St., Philadelphia.
Lion Motor Parts Co., Philadelphia.
Midland Motor Co., 2029 Michigan Ave., Chicago.
Puritan Machine Co., 422 Lafayette Boulevard, Detroit.

LITTLE.
Auto Gear Co., 1404 Hennepin Ave., Minneapolis.
Chevrolet Motor Co., 1764 Broadway, New York.
Puritan Machine Co., 422 Lafayette Boulevard, Detroit.

LOGAN.
Gramm Motor Truck Co., Lima, O.

LONGEST.
Longest Bros. Co., 725-29 S 3rd St., Louisville, Ky.

LOZIER.
Gorey & Co., Jos. C., 354 W. 50th St., New York.
Lozier Motor Car Co., Fort and Sixth Sts., Detroit, Mich.
Puritan Machine Co., 422 Lafayette Boulevard, Detroit.

MCINTYRE.
Puritan Machine Co., 422 Lafayette Boulevard, Detroit.

MARATHON.
Marathon Service Co., 14th & Clinton Sts., Nashville, Tenn.
Puritan Machine Co., 422 Lafayette Boulevard, Detroit.
Wichita Auto Wrecking Co., 807 W. Douglas Ave., Wichita.

MARION.
American Motors Parts Co., 430 N. Capitol Ave., Indianapolis.
Automobile Mechanics Corp., 159-61 W. 24th St., New York.
Auto Parts Co., 4116-18 Olive St., St. Louis.
Connecticut Auto Parts Co., 583 Franklin Ave., Hartford, Conn.
Dayton Auto Parts Co., 1777 Broadway, New York.
Elyria Belting & Machinery Co., Elyria, O.
Gorey & Co., Jos. C., 354 W. 50th St., New York.
Longaker Co., V. A., 448-50 N. Capitol Ave., Indianapolis.
Marion Motor Co., 2450 Michigan Ave., Chicago.
Puritan Machine Co., 422 Lafayette Boulevard, Detroit.

MARION-HANDLEY.
Dayton Auto Parts Co., 1777 Broadway, New York.

MARQUETTE.
Auto Salvage Co., 1701-03 Main St., Kansas City.
Puritan Machine Co., 422 Lafayette Boulevard, Detroit.

MASON.
Auto Salvage & Exchange Co., 1317-19 Locust St., Des Moines.
Erbes, L. C., 2654 W. University Ave., St. Paul, Minn.
Longaker Co., V. A., 448-50 N. Capitol Ave., Indianapolis.
Mason Motor Car Co., Detroit, Mich.
Puritan Machine Co., 422 Lafayette Boulevard, Detroit.
Standard Motor Parts Co., Detroit.

MATHESON.
Boulevard Motor Co., 276 River St., Cambridge, Mass.
Matheson Co., Frank F., 694 Wyoming Ave., Wilkes-Barre, Pa.
Puritan Machine Co., 422 Lafayette Boulevard, Detroit.

MAYTAG.
Metz Wichita Auto Wrecking Co., 1807 W. Douglas Ave., Wichita.
Puritan Machine Co., 422 Lafayette Boulevard, Detroit.

MERCEDES.
Connecticut Auto Parts Co., 583 Franklin Ave., Hartford, Conn.

MICHIGAN.
Buda Co., Harvey, Ill.
Burt Motor Car Co., W. J., Pico & Hope Sts., Los Angeles.
Dauch Mfg. Co., 303 W. Water St., Sandusky, O.
Davis, Carey A., 486 Louisiana Ave., Washington, D. C.
Gorey & Co., Jos. C., 354 W. 50th St., New York.
Michigan Motor Car Parts Co., Detroit.
Philadelphia Machine Works, 61-71 Laurel St., Philadelphia.
Puritan Machine Co., 422 Lafayette Boulevard, Detroit.

MIDLAND.
Auto Gear & Parts Co., 291-93 Marietta St., Atlanta.
Levene Motor Co., 2200-18 Diamond St., Philadelphia.
Puritan Machine Co., 422 Lafayette Boulevard, Detroit.

MILLER.
Puritan Machine Co., 422 Lafayette Boulevard, Detroit.

MILWAUKEE.
Erbes, L. C., 2654 W. University Ave., St. Paul, Minn.
Smith, A. O., Corp., Milwaukee.

MOGUL.
Auto Salvage Co., 1701-03 Main St., Kansas City.

MOLINE.
Auto Parts Co., 4116-18 Olive St., St. Louis.

MONARCH.
Puritan Machine Co., 422 Lafayette Boulevard, Detroit.
Wichita Auto Wrecking Co., 807 W. Douglas Ave., Wichita.

MORA.
Philadelphia Machine Works, 61-71 Laurel St., Philadelphia.
Puritan Machine Co., 422 Lafayette Boulevard, Detroit.

MORGAN.
Steele, W. M., 98-100 Beacon St., Worcester, Mass.

MOYER.
Auto Salvage & Exchange Co., 1317-19 Locust St., Des Moines.

NANCE.
Gorey & Co., Jos. C., 354 W. 50th St., New York.

NIAGARA.
Auto Gear & Parts Co., 291-93 Marietta St., Atlanta.

NORTHERN.
Puritan Machine Co., 422 Lafayette Boulevard, Detroit.

NORTHWESTERN.
Puritan Machine Co., 422 Lafayette Boulevard, Detroit.

NYBERG.
American Motors Parts Co., 430 N. Capitol Ave., Indianapolis.
Auto Salvage & Exchange Co., 1317-19 W. Locust St., Des Moines.
Longaker Co., V. A., 448-50 N. Capitol Ave., Indianapolis.
Puritan Machine Co., 422 Lafayette Boulevard, Detroit.

OHIO.
Northway Auto Parts & Sales Co., 223 Kearney St., Cincinnati.
Puritan Machine Co., 422 Lafayette Boulevard, Detroit.
Smith Corp., A. O., Milwaukee.

OMAHA.
Dayton Auto Parts Co., 1777 Broadway, New York.
Puritan Machine Co., 422 Lafayette Boulevard, Detroit.

OWEN.
Puritan Machine Co., 422 Lafayette Boulevard, Detroit.

PALMER-MOORE.
Dayton Auto Parts Co., 1777 Broadway, New York.

PALMER-SINGER.
Auto Parts Co., 4116-18 Olive St., St. Louis.
Auto Salvage & Exchange Co., 1317-19 Locust St., Des Moines.
Puritan Machine Co., 422 Lafayette Boulevard, Detroit.
Singer Motor Co., 102-04 West End Ave., New York.

PARRY.
Auto Parts Co., 4116-18 Olive St., St. Louis.
Puritan Machine Co., 422 Lafayette Boulevard, Detroit.

PARTIN.
Auto Parts Co., 4116-18 Olive St., St. Louis.

PATHFINDER.
American Motors Parts Co., 430 N. Capitol Ave., Indianapolis.

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Trade

Cochran Pistons

Mark

FORD
BUICK
DODGE
MAXWELL
CHEVROLET
CADILLAC
OAKLAND
STUDEBAKER
OLDSMOBILE
LIBERTY
PAIGE
PATERSON

CAST IRON

SCRIPPS-BOOTH
COLUMBIA
LEXINGTON
MOON
WILLYS 6
ROAMER
WESTCOTT
HUDSON
ESSEX
NASH
CASE
JORDAN

GROUND TO SIZE

SIZES

Standard Over-Sizes: .002½, .005, .010, .015 .020, .025, .031¼, .033, .035, .045, .047½, .050.

REBORE YOUR OLD BLOCKS----INCREASE YOUR EFFICIENCY

Cochran Pistons are evenly balanced and eliminate as nearly as possible the vibratory forces set up by the weight of reciprocating parts.

County Distributors desired as representatives in every state. Write for our proposition.

DETROIT METAL PRODUCTS COMPANY

DETROIT, MICH.

(When Writing to Advertisers, Please Mention the Accessory and Garage Journal.)

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BLUE RIBBON PRODUCTS

Are a Standard Line

Jobbers and Dealers stock the full Blue Ribbon line as they do all other tried, proven and constantly selling goods.

Blue Ribbon products are made by specialists who depend wholly on the quality and service giving satisfaction afforded by lines bearing their trade mark.

There can be no experimentation at the expense of the consumer, dealer or jobber. All Blue Ribbon Specialties must be as good as they are practical in every day use as it is possible to make them.

A nation wide trade, enormous expenditures devoted to development and promotion work as well as the maintenance and operation of the largest plant of the kind in America is too great a stake to gamble against quality.

Blue Ribbon Products today stand supreme. They are passed over the counters backed by an unqualified guarantee on the part of the trade that can leave no doubt as to their merits.

That is why Blue Ribbon Products are a standard line and will always continue to be so.

That is why all jobbers and dealers sell and list them in their catalogues.

Above all else that is why the consumer buys Blue Ribbon trade marked products. Blue Ribbon Products cost no more than others, yet represent the most profitable line that can be placed by the jobber or dealer.

If the **BLUE RIBBON** trade mark is to be seen on your shelves or counter you have a silent salesman in your store that is always working, always earning.

All Blue Ribbon Specialties are sold in quantities to meet any requirement.

The full line affords a complete line and it pays to specialize in known quality goods.

Blue Ribbon Specialties Include:

Blue Ribbon Cold Cream Hand Soap
Contains no pumice or sand.

Blue Ribbon Leak Proof Cement
A permanent radiator cement.

Blue Ribbon Nickel Polish
For nickel parts and trimmings.

Blue Ribbon Auto Body Gloss
For automobile or furniture.

Blue Ribbon Lightning Carbon Remover
Quick and positive in action.

Blue Ribbon Black Enamel
For lamps, hoods, radiators and metal parts

Blue Ribbon Auto Top and Seat Dressing
A waterproof dressing that restores tops and seats.

Blue Ribbon Hand-On Patch
A self-vulcanizing patch for shoes and tubes that never fails.

Blue Ribbon Cream Metal Polish
For any metal. An easy, quick working, satisfactory polish.

Blue Ribbon Oil Soap
A pure vegetable oil soap for any purpose. All quality and efficient.

This is the time to consider your winter and spring requirements

Jobbers and Dealers: Prices and discounts at request.

International Metal Polish Co.
INDIANAPOLIS, INDIANA.

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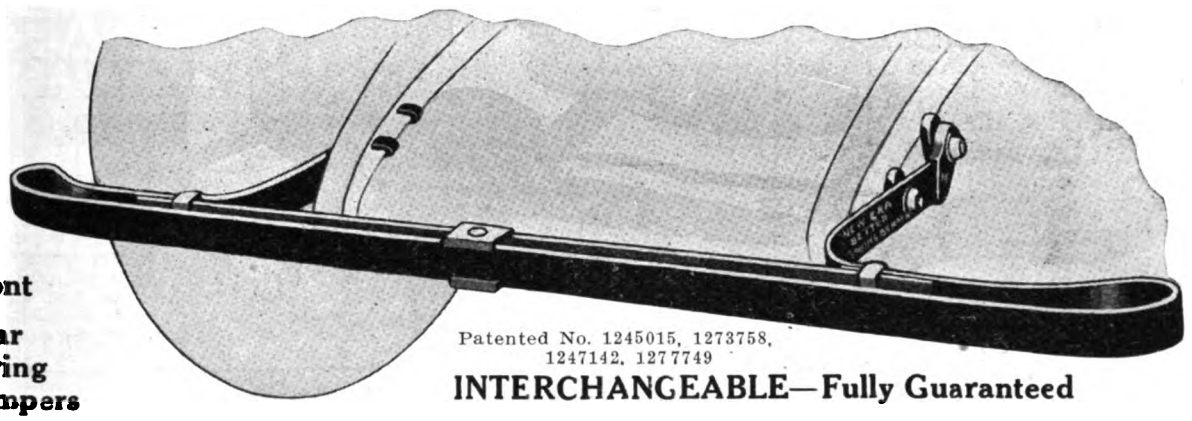
NEW ERA
"Better" Spring Bumpers
FOR ALL MAKES OF CARS



Front and Rear Spring Bumpers

Patented No. 1245015, 1273758, 1247142, 1277749

INTERCHANGEABLE—Fully Guaranteed

STRONGER — LIGHTER — NEATER

Unusual Resiliency

The New Era "Better" Spring Bumper is constructed of tempered spring steel bars, one inch apart, which are tied in center with three-inch plate, assuring an unusual strength and resiliency. A bumper is as strong as its weakest point, and there are no weak points in the New Era Bumper.

Absorbs Shocks

No matter from which angle the New Era "Better" Spring Bumper strikes, it absorbs and distributes the shock throughout its entire length and arms. It fully protects both occupants and car, and is the best automobile insurance obtainable.

No Dealers' Dead Stock

One big important feature is the free exchange of attaching arms for any more salable cars; so not a dollar's worth of dead bumper stock need be carried. A positive evolution and solution.

1920 Prices—Tax Absorbed

Standard Black	$11.55
Special Black	13.65
Ford—Front and Rear in Black	10.50
Rustproof Zinc Nickel, extra	2.10

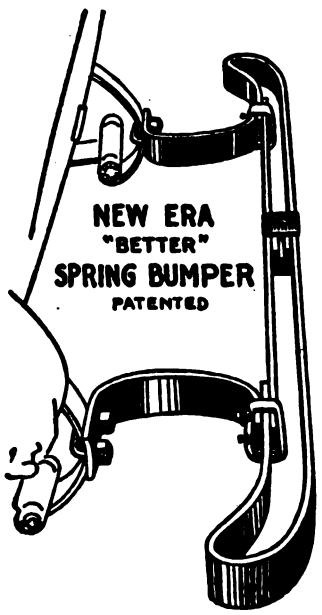
Ready and Profitable Dealer Sales

The public are sold on their knowledge of a spring bumper, it being the only practical and real shock absorber. There is an unusual opportunity for dealers to make liberal discount and quick stock turnover. No dead stock. Excellent factory co-operation. Get full details at once.

No Cutting or Drilling of Frames

Our Patented Universal Adjustable Hook on attachments are quickly attached to 95% of all makes of cars; on the fronts as well as on some rears. Hooks are attached to either top or bottom edge of frame, without interfering with splash pan.

Remarkable Resiliency



New Era Spring & Specialty Co.

1177 Hamilton Ave. **Grand Rapids, Mich.**

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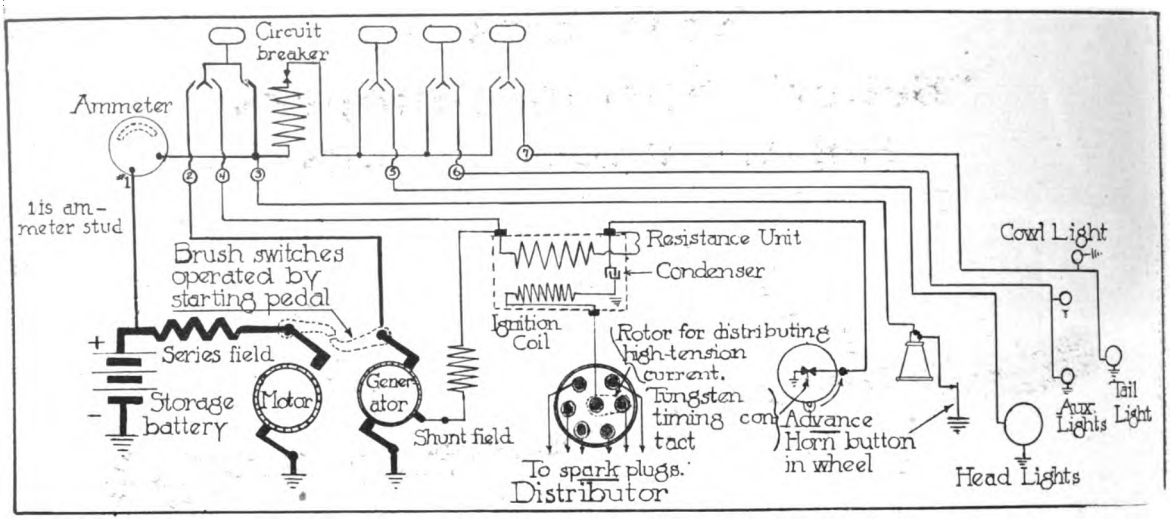
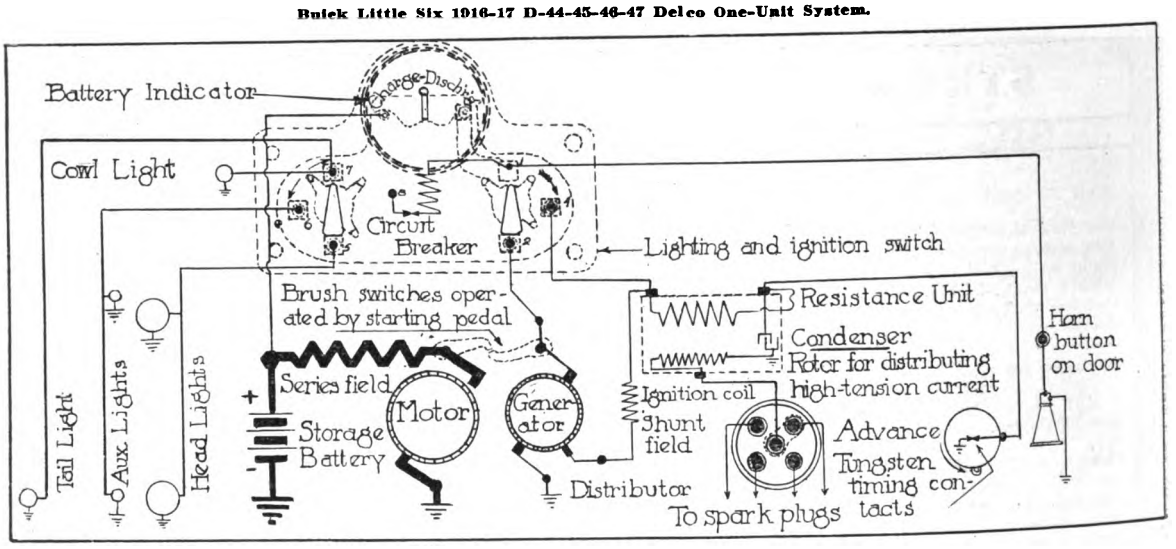
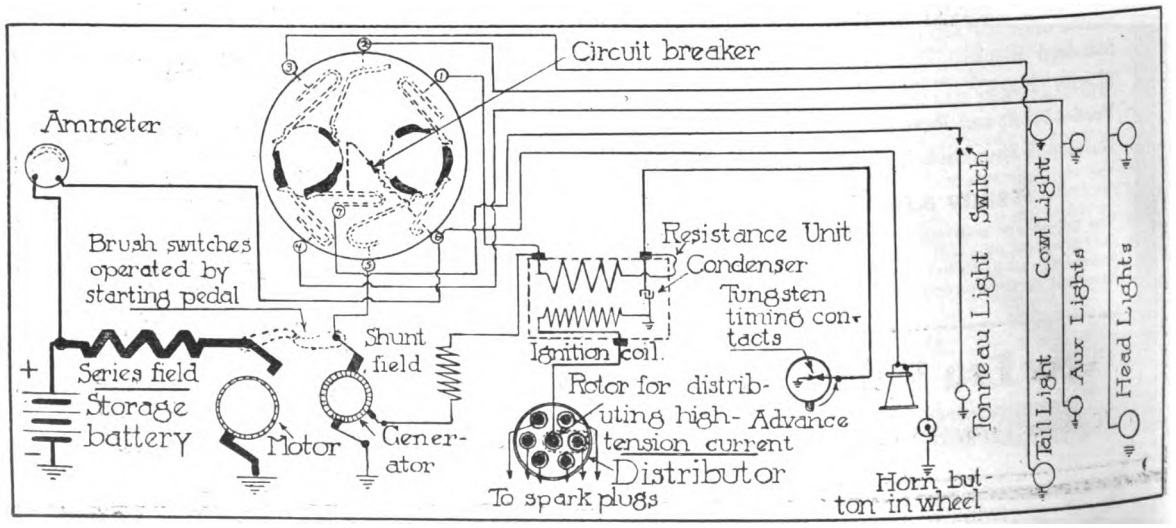
Monthly Wiring Diagram, No. 3



Buick Little Six 1916-17 D-44-45-46-47 Delco One-Unit System.



Buick Little Four 1918 E4-34-35 Delco One-Unit System.



Buick Six 1919-20 H-44-45-46-47-49-50 Delco One-Unit System.

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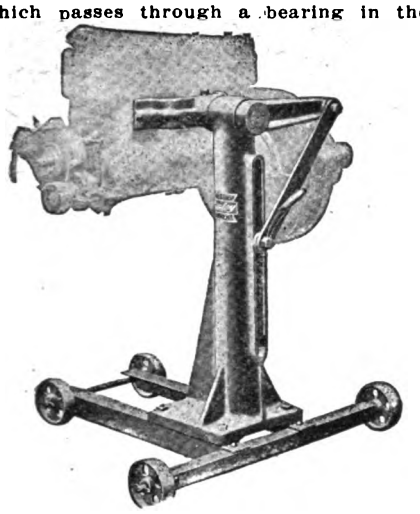
ACCESSORIES, EQUIPMENT AND TOOLS FOR THE GARAGE AND REPAIR SHOP

The New Manley Ford Engine Stand includes many new features not heretofore found in engine stands designed for the Ford engine, among them being the adjustable head, which not only takes the Ford engine as a unit, holding it securely by a single bolt fastening, freeing the water jackets from any strain, but is also easily adjustable, allowing the engine to be turned to any position desired. A heavy cast steel base, mounted on an angle iron frame, provided with small rolls, supports the head, at the same time providing an easy means for moving the stand from point to point in the service station. Adjustment of the head is made by an arm fastened to the center shaft, which passes through a bearing in the

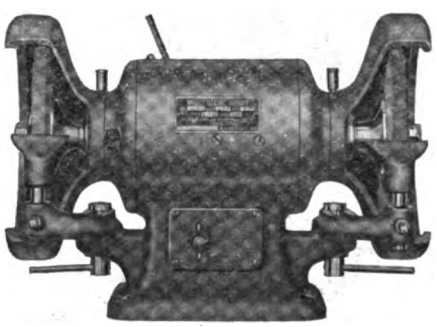


upright of the stand. At the end of this arm a flat steel brace is attached, fitting a bolt which travels in a slot cast in the side of the upright of the standard, and is fastened, after making the necessary adjustment, by a lever, having a treaded opening fitting the bolt.

It is stated that this device makes every part of the Ford engine easily accessible, as the engine is gripped in the center and turns over in a complete circle and may be instantly locked rigidly in any position.

Manufactured by the Manley Manufacturing Co., York, Pa. Price, No. 182 Portable Stand, $32; No. 181 Stationary Stand, $28.

Stow Bench Grinders Nos. 81 and 82 have the motors completely enclosed, with the starting and stopping devices located conveniently in the bases. The grinders may be placed in any convenient place about the service station where current is available. For a few dollars extra a floor stand can be added on which the equipment may be mounted, bringing the work at a standing height from the floor. They may be used as all around grinders for a variety of work, such as buffing, grinding, etc.; can be equipped with extended spindles for the buffers in place of one wheel if desired and may be provided



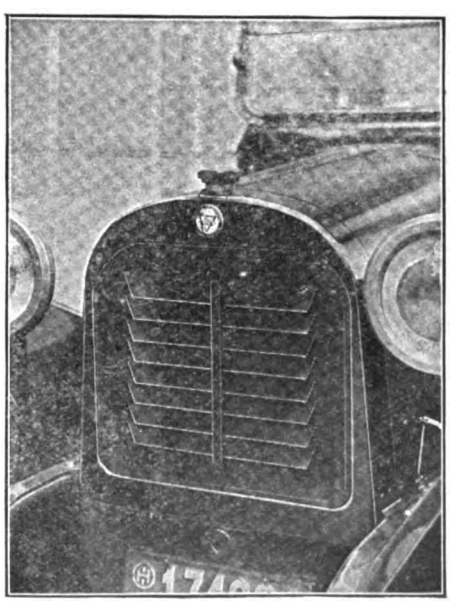
with flanges for clamping wheels to insure their running true, and with a water container of ample dimensions for cooling work while grinding. Hoods for the cutting members are the latest improvement added to these machines, which are provided with hinged doors on the outside.

The motors are wound for either 110 or 220-volt direct current and single two or three-phase alternating current, 60 cycle.

Manufactured by the Stow Manufacturing Co., Inc., Binghamton, N. Y. Prices on request.

The Doty Radiator Shutter is a recent invention that has all the ear-marks of a big success. The product is a new shutter for all makes of cars, is made of metal-bound fiber and is so constructed that it can be applied to any car in five minutes, it is stated.

The model for Ford cars is now being turned out in big production units. The company will immediately have several

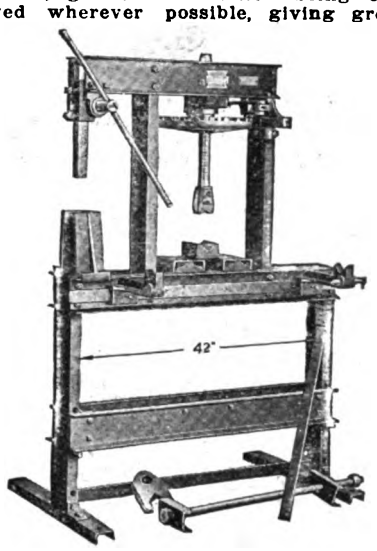


other models ready for the market, including the Dodge, Chevrolet, Oakland, 1920 Maxwell and new Overland Four cars.

A big feature in favor of the Doty shutter is its very simple construction and the fact that it is claimed to be absolutely free from rattles.

Manufactured by the Auto Radiator Shutter Co., Dayton, O. Price, retail, $8 each. Special proposition to jobbers and dealers.

The Manley 22-Ton 42-Inch Press is designed and developed especially for automobile repair work in service stations and garages. The frame is made throughout of steel, girder construction being employed wherever possible, giving great



strength. Besides the usual hand wheel, for holding the work in position, additional leverage is supplied by a hand lever and multiplied gearing, operating on the worm of the press and located in the top cross member. The result is a press having a high power ratchet leverage of 2200 to 5000 to one for heavy work. A high speed, high power sensitive leverage of 1000 to one for light work, especially adapted for straightening operations. The 42-inch opening is sufficiently large to easily accommodate a truck wheel with solid tire.

Manley presses may be purchased in larger sizes for heavier work if desired, having a leverage of 44 to one and exerting a pressure of from 3½ to five tons. Extra attachments that are included with the Manley press are two test centers for centering the work, which are indispensable where straightening is to be done, and two 60-degree centers, one fixed, the second adjustable. The Manley press is made throughout of the best of material, by men experienced in this class of machine work and knowing from long experience what the trade demands.

Manufactured by the Manley Manufacturing Co., York, Pa. Price, $30.

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Converse Cord Tires were designed by the manufacturer of Converse fabric tires to supply a tire that would stand up under the most trying road conditions and give unlimited service for the life of the tire. Fourteen months after the company conceived the idea of making a cord tire the first one was placed on the market, during which period a large amount of experimenting was done at the factory with the object of producing a tire that would do all the manufacturer desired. The result obtained is a tire constructed throughout of the best of material behind which is the maker's statement that it will make good any defect in workmanship or material regardless of mileage at any time

during the life of the tire.

The tire consists of eight layers of cords, impregnated with pure rubber, separated from each other by sections of pure rubber covered with a cushion stock, breaker strip and finally with a pure rubber cushion or tread absorbing the shocks of the road. The cord layers are placed at a 45-degree angle with relation to the bead or base of the tire. They are arranged in four groups placed at right angles to each other. Each group is two plies thick, the

individual cords of which do not cross each other, but run in the same direction. Where the four groups cross a heavy insulation of rubber is placed, so there is no contact.

It is stated that this construction eliminates the heating caused by the friction of the strands, as it obviates chafing.

Converse tires, it is claimed, have a balanced strength, due to their form of construction, which distributes the road strains over a great many strands instead of concentrating it on a few.

Manufactured by the Converse Rubber Shoe Co., Malden, Mass. Prices and literature on request.

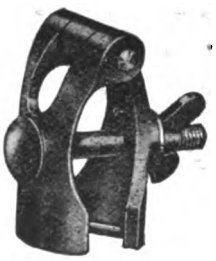
The Continental Radiator Stand was designed to overcome the difficulty experienced by repairers when soldering leaks in radiators and of spending considerable time in getting the radiator in the proper position for soldering.

The stand was designed to overcome this difficulty and turning in two different directions makes it possible to get any part to a level position. In placing the radiator in any desired position the outer frame revolves with the axis of rotation in one direction, while the inner frame revolves with its axis of rotation in the opposite direction and either frame can be firmly locked in position. As the stand is portable, it is not necessary to take the radiator from the stand when testing for leaks.

The clamps, which are furnished, are covered on the ends with rubber, so as not to injure the most highly finished radiator, and the supports are made of wood for the same reason. There are no obstructions whatever in the mechanic's way, and the radiator can be instantly turned to any desired position and firmly locked. The stand is constructed of structural steel and, although light, is amply strong enough to handle the heaviest truck radiator. The Continental radiator stand is 34 inches high and occupies a floor space of 24 by 26 inches.

Manufactured by the Continental Auto Parts Co., Columbus, Ind. Price, $25 f. o. b. Shipping weight, 150 pounds.

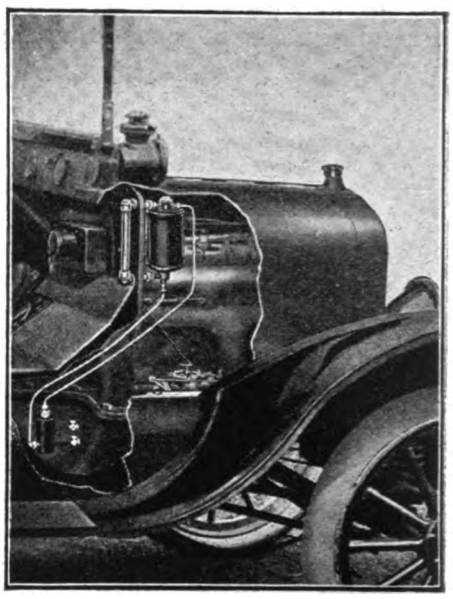
The Valve Spring Compressor is designed for the quick removal and insertion of the fastening key on Buick cage valves and is used for compressing the spring while the key is either removed or inserted. The device consists of a cast base that sets on the work bench, having



a concave seat into which the base of the cage fits, and a hinged inverted cup-shaped handle with an opening in the center through which the valve stem is passed when the handle compresses the spring, exposing the key for easy removal.

Manufactured by the Osborne & Stephenson Manufacturing Co., Plainville, Conn. Price, $2.

The Fracto Visible Lubricator for Ford Cars consists of an auxiliary tank holding a quart and a half of lubricating oil, located on the dash under the hood, connected to a gauge glass on the front, showing at all times the amount of lubricant in the tank. An oil regulator which contains no moving parts to get out of order is located at the rear end of the crankcase,

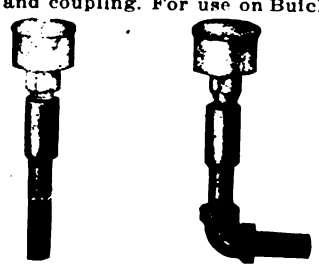


attached to the lower level petcock and connected to the auxiliary tank on the dash by two copper tubes.

The Fracto visible lubricator automatically feeds oil to the engine even at slowest speed and, it is stated, under all conditions. When oil gets below the correct level in the crankcase, an air vent is automatically opened, which allows oil to flow from the tank. When the correct level is reached the oil closes the vent, forming a vacuum in the tank. The level of the oil in the engine crankcase can easily be adjusted to suit the requirements of the engine, it is claimed. The auxiliary tank has a capacity sufficient for four days with one filling.

Manufactured by the Fracto Specialty Co., Inc., 161 Massachusetts Avenue, Boston, Mass. Price, $12.

Grease Cup Extension Pipes are designed to be used in inaccessible places about the car by being fitted to grease cups. They consist of a section of straight pipe and a coupling or two nipples, an elbow and coupling. For use on Buick cars,



there are two nipples and an L for the driving ring bearing between the battery and the transmission, while the straight nipple and coupling type was designed for the brake camshafts on the rear axle close to the axle flange.

Manufactured by the Osborne & Stephenson Manufacturing Co., Plainville, Conn. Prices, 50 and 75 cents each, respectively.

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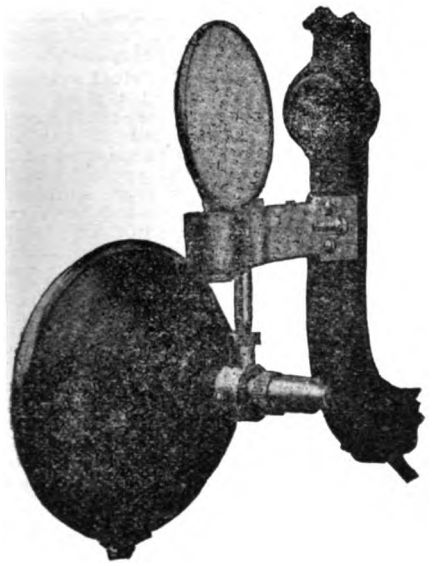
"Fox" Spotlight

"SUNLIGHT AT NIGHT"

THE LIGHT WITH THE ADJUSTABLE BALL BEARINGS



The Fox Spotlight is constructed entirely of brass, heavily nickel plated and easily fulfills the legal requirements in many states. The mirrors are first nickeled and then silver plated, resulting in a continuous light of great efficiency. The Fox switch is very simple in construction, located conveniently to the hand of the operator and is fully protected against moisture and guaranteed to be sure in action under any normal use.

The lens is convex and of the best double strength glass, the special process of manufacture, it is claimed, insuring a perfect fitting lens, both weather and dust proof.

The three-point suspension clamp is rigid, free from vibration and fits any car. The Fox mirror is a convex diminishing form, with nickel plated rim. The Fox spotlight can be purchased either with or without mirrors, as desired.

The trouble reel can be attached under the cowl of the car, has black enamel finish, carries 12 feet of protected cord and when attached to the spotlight makes a trouble light that is capable of lighting any part of the engine or car.

A special model is manufactured for enclosed cars having brackets for attaching to the windshield and a special dashboard switch, so that the light can be turned off or on from the inside of the car.

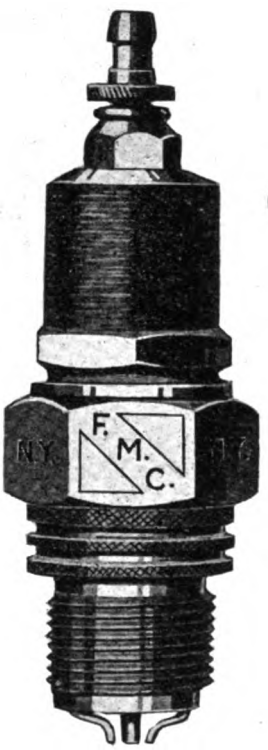
Manufactured by the Hardware Manufacturing Co., Seattle, Wash. Prices, model A with mirror for any car, $10; model B, without mirror, for any open car, $8.50; model C with mirror for any closed car, $10; model D, without mirror, for any enclosed car, $8.50.

The F. M. C. Mica Insulated Spark Plug is practically a hand made product, as each plug is assembled and set by hand, individually tested and inspected before leaving the factory.

Among the features claimed for this plug is that it is insulated with mica of the highest grade obtainable—ruby Brazilian—which insures thorough insulation under all conditions, making the plug practically indestructible, for mica will not break, chip or leak, it is stated.

The mica core insulation is made extra thick to insure durability. This mica core insulation covers the central electrode, which is conical in shape where it enters the body of the plug. The effect of this conical construction, it is claimed, is to make the plug leak proof, as compression in the cylinders tends to force the electrode upwards, making this part of the plug seat more tightly. The plug is in two parts and can easily be taken apart for cleaning with ordinary wrenches, or a wrench and vise. The construction of the plug is such as to make it practically soot proof, it is stated, as an unusually large chamber is provided in which considerable oil or carbon can accumulate without affecting the operation of the plug. The mica insulation at the top of the plug is composed of discs of mica fitting the core tightly compressed until mechanically they may be considered as a solid block of mica.

Knurls on the shell of the plug and a large radiating surface cause an even, rapid radiation of the heat, insuring cool operation and preventing preignition troubles. This plug is designed for all classes of trade where a quality plug is desired.

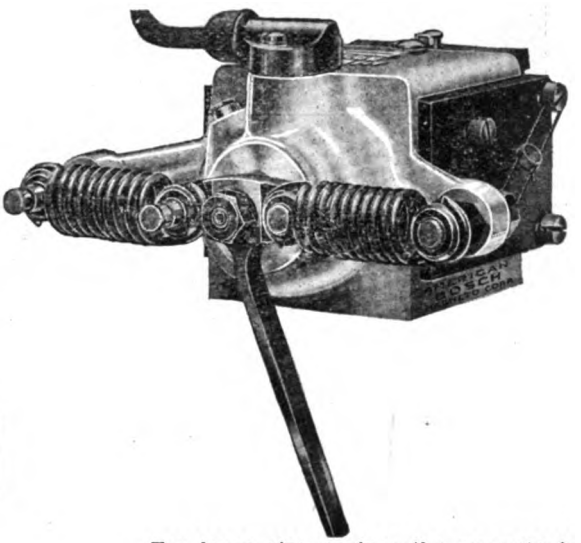


Manufactured by Ford Mica Co., Inc., 14 Christopher Street, New York, N. Y. Price $2 each.

AB-33 Ed. I American Bosch Magneto is a newly designed high-tension magneto for stationary engines using liquid fuel such as gasoline, kerosene, distillate, motor spirits, tops, etc., for fuel. Stationary engines require intense, thick sparks at the starting periods and the complete igniting of the various kinds of fuels used under comparatively high pressure. The type AB-33 Ed. I magneto is a complete ignition system in itself and requires no batteries, igniters or make-and-break apparatus to produce either the starting or running sparks. Its high-tension current is produced by transforming mechanical energy into electrical energy by rocking the armature, made up of many coils of wire, between the poles of a powerful magnet thus producing an inexhaustible high-tension electric current of great volume and penetrating power.

The construction of the AB-33 Ed. I magneto is typical of other Bosch products. The magneto frame is cast of aluminum and includes the driving end plate with arms for holding the studs of the trip lever springs. The pole shoes and drive shaft bearings are cast in the magneto frame. The rear end plate is of cast iron and acts not only as a bearing for the rear end of the armature, but also as a pole piece for the two magnets which are screwed both to the rear end plate and to the pole shoes of the magneto frame. The rear end plate carries the interrupter housing, inside of which is fastened the interrupter cam. The rear end plate also carries one oil cup with wick for lubricating the bearing.

The interrupter is of the standard Bosch type (anti-clockwise), the only difference being that the points are made of a special material (not platinum) and are marked on one face of the hex with the letter "F." No carbon brush is furnished with these interrupters because the circuit is completed through the carbon grounding brush provided in the top of the magneto frame. This magneto is made with plain bearings and because of this the complete armature is not interchangeable with other types.



For large size engines the magneto is equipped with a trip lever for starting. Smaller engines may have this trip lever supplied at an extra cost.

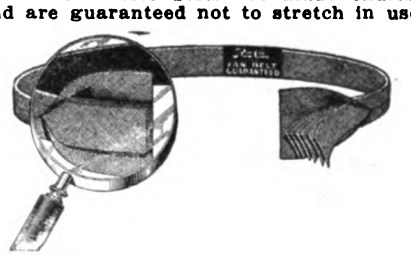
The magnets on this type of magneto are permanent flat magnets, which are screwed both to the rear end plate and to the pole shoes. The screws which hold the magnets to the pole shoes and rear end plate have holes through their heads for the wire seals.

The grounding brush consists of a brass holder in which is placed a carbon brush and spring. This brush is found at the rear end of the top face of the magneto frame just in front of the oil cup.

Manufactured by the American Bosch Magneto Corporation, Springfield, Mass. Prices on application.

Rie Nie Fabric Fan Belts are built up from several layers of fabric impregnated with rubber and wrapped in a strip of fabric of the same material that covers the strips, holding them together and providing an oval edge that is claimed not to fray when rubbing against the flange of the driven pulley.

Rie Nie fabric belts are made endless and are guaranteed not to stretch in use,



as the stretching qualities of the fabric have been removed during the manufacturing process. Belts are manufactured for practically all cars from 1911 to 1919 inclusive for the Fordson and Moline tractor and are listed by stock numbers.

Manufactured by the Durkee-Atwood Co., Minneapolis, Cleveland and Toronto, Can. Prices according to stock numbers on request.

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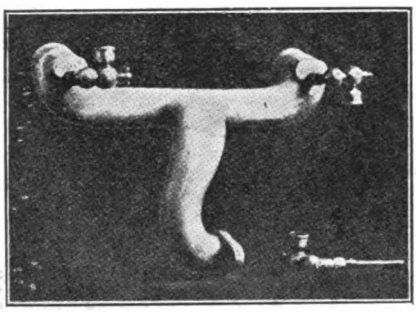
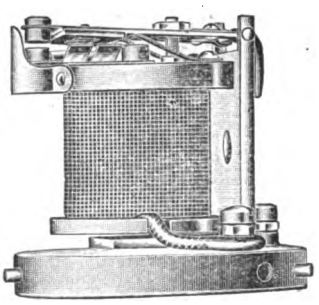
The King Priming Device for Ford Cars consists of two priming cups, threaded and inserted in ⅛-inch openings in the elbows of the intake manifold. A tube extends from the end of the petcock into the intake manifold, conducting the gasoline into the valve chamber of the engine, allowing the engine to be started more quickly than is ordinarily possible. The cups can be inverted after the engine has



been primed, shutting the valves and preventing the entrance of dust and dirt into the cups. The priming cocks are made of brass, either polished or nickel plated.

Manufactured by W. C. King, 911 Sargent Street, Litchfield, Ill. Prices on request.

Reverse Current Cut-Out for Automobile Lighting Plants is a device which is designed to automatically close the charg-



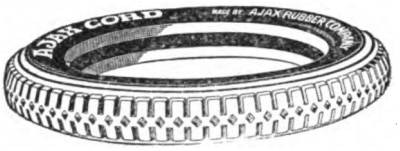
ing circuit, throwing the battery into the line, when the generator pressure has reached a specified voltage, generally one volt higher than the normal battery voltage; secondly, to automatically break the charging circuit, throwing the battery out of the line when the generator pressure has dropped to normal battery voltage, thus allowing a flow of current into the battery from the generator at such times as the generator voltage exceeds the bat-

tery voltage, and preventing at all times a flow of current from the battery through the generator.

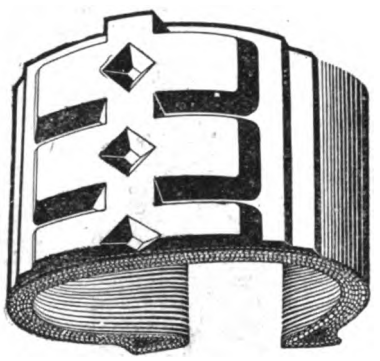
These instruments are furnished to work on voltages ranging between six and 32 and are made in one style known as type 2000, with a removable steel cover.

Manufactured by Briggs & Stratton Co., Milwaukee, Wis. Prices in quantity lots on application.

Ajax Cleated Tread Cord Tires are the result of many successful years of manufacturing and experimenting by the manufacturer in the making of fabric tires.



They embody great strength in the carcass, which is made of Sea Island cotton, covered with layer after layer of cotton cords, impregnated with rubber criss-crossed, to give strength, and are covered by a special tread having longitudinal

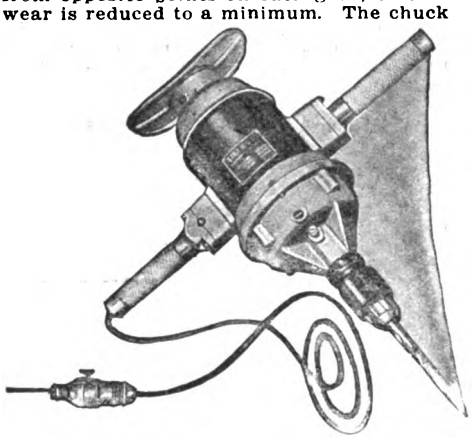


strips and cross cleats. This form of tread is peculiar to Ajax cord tires and is claimed to increase the traction, adding to its strength and increasing its wear-resisting qualities.

Manufactured by the Ajax Rubber Co., Inc., 218-222 W. 57th Street, New York. Prices on request.

Stow Heavy Drills are designed especially to withstand severe service in garage and service stations. The motor armature is mounted in heavy duty bronze bearings with a ball thrust bearing on the end of the spindle to take care of the end thrust. Specially treated steel gears connect the motor to the drill spindle. All gears are encased in a grease filled housing, insuring long life and low upkeep.

All parts of the drill are perfectly balanced, it is stated, making the drill especially easy to handle. The gearing is of the planetary type and is well adapted to this class of work. With this system of gearing power is transmitted equally from opposite points on each gear, so that wear is reduced to a minimum. The chuck



is of the well known Jacobs make, easily operated, holding the drills firm, yet is easily opened when changing drills.

It is stated that this tool will drill hard wood up to ¾ inch and metal up to ½ inch, while the capacity of the chuck is ½ inch. Speed is approximately 500 revolutions a minute, while the maximum horsepower given by the motor is one-fourth. The motor is wound for 110 or 220 volts direct current or 60-cycle alternating current and Universal as desired.

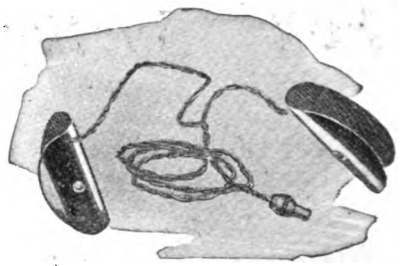
Manufactured by the Stow Manufacturing Co., Inc., Binghamton, N. Y. Prices on request.

The Rose Auto Grease Gun is adapted for light oils and some grades of hard grease, but is easily filled with hard grease by removing the nozzle on the end. The grease gun measures 1¼ inches outside diameter and 12½ inches over all. It

is stated that using either the curved or tapered nozzle, it is possible to pack a universal joint completely full of grease without waste. Weight, 1¼ pounds.

Manufactured by J. H. Haney & Co., Hastings, Neb. Price, $1.80.

The Globe Hand Warmers consist of two electrical heating pads attached to the steering wheel by screws. The heaters



are connected to the electrical system of the car by two wires and a plug, fitting a socket on the dash, or they may be fitted to a socket located at any convenient point handy to the operator. The hand warmers are easily applied by anyone in a few minutes time, are nickel plated and highly polished and are attractive looking on the steering wheel. The inside of the warmers are lined with green baize cloth to prevent the steering wheel from becoming scratched or marred. The Globe hand warmers consume very little current. It is stated that the 6-8 volt type consumes only three amperes an hour when in continuous use.

Packed in individual boxes, 10 boxes to the case, for jobbers and dealers. In ordering specify the voltage of car, otherwise 6-8 volt type will be supplied.

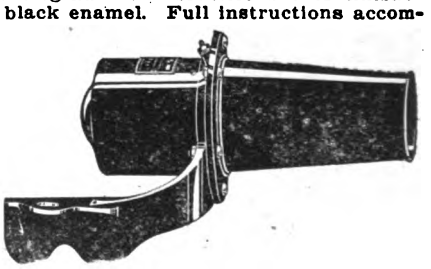
Manufactured by the Globe Machine & Stamping Co., 1200-50 West 76th Street, Cleveland, O. Price, $3.50 a pair.

"Red Devil" No. 80 Automobile Tire Iron and Jack Handle is especially designed for quick handling of tires, is light in weight and constructed from forged steel. The tire iron and jack handle has a

smooth finish so that no harm can come to a tire on which it is used. May also be used as a jack handle or for other purposes where a leverage is desired. Made in ¾ inch steel, 12 inches long and 16 inches long.

Manufactured by Smith & Hemenway Co., Inc., 180 Colt Street, Irvington, N. J. Prices on request.

The Klaxon No. 5 Motor Driven Horn for Ford Cars is designed for cars factory equipped with self starters and electric lights. The horn is easily attached to the original horn bracket and is finished in black enamel. Full instructions accom-



pany each motor driven horn, so that its attaching to the car is easily done.

Manufactured by the Klaxon Co., Newark, N. J. Price on request.

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The Hempy-Cooper Motor Tester should prove very attractive to the garage man who wishes to maintain service of the highest efficiency and realizes what a saving it means in money and time both to himself and patrons to be able to positively diagnose his customer's motor trouble in a few minutes without even running the motor.

In using the Hempy-Cooper tester, all spark plugs are removed and the tester is screwed into spark plug opening. After a complete test of No. 1 cylinder the operation is repeated in each succeeding cylinder until the whole motor has been tested. All tests on each cylinder are made without changing the position of the tester. The different methods of procedure to test compression, piston rings, valves, piston slap, wrist pins, connecting rods and main bearings are all very simple.

For example, to test for piston slap: Turn the motor 30 degrees past top center so that connecting rod will be at an angle, then work plunger up and down with a short stroke; if the piston is loose you will hear a clattering noise as the piston moves from one wall to the other. However, if the trouble is not a piston slap it is a matter of only a few minutes before one of the other equally easy tests locates the trouble positively.

The test for compression loss serves as an illustration of the simplicity with which the different tests are made. Push

the tester handle down and fasten hook in opening. Turn the motor two complete revolutions by hand. The gauge will indicate the number of pounds compression in cylinder.

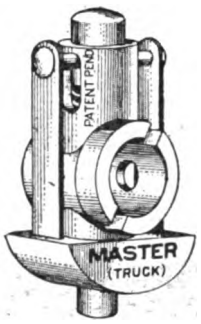
Or in case of the valve test, turn the motor until piston is up with the valves closed. Push tester handle down and a leaky intake valve will blow compression out through carburetor or through intake manifold to the cylinder that is on suction stroke, and then out through spark plug opening. Leaky exhaust valve compression will blow out through muffler or through the spark plug hole in the cylinder that is on exhaust stroke.

The tester is simple in the extreme, consisting mainly of an ordinary plunger pump with a hollow plunger to allow the compression to register on the attached gauge. An instrument with so few movable parts is practically immune to wear and should prove very durable.

Distributed by the Fairbanks Co., New York City. Price complete, $18, including fittings for ½-inch standard, ⅞-inch S. A. E. and metric threads.

The "Master" Governor for Ford Trucks was designed for commercially used Ford cars and trucks and tractors, insuring positive, unfailing control of Ford engine speed without impairing or altering the engine's efficiency.

The governor consists of a specially constructed timer brush of the wipe contact type, fastened to the camshaft in the regular manner, but has, in addition, a weight attached by two side straps to a cross pin in the brush contact and a guide fitting the hub of the brush carrier and the camshaft. When the speed of the engine reaches 1400 turns a minute the brush contact is broken by the weight



drawing the brush away from the contacts of the timer case and cutting out the ignition of the engine; when the speed of the engine falls back to normal the weight allows the contact brush to remake the contact with the points of the case, due to spring action within the brush carrier and the engine speed again picks up.

It is stated that drivers cannot tamper with this governor, alter it, or effect a change in its operation. At 1400 revolutions a minute the Ford engine develops its rated horsepower (20-22½).

Manufactured by the Master Products Co., Detroit, Mich. Price, $5.

Rie Nie Fabric Back Patch is as its name implies a patch for repairing punctures in automobile tubes and other articles of rubber, reinforced by a fabric backing that greatly strengthens the final patch and makes a more perfect job.

The manufacturer states that Rie Nie patches will not leak and resist high air pressure, the fabric backing insuring strength and durability. The patch is applied without the use of heat and as the

A PERMANENT REPAIR—NOT A MAKESHIFT.
Will Outlast the Usefulness of the Article

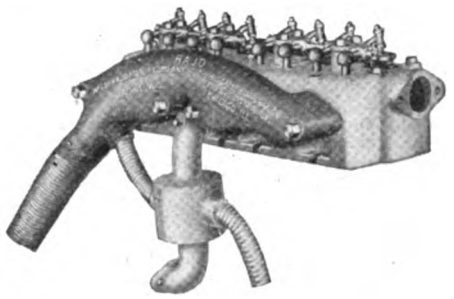
work of applying the patch is done entirely with the hands, tools are unnecessary. Rie Nie patches are equally effective in repairing rubber goods of all kinds and is said to make a permanent, lasting repair that is not affected by heat or cold and is nearly equal to work done by the vulcanizing process.

Manufactured by the Durkee-Atwood Co., Minneapolis, Cleveland and Detroit. Prices on application.

The "Rajo" Model 30 Valve-in-Head for Ford Cars is a replacement proposition by which the Ford engine can be converted into an overhead valve type of engine without great expense. The device consists of a special separable head fitted

with overhead valves, operated by long push rods passing through the regular guides to the tappets of the engine. Special manifolds for the intake and exhaust are provided and a heating device for the inlet manifold, connected to the exhaust manifold by flexible tubing. The separable head is cast in one piece of highest grade cylinder iron, while the exhaust manifold is constructed with a by-pass and pipe that carries hot fumes to a jacket surrounding the intake manifold and heating the gas before it reaches the combustion chambers of the engine.

It is stated by the manufacturer that the Rajo valve-in-head assures complete combustion, reduces carbon accumulation to a minimum, increases the mileage per gallon of gasoline to an average between

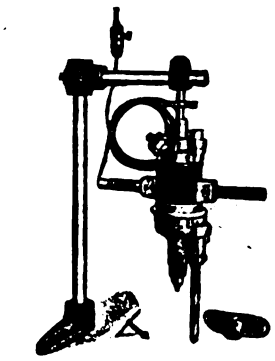


25 and 30 miles, at the same time allowing quicker acceleration and better power on hills.

The Rajo model 30 is fully guaranteed by the manufacturer against defects and workmanship for a period of one year from date of purchase. Fifteen days trial is allowed and if not satisfactory the purchase price will be refunded. The Rajo cooling system provides for ample water circulation around all combustion chambers and valves, eliminating all possibility of overheating. Special heads for Ford racing models are also supplied.

Sold by Trindl Sales Corporation, 57-61 East 24th Street, Chicago, Ill. Prices on request.

Stow Heavy Duty Two-Spindle Drill is designed for heavy work in and about the service station. By means of the two spindles, drills from 1/16-inch to ¾-inch can be easily used and a greater drilling efficiency secured. The drill is fitted with a heavy duty type motor, having extra heavy bearings, enclosed in a grease tight case with all gears running in a bath of lubricant. All gears are made from specially heat-treated steel, which guarantees long life. The No. 1 or center spindle is fitted with a Jacobs chuck taking S. S. drills 0 to ½ inch at a speed of 450 revo-



lutions a minute. No. 2, or the offset spindle, is fitted with a Morse taper socket and takes M. T. drills up to one inch, at a speed of 225 revolutions a minute. This tool is adapted to small shops where only one tool of this kind is desired. It is capable of drilling hard wood up to 1⅛ inches and metal up to one inch.

The capacity of the No. 1 Jacobs chuck is ½ inch, Morse taper socket, No. 2 taking drills up to 29/32 inch. The motor is wound for 110 and 220 volts direct current or 60 cycles alternating current and Universal as desired. Speed approximately, direct current, 450 and 225, alternating current and Universal, 500 and 250 revolutions per minute.

Manufactured by Stow Manufacturing Co., Inc., Binghamton, N. Y. Prices on request.

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Hudson (One-Piece) Slip-In Auxiliary Radius Rod for Ford Cars consists of a wishbone or radius rod support for the Ford. It is fastened to the perch rod ends

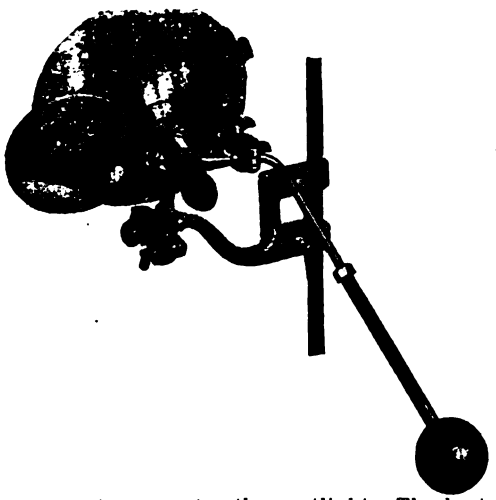
under the front axle and slips over the forked end of the radius rod by means of a socket joint, strengthening the radius rod and helping to prevent the radius rod from buckling.

The Slip-in auxiliary radius rod is made of the best of material, built especially for the purpose for which it is used and once in place becomes a permanent part of the car.

Manufactured by the Hudson Motor Specialties Co., Real Estate Trust Building, Philadelphia. Price, $2.50.

The Jiffy Spotter is an attachment for the spotlight whereby the spotlight is easily controlled from within a few inches of the steering wheel. The device is applicable to any spotlight and increases the control of the spotlight many fold. The device is adjustable and when not in use may be moved forward out of the way of the operator.

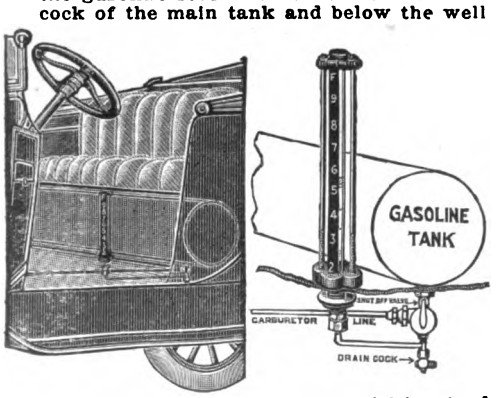
It consists of an extension that is adjustable, having a ball end by which the



operator operates the spotlight. The best of materials enter into the construction of the Jiffy Spotter and it is easily attached in a few moments.

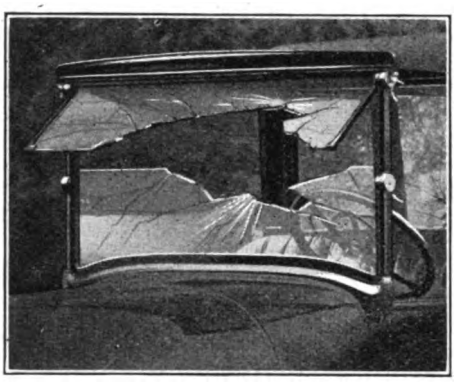
Manufactured by the Detroit Auto Accessories Co., Inc., 1616 N. Robey Street, Chicago. Price, $2.50. Sold under a money back guarantee.

The Baer-Glauber Gasoline Gauge for Ford Cars is a small gauge device that is attached by a short length of tubing to the gasoline feed line above the drain-out cock of the main tank and below the well of the tank. The gauge is located below the edge of the front seat cushion in a vertical position and shows at a glance the amount of gasoline in the tank. The gauge is a glass tube, containing a red ball which rises and falls according to the amount of gasoline and shows by means of figures on the tubing the amount of gasoline contained in the tank. The device is fastened to the floor of the car and may be fitted in a few minutes by anyone handy with tools.



Manufactured by the Baer-Glauber Co., 6523 Euclid Avenue, Cleveland, O. Price, $3.

Ultra Glass has two sheets of fine plate glass with a layer of pyroxylin compound between, welded together under great heat

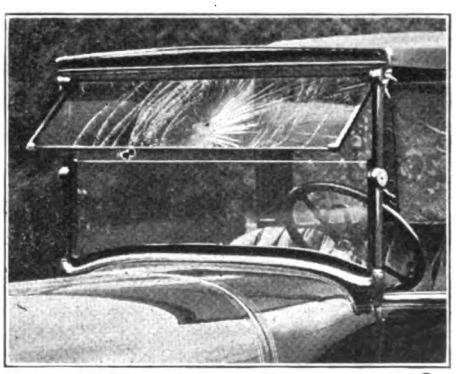


and pressure into one resilient, impenetrable, non-scattering unit. It is absolutely clear and undistinguishable in appearance from the finest brilliant plate glass the maker states.

If struck a heavy blow the layers of glass may develop fine hair line fracture, but each particle of glass will be firmly held to the resilient layer of the pyroxylin compound. The sheet of Ultra Glass will be found a unit with a surface as smooth to the touch as before the injury.

This feature makes Ultra Glass desirable wherever there is danger of personal injury resulting from broken glass, for Ultra Glass cannot splinter and fly about. It will not break apart, leaving jagged edges. The resilient layer of pyroxylin compound not only keeps the glass from scattering under a blow, but it strengthens and reinforces it. Blows which would break ordinary glass frequently have no effect on Ultra Glass.

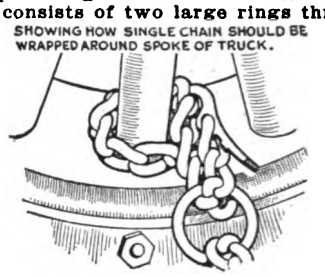
Its value for windshields and windows for motor vehicles and aircraft, for railroad cars and street cars, is self-evident. It is equally well adapted for goggles for motorists, aviators and mechanics, and for



many special uses, such as show cases, glass doors and machinery guards. For special purposes where a lighter gage of glass is desired it is made up with only a single layer of glass. In this form it is marketed under the name of Non-Skatterable Glass.

Made by the Glass Founders Corporation, Milltown, N. J., which is prepared to supply it to dealers cut to appropriate sizes and shapes.

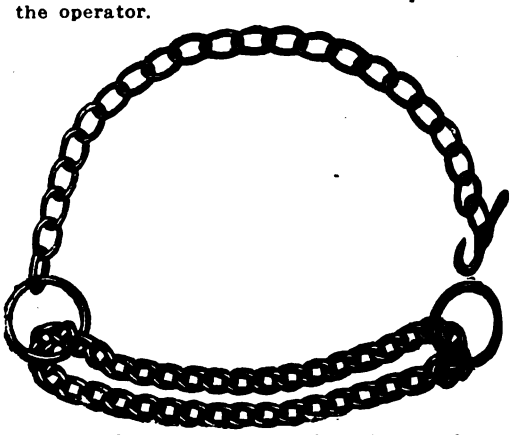
Herman Truck Traction Tire Chains for the motor truck embody a new fastening principle and a new traction feature. The chain consists of two large rings through



which is run an endless cross chain forming two strands across the tire. The fastening chain is attached to one of the rings by a permanent fastening and attaches to the opposite ring by a hook fastening of a patented design.

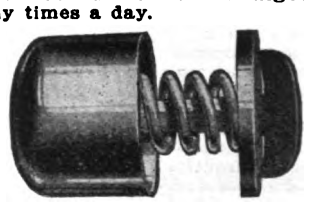
The chief feature of the traction chain is the double cross chain, as most traction chains depend on a single cross chain for traction purposes. The chain for fastening the cross chain to the wheel is of ample size to fit almost any size rim, and is attached by simply passing the fastening chain around the spoke of the wheel and passing the hook end through the large ring, drawing the chain up tightly and catching the hook in the fastening chain.

The cross chains are made of the best of material obtainable for the purpose and are easily attached and detached with a small amount of effort on the part of the operator.



Manufactured by the Utility Accessories Corporation, 16 West 61st Street, New York. Prices from $7.50 to $26, according to size of tire.

Lambert License Plate Holder is a patented device by which the license plate is held in place by a spring tension. The device is made of the best of steel, nickel plated or black finish as desired. Easily attached or removed in a few seconds. Especially useful among garages or salesrooms where numbers are changed often or many times a day.



The device consists of a steel rod, having a wing attached at one end, a washer fitting against the wing and a spring on the rod held in place by a suitable cover. To use the device the wing is inserted through the slot in the license plate and the bracket on the car. The cap is depressed, forcing the wing through the slots against the spring tension. Turning the cap one-quarter turn to the left or right fastens the holder. Two are required for each plate, four for the two plates.

Manufactured by the Lambert Manufacturing Co., Highland Building, Pittsburgh, Pa. Price, $1 per set of four.

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Marathon Fabric and Cord Tires are claimed to offer as a special feature that the same tough wear-resisting stock that is used in the tread is extended down over the side walls to the beads. This construction prevents the chafing and scuffing off of the side walls when the tire is driven over rough, rutty or frozen roads. Consequently, sand and water do not get into the carcass. The cords are impregnated with pure rubber several times, so that each cord is thickly cushioned. It is stated that there is no internal friction to loosen the plies or create heat, because no single strand or cord can touch another, all cords being heavily imbedded in live rubber.

The casing is cured on an internal air bag instead of an iron core. By this process the cord carcass, after being expanded and cured, is in the same condition that it will be in when mounted on a rim, inflated for service, the cords being free from tension. It is stated that this is why Marathon cord tires will not stone bruise, as the carcass will flex to the utmost, but the cords will not break. It is claimed that the same high-grade construction is used in the manufacture of Marathon fabric tires as in cord. The tread stock is extended down over the side walls and is white instead of black.

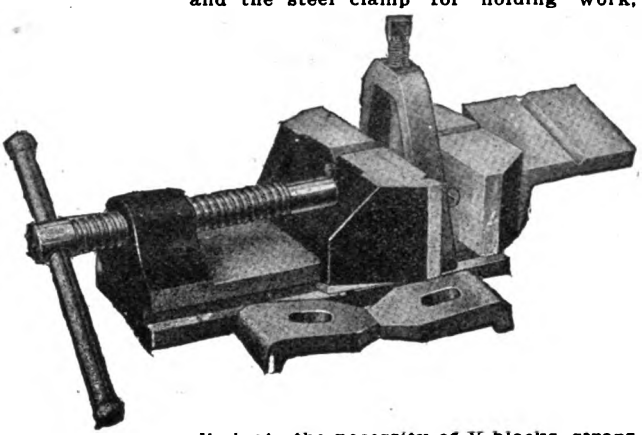
Manufactured by the Marathon Tire & Rubber Co., Cuyahoga Falls, O. Prices on request.

The "Basline" Autowline consists of a quarter inch yellow strand power steel wire rope 20 feet in length, with patented snaffle hooks on each end and two manilla slings especially constructed for towing automobiles or trucks. These slings are recommended to be always used in attaching the "Basline" Autowline, as they prevent the marring of the painted surface and also the fraying or chafing of the wire strands of the cable. One end of the "Basline" Autowline is attached to the rear axle of the towing car and the other end to the front axle of the damaged car. The snaffle hooks will hold under all conditions, it is stated. After using the Autowline may be coiled by rolling along on the ground as a hoop, this preventing kinks. It rolls up in a flat spiral and readily fits under the rear seat.

Manufactured by Broderick & Bascom Rope Co., St. Louis, Mo. Prices on request.

The G-S Combination Vise combines the vise, V blocks and angle plates in one device that may be used for a number of operations in the service station, and will prove a time saver wherever used.

The vise is accurately machined and is heavily built to afford ample strength and durability. The base is one solid casting and has two ⅝-inch slots cut in the bottom. The sliding jaw is quickly operated by a heavy square thread screw, set in the center of the jaw, keeping the jaw square by preventing wear on the bearings and giving the vise additional gripping power. The V's cut across the top of the jaws and the steel clamp for holding work,



eliminate the necessity of V blocks, straps and bolts. Work is set up and removed quickly by this method of holding. The V's cut on the face of the sliding jaw hold the work square with the face and in a rigid position. This feature is very handy in setting up duplicate parts, which is difficult where blocks are used for the purpose.

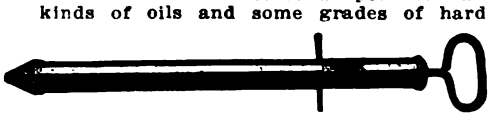
The steel plates forming the face of the jaws are case hardened, making it next to impossible to mar the V's when work is placed in them, while the adjustable angle plate can be quickly set to any degree and is held rigidly in position by tightening one nut.

The overhanging jaws are an essential feature of the G-S vise, as machinists have proved that there is a great variety of work which cannot be held by any other manner than by using overhanging jaws.

A strong feature of the G-S vise is that no time is lost in setting up the vise for different sizes of work or duplicate parts, as levers, cams and double handles are not used in its construction. The G-S vise is especially adapted for use on the drill press, milling machine, planer, etc. Each vise is provided with two special straps for fastening to the bench. Made in two sizes, No. 1 and No. 2.

Manufactured by the Germanow-Simon Machine Works, Rochester, N. Y. Price, No. 1, $35; No. 2, $50, f. o. b.

The Rose Shop Grease Gun is made of heavy steel with a projecting arm at each side of the cylinder to afford easy operation. It is stated it is adapted for all kinds of oils and some grades of hard

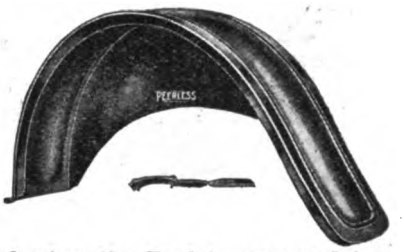


greases, and it may be filled easily with hard grease on the removal of the nozzle. It is furnished with either a curved or cone shaped nozzle, the latter having many improvements over a curved type previously manufactured by this company, as it will fit all openings up to and including the largest diameter of the nozzle, preventing the grease from backing out around the nozzle as the gun is discharged. It is especially adapted for drawing grease and oils from gearsets, differential housings, etc., as it will inject and suck out gasoline and dirt.

The pump measures 1½ inches outside diameter and is 24½ inches long; weight, 2½ pounds.

Manufactured by the J. H. Haney & Co., Hastings, Neb. Price, each, $3.50.

The "Peerless" Commercial Fenders for Ford Trucks are manufactured in three types, from heavy gauge steel, finished with two coats black japan baked on, to match the front fenders of the Ford car or truck. No. 1 is a crown fender, to be



used when the Ford is converted into a commercial car. A pair of these is necessary, as the fenders which are furnished with the Ford chassis body cannot be put in place without interfering with the fender. No. 3 is adapted for all truck units and is especially serviceable on the

Ford one-ton worm drive truck. Two extra heavy irons, bolts and washers are furnished with each fender for attaching to the truck.

No. 4 fender is adapted for all truck units. Brackets are not required as the fender is bolted directly to the body,

through holes drilled in the skirt of the fender. One end of the fender is cut away, allowing it to fit up close to the body and to prevent the chain interfering.

Manufactured by the Corcoran Manufacturing Co., Cincinnati, O. Prices on Nos. 1, 3 and 4, $6 a pair.

The Romfort Style AA Valve Connection is designed for use with the Romfort Universal hose coupling, providing a valve

connection which, it is claimed, will not blow off when inflating tires. It is made of cast metal and is easily accessible for fitting with new rubber washers or supplying new springs and valve.

Sold by the Zinke Co., 1323-25 Michigan Avenue, Chicago, Ill. Price, $3.

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The Ultimate Valve Spring Lifter consists of a curved steel bar, forked at the lower end, having holes drilled at the upper end equidistant, a slidable arm fitting the bar, and a handle for operating the

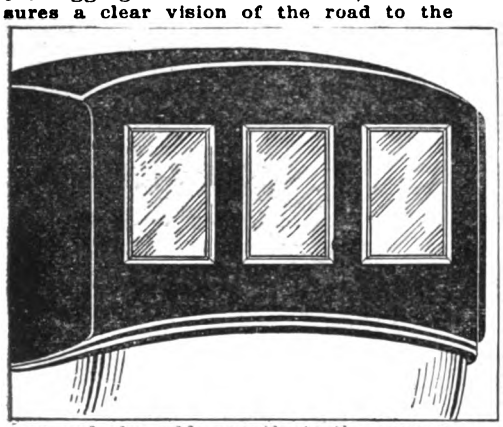
valve lifter having an elliptically shaped end with a hole drilled through one end of the ellipse. To operate the valve lifter the forked end is placed under the valve spring, the slidable arm resting upon the head of the valve and the elliptical end of the handle is fitted as closely as possible against the slide of the arm; a pin hanging conveniently from a chain is passed through the holes of the elliptical end and the bar, while a downward pressure of the arm compresses the spring, allowing the removal of the pin in the valve stem. Removing the pressure on the handle allows the spring to free itself and it is easily removed. To replace the spring reverse the operation. It is manufactured for all makes of cars.

The valve lifter may be adjusted by means of the pin, through holes in the lever and bar, for lifts from 4½ to seven inches. The throat opening is 4¾ inches, height 13 inches, width 6¾ inches.

Manufactured by H. D. Smith & Co., Plantsville, Conn. Prices on request.

"Ero" Aristocrat Glass Windows for Ford Cars are designed especially for the rear curtains of 1917, 1918 and 1919 Ford cars. They are made of the best grade, double-strength glass with highly polished, nickel plated frames, complete, ready to install.

The glass is heavy enough for strength and durability, yet light enough to avoid the sagging of the back curtain, and insures a clear vision of the road to the



rear and also adds greatly to the appearance of the car. It is claimed to be easily installed by the car owner in a few minutes without tools. Three windows constitute a set, packed in a neat carton.

Manufactured by the Ero Manufacturing Co., 700 West 22nd Street, Chicago, Ill. Price, per set, $3.

The Workrite Battery Hydrometer is designed for general use by motorists, service stations and garages. A rubber flange is provided at the base of the rubber bulb to protect the glass tube at the top, while a square flange is fitted at the bottom of the glass tube to minimize the chance of breakage. The center opening projects into the lower end of the tube, forming a cushion for the float and prevents the float from closing the opening. The float is always in plain view, there being no plug in the bottom to drop out, with the liabilty of spilling the acid and breaking the float. All rubber fittings are made of unusually high grade stock, insuring, it is stated, strong suction and long life.

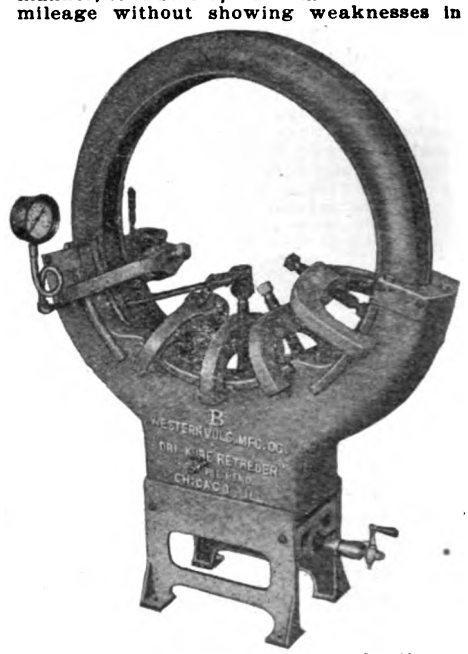
The WorkRite hydrometer is combined with a glass container of one quart capacity for the motorist's use, known as No. 1 outfit, and one of one gallon capacity for house lighting or service station plants. The containers are filled with distilled water. The flanged top of the bulb prevents the hydrometer from fully entering the container, preventing its breakage and keeping it in a position for instant use either for supplying distilled water to the battery cells or testing the electrolyte of the individual cells.

Manufactured by the Workrite Manufacturing Co., 5606 Euclid Avenue, Cleveland, O. Prices, No. 1 outfit, $1.50; $1.75 west of the Rockies; No. 2 outfit, $2.50; $2.75 west of the Rockies; No. 3 outfit for service stations, $2.50; $2.75 west of the Rockies.

The Dri-Kure Retreader is designed for the service station wishing to do satisfactory work without incurring the heavy expense of purchasing a retreading kettle. It is stated that the Dry-Kure retreader, owing to its construction, will do equally as good work as the retreading kettle at a fraction of its cost, and of a grade that is highly satisfactory to the customer, providing that the repairer uses care in the selection of the casings to be retreaded.

The construction of the Dry-Kure retreader differs from regular construction of this type of device in that wood blocks are used at each end of the steam chest, preventing the steam from acting upon the casing at these points and causing the casing to become porous or spongy.

Sand bags are used on the inside of the casing, applying the necessary pressure to the casing to keep its proper shape while being cured. Casings cured in this manner, it is stated, will run their allotted mileage without showing weaknesses in



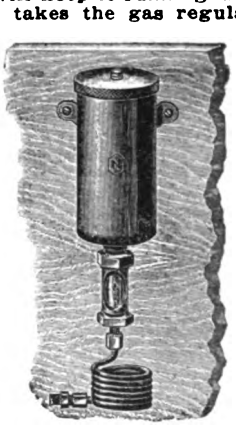
the side walls of the fabric or the tire.

Heat is supplied to the steam chest from a gas plate located in the base of the retreader, a suitable shut-off valve being provided, to which the flexible gas tube from the gas connection is attached.

The outfit is complete with a set of matrices, clamps, etc., for the various types of treads encountered in repair work, and it is stated that it is possible to finish a job complete without the need of patching or otherwise finishing the cure.

Manufactured by the Western Vulcanizer Manufacturing Co., 150 North Desplaines Street, Chicago, Ill. Prices on request.

The Engine Dash Primer for Ford Cars consists of a container having a capacity of ½ pint, that is fastened to the dash of the car. A sight feed glass and a coil of copper tubing connecting the priming device with the intake manifold by a ⅛" nipple threaded into the manifold. The sight feed is regulated by means of a needle valve on the dash. The primer is designed to prime the engine from the dash and will keep it running until warm or until it takes the gas regularly from



the carburetor. Primer may also be used for decarbonizing cylinders by feeding kerosene or water through intake manifold while engine is operating. The primer is easily attached in a few minutes time by simply drilling a hole in the intake manifold for the ⅛ inch standard pipe nipple and fastening the container to the dash.

Manufactured by A. Nelson Co., 2262 to 2722 Southport Avenue, Chicago, Ill. Prices, per hundred: Polished brass, $250; nickel plated, $275.

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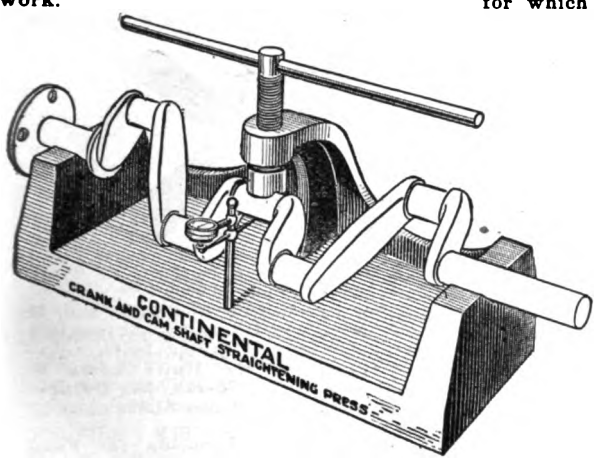
The Continental Crank and Cam Shaft Straightening Press was designed for service stations catering to the Ford trade. It comprises two tools in one, is light in weight and very accurate in its work.



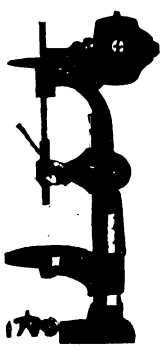
The device consists of a bench rest, made of heavy cast metal, the ends vertical, with V-shaped grooves for the shafts to rest in while straightening and a screw clamp in a vertical bracket, that fits the shafts at its center.

The device is equipped with a dial test indicator reading accurately to a thousandth of an inch.

Ford repairers are aware of the fact that Ford crank and cam shafts are bent very easily and by testing them during the course of repair, guess work on this score is eliminated.

Manufactured by the Continental Auto Parts Co., Knightstown, Ind. Price, $34 f. o. b.

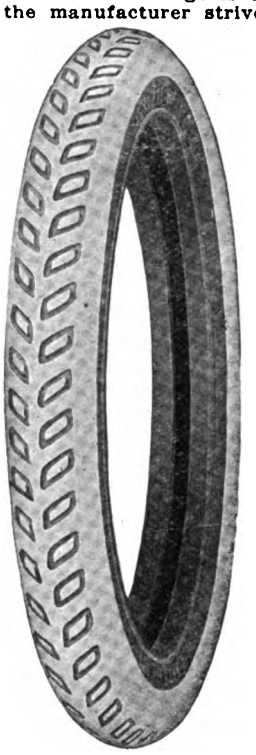
Stow Friction Driven Sensitive Drill is designed for light work requiring rapidity and accuracy and will drill holes up to one-half inch in diameter. The spindle is made of tool steel, is counterbalanced by a spring and provided with a ball thrust bearing. The weight and thrust of the friction disc is also carried on a ball bearing. The table of the drill is counterbalanced by a weight in the column, and can be swung around out of the way when desired. A finished boss is provided on base under the spindle, for convenience in centering long shafts, while an index line is provided on the column for setting ta-



ble central at any height. The friction disc drive permits quick adjustment of the speed, keeping the power in proper proportion to the size of the drill, avoiding drill breakage. The motor is of the simplest construction, having steel magnet cores, form-wound field coils, iron clad armature, tool steel shaft, commutator insulated throughout with mica and provided with self-feeding carbon brushes. The materials entering into the construction of this machine and the workmanship are claimed to be first class in every respect. The drill is complete with V block, cup and point centers.

Manufactured by Stow Manufacturing Co., Inc., Binghamton, N. Y. Prices on request.

Quaker Tires with T. T. T. Tread are the result of many years of careful experimenting on the part of the manufacturer and combine many desirable features. In building Quaker tires mileage is the aim for which the manufacturer strives, and



from the selection of the crude rubber, Sea Island cotton duck and other raw materials used, the employment of highly skilled workmen, to the final process of curing and shipping, this factor is first in mind.

Quaker tires are backed with a guarantee of unlimited mileage and should a defect occur in workmanship or material during any period of the life of the tire, an equitable adjustment will be made regardless of the number of miles the tire has been run.

Quaker tires are made of tempered rubber, an exclusive process controlled by the manufacturer, which gives hardness, toughness, flexibility, elasticity, resiliency and tensile strength, making possible the broad gauge mileage guarantee. T. T. T. is the trade name given to the non-skid tread.

Manufactured by the Quaker City Rubber Co., Philadelphia, Pa. Prices on application.

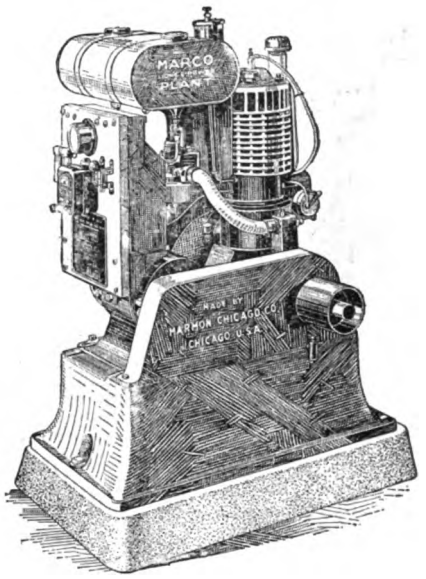
The Marco Light & Power Plant consists of a single-cylinder, air-cooled gasoline engine mounted on the same base with a Dyneto generator developing 1250 watts, with an overload capacity of 25 per cent.

The generator is actuated from the engine crankshaft sprocket by a silent chain, driving the generator at 2000 revolutions per minute, with a slow engine speed of 800 revolutions per minute. The engine is four horsepower, equipped with power pulley, enabling other light farm machinery to be belted to it for power purposes. Ignition is supplied by a Bosch magneto and spark plug of the high-tension type.

The Marco light plant is started by pressing a button, which closes the circuit from the storage batteries to the generator, changing the generator to a motor for starting the gas engine. After the engine picks up the motor automatically changes back to a generator, storing up current in the batteries for future or immediate use.

The outfit is supplied with a suitable panel equipped with switch, fuses, combination volt-ammeter and automatic control, which shuts off the engine when the batteries are filled or the current is not needed.

The storage batteries are the Prest-O-Lite pasted plate type—16-cell sealed glass jars, that may be placed in any convenient location. Batteries can be fur-



nished in different sizes ranging from 112 to 225 ampere-hour capacity.

The engine alone weighs 235 pounds and it is stated that five minutes work will disconnect it from the base by removing four bolts, when it can then be placed on skids and used for other power purposes.

Distributed by Marco Sales Co., Neenah, Wis. Prices on request.

The Romfort Universal Hose Coupling is designed for the garage or service station supplying air pressure to the trade. The couplings are made and provided with suitable bushings so as to be easily attached to hose of varying size and also metal or armored hose.

Extra bushings are supplied to fit the inside of the coupling, spreading the hose and making an air tight joint. The coupling consists of two sections, a threaded outer section of brass, provided with a hexagon nut, and a tapered inner end, having a hole drilled through the center for the passage of the air. The inner section consists of a metal shell having a smooth opening at the smaller end for the hose to pass through, and the opposite

end threaded for the nipple to screw into, with projections on the interior for the placing of the bushings when applying the coupling to small or armored hose.

It is stated that it is possible to use this coupling on either large or small hose, rubber or metal covered, and on both ends of air hose.

Sold by the Zinke Co., 1323-25 Michigan Avenue, Chicago, Ill. Price, $1.25.

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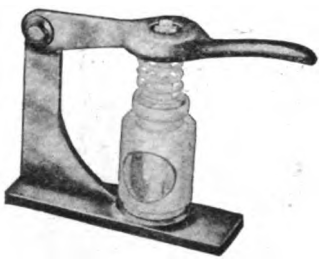
The Buick Valve Cage Lifter is a device for removing cages from Buick engines, consisting of a hinged casting, having a bolt and winged nut, which tightens the clamp after it is fitted to the valve cage. Removal is facilitated by removing the rocker arm and using a steel rod resting on a block of wood located on the rocker arm bracket, one end of the bar being placed under the cage remover. Striking



the free end of the rod with a hammer loosens the cage, making possible its removal. In obstinate cases an application of kerosene oil around the edges of the cage will facilitate its loosening.

The device is made of the best of material, and is stated to be a time and labor saver in the removal of Buick valve cages.

Manufactured by the Osborne & Stephenson Manufacturing Co., Plainville, Conn. Price, $1.

Zapon Leather Cloth is a leather substitute fabric incorporated into a strong cloth backing, either a fine sateen, finely napped moleskin, sateen or drill cloth. The quality of the cloth backing and the grade of facing material determine the grade and price of the finished article.

Zapon cloth is stated to be the result of careful experimenting in the manufacture of leather substitute, covering a period of years, by men who have grown up with the industry, know what is required by the trade and how to supply it in such a form as to give universal satisfaction wherever sold.

The cloth backing is subjected to careful inspection at the mills where it is woven. The operation of coating the cloth at the factory is very carefully guarded by experts, as experience in leather cloth making is highly important. In the coating is claimed to lie the secret of Zapon's uniformity and durability. Using the specially woven fabrics as a foundation, the Zapon coating mixture is scientifically applied in thin, filmy layers, accurately

gauged to prevent variations in thickness. Many layers are applied, inseparably welded into a tough and attractive leather cloth that is said to resist wear to the last degree.

The test and safeguards surrounding the making of Zapon leather cloth are continued in embossing rooms, where the grain is put in by machines which exert a pressure of nearly a ton to the square inch. The embossing rolls and plates through which the product passes are heated to a temperature that gives exactness and permanence to the grain. Special finishes, shaded and two-toned effects, are produced by hand buffing.

Zapon leather cloth is used principally by motor car manufacturers in upholstering seats, cushions, etc., and also as a top covering for curtains. The principal grades manufactured and sold to the trade are: Muleskin, broncho, moroccoline, rando and 170 drill.

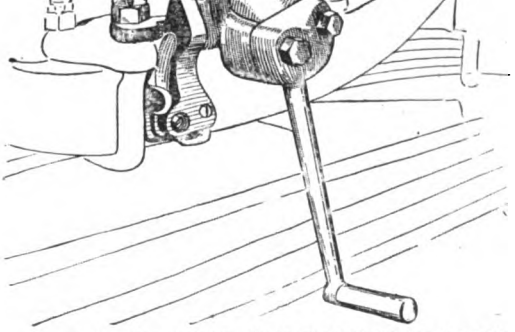
Manufactured by the Zapon Leather Cloth Co., 200 Fifth Avenue, corner 23rd Street, Fifth Avenue Building, New York. Prices and literature on request.

The Lock-Roll Clamp, a device for clamping rubber hose to metal water pipes in the cooling system of automobile engines, is made from a continuous band of steel that is light in weight and provides a unique fastening for the rubber hose. The method of fastening the clamp, as shown in the cut, is a patented feature, the ends of the band forming a scroll, through which is drilled a hole, threaded to receive a machine screw. Nuts are not required with this fastening, as the screw holds the clamp firmly in position. It is stated that the Wright-Martin Aeroplane

Co. used the Lock-Roll hose clamp for war work in its Hispano-Suiza aeroplane motor. The design of the Lock-Roll clamp is simple and it is claimed to be unusually strong and effective, a screw driver being all the tool that is required to set the clamp tightly in place.

Manufactured by the Federal Tin Co., Inc., Baltimore, Md. Prices on request.

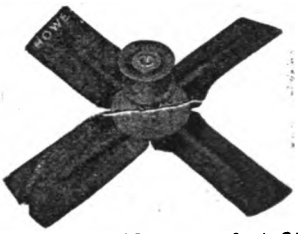
The Atlasta Safety Auto Device for the Ford Car consists of a notched cam, which is bolted to the starting crank of the Ford engine by two machine screws holding it securely in place. A spring actuated ratchet is attached by a bracket to one of the spring clips fitting the notches of the



cam. Its action, it is stated, is to prevent the engine from kicking back when started, especially if the spark lever is left in an advanced position. This is claimed to be of special advantage to lady drivers, as it is claimed that the device disconnects the starting crank from the crankshaft if a kick shouid occur, preventing the possibility of injury.

Manufactured by the Atlasta Auto Specialty Manufacturing Co., 2925-27 Locust Street, St. Louis, Mo. Price, prepaid, $2.50.

The Howe Fan for Ford Engines is a replacement proposition made entirely of heavy gauge steel stampings, except the bronze bushings, which are reamed to the proper size when assembled, all assembling being done by machinery, insuring

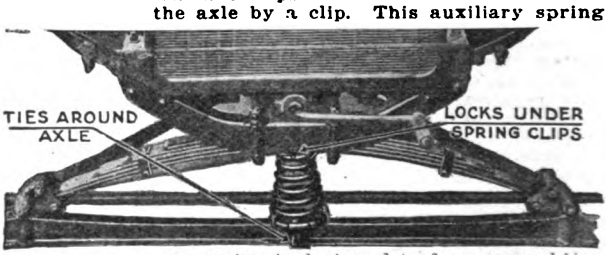


accuracy that provides a perfect fit when applied to the engine.

The Howe fan is light in weight and, it is stated, is easily driven by the engine, conserving power and saving belts.

Manufactured by the Howe Lamp & Manufacturing Co., 115-123 E. Ontario Street, Chicago, Ill. Price, $1.50.

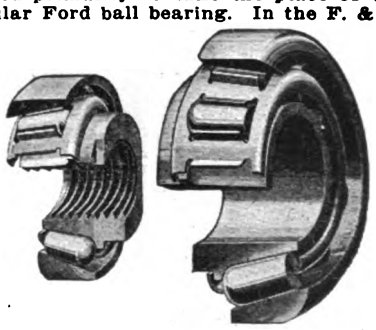
The ARG Auxiliary Spring for Ford Cars is stated to be manufactured from the highest grade of steel obtainable, has a special patented plate at the top which locks under the spring clips, and another which clamps on the bottom and ties to the axle by a clip. This auxiliary spring



suspension is designed to form a combination shock absorber and snubber and in addition to gradually reduce the rebound of the front spring so as to lessen the sudden jar. It is also claimed to prevent the front spring from breaking. The auxiliary spring and its attachments are quickly and easily applied as no holes are bored. The spring clips are simply removed and the special plates placed under the spring and on the axle.

Manufactured by the ARG Auxiliary Spring Co., 1908 Avenue B, Birmingham, Ala. Price, $5.

The F. & H. Roller Bearing for Ford and Chevrolet Cars is made of chrome steel throughout. This is a replacement bearing for the cars mentioned and is intended primarily to take the place of the regular Ford ball bearing. In the F. & R.



roller bearing the ring, cone and rollers are forged from high carbon chrome alloy steel bars, slightly oversize, then heat treated and hardened in oil, giving a uniform hardness throughout. The roller separator is a high carbon steel stamping so designed that the rollers are always held in their proper position, the bearing becoming self-aligning and easily adjustable. The separator is complete one piece and is heavy enough to retain its form, holding rollers in position on cone even when the outer bearing ring is moved.

Manufactured by F. H. and S. Co., 624 South Michigan Avenue, Chicago, Ill. Price, per set of four for two wheels, $10.

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Uniform Signs for Grade Crossings

Pennsylvania Railroad Begins Installation in the States of Pennsylvania and New York

IN CONFORMITY to the campaign for a better and more uniform system of signs for safe guarding railroad grade crossings, the Pennsylvania railroad is to begin at once in the states of Pennsylvania and New York the installation of protective warning signs, which are designed to give advance notice of approach to crossings. The work of installation will be extended to other states, where preliminary warnings are not now in use, as soon as the necessary approval can be obtained from the state regulative authorities. The Board of Public Utility commissioners of New Jersey has taken up the application and approval for that commonwealth is now pending. Approval will also be requested in Delaware, Maryland, Virginia and elsewhere.

The new form of signal is devised especially to deal with the problem of inducing motorists to run at reasonable speed, and with their cars under full control, when nearing railroad crossings. This, it is expected, will be accomplished by the new "approach" signs, giving warning of crossings ahead in ample time to reduce to a safe speed.

A Standard Design.

The design which will be used is a standard adopted for such purpose by the American Railway association and consists of a metal disk 24 inches in diameter, having a black rim and divided into four quarters by a black cross on a white ground. The two upper quarters bear the letters "R. R." The sign will be mounted on a post of suitable height. The disc resembles that devised by the American Railway association as the standard "Stop" hand signal for watchmen at grade crossings where the volume of traffic requires such form of protection.

The new "approach" signs will be placed as nearly as practicable 300 feet from the crossings in both directions, and will be located on the vehicle, or right hand side of the highway. The exact point of location will be determined in each case with a view to giving the greatest visibility and prominence.

Method of Maintenance.

In the State of Pennsylvania an agreement has been reached between the Pennsylvania railroad, the State Public Service commissions and the State Highway commission, by which the railroad will furnish the signs and posts and the commissions will arrange for their erection and maintenance. In New York state, the erection of the signals is covered by a new act of Legislature under which, as in the case of the State of Pennsylvania, the railroad will furnish the signs and posts and the municipal or county authorities will be responsible for placing and maintaining them. When occasion arises the maintenance of way supervisors of the railroad will be assigned to the duty of explaining to the local authorities the purpose and utility of the new signs.

SECRETARY HUGO'S WARNING TO MOTORISTS.

The majority of the deplorable accidents can be avoided by automobilists exercising care at grade crossings.

Don't take chances.

Even if a crossing is protected by gates, flag man or bell, be sure you are safe.

The best safety device in the world is a careful driver.

Stop, look both ways, and listen.

Play safe.

A moment's caution may save your life.

Ultimately, it is intended by the American Railway association to extend the use of the "approach" signals, in uniform standard style, to all parts of the country and all railroads. The standard design was adopted for this purpose by a joint committee of the American Railway association and the National Association of Railway commissioners; and has been passed upon by a committee of the American Automobile association. This was done before the United States entered the war, but subsequent events interfered with the carrying out of the plan.

To Be Extended to All States.

With the approaching return of the railroads to private operation, it is now proposed to push the plan to execution in every state. When that is accomplished automobilists in all parts of the country will receive invariably the same warning of approach to a railroad crossing, with resulting great advantage from the viewpoint of safety and incentive to proper care. There will be no confusion over the use of different warnings in different states, as the standard "approach" sign will always mean the same thing.

Type of Railroad Warning Sign Being Placed at Grade Crossings.

A Safety First Message.

Cooperating with the New York Central railroad, Secretary of State Francis M. Hugo of New York has been promulgating a safety first message to 550,000 motorists in that state during the past few weeks, by inserting a card with each renewal of license, urging that all autoists exercise greater caution when approaching a grade crossing. This procedure was followed by Secretary Hugo several years ago and while there was no direct means of ascertaining how well motorists bore the warning in mind, Mr. Hugo is convinced that good resulted.

Still Great Need for Care.

That there is still great need for care on the part of motor car drivers in this respect is indicated from the fact that statistics show that each year more than 1500 persons are killed and 4000 injured on railroad crossings alone in the United States and that the number is steadily increasing.

There is, however, a crumb of comfort in the comparison made in the annual report of the National Highway Protective society, which shows that during 1919 92 persons were killed on highway railroad grade crossings in New York state, and 48 in New Jersey, as compared with 117 persons killed in New York and 54 in New Jersey in 1918, a slight decrease.

CATALOGUE, BROWN PYROMETERS.

The Brown Instrument Co., Philadelphia, maker of pyrometers, thermometers, tachometers and other indicating and recording instruments, has just issued catalogue No. 12, entitled "Brown Pyrometers," consisting of 88 pages, eight by 10½ inches, with a handsomely embossed cover design and elaborately illustrated with 159 copper plate half tones and diagrams. Without question this booklet contains more information in an available form on the subject of pyrometry than has ever before been covered in any catalogue, and the matter is presented in a practical way and couched in plain language so as to be perfectly intelligible even to the general reader.

The catalogue No. 12 also gives valuable information regarding resistance thermometers, recording thermometers, pressure gauges, draft gauges, tachometers, time and operation recorders and other instruments included in the Brown line.

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Practical Book-Keeping System for Service Station, Garage and Vulcanizing Shop

By W. G. Harris, District Credit Manager, Atlanta, Ga., Goodyear Tire and Rubber Co.

FOR many months the Goodyear Tire & Rubber Co. has been in search of a simplified system of bookkeeping applicable to the average service station, garage and vulcanizing shop to enable the proporietors to know the exact financial condition of their business at any and all times. Many bookkeeping systems investigated have been far too elaborate for the average dealer who does not employ a bookkeeper and who must do his work himself, and are not detailed enough for the large establishment employing an expert bookkeeper.

The following system in which four books only are used, these being purchased at a small cost, may be kept in odd moments during the day or in a few minutes in the evening by any dealer. The only other book necessary is a check book.

Dealers interested in installing this simplified record system should write or get in touch with the credit man in the nearest Goodyear branch, who will be glad to assist in starting it without cost.

In any business, whether it is a garage, service station or vulcanizing shop, it is fundamentally important to the owner to know just where he stands financially, to know whether he is making money on a particular account and to keep a complete record of his stock and outstanding accounts.

A Genuine System.

Only through an adequate system of bookeeping can the dealer know the profits of his business. With the system described here he may with the least amount of labor open up an account with each department of his business; for example, the vulcanizing and repair department, and charge each department with everything going into it and credit it with all sales. In this way it is possible to know whether a particular department is being operated at a loss or at a profit, daily determining if any department is "sick' and enabling the dealer to make the requisite changes.

If a department is "sick" it should be analyzed just the same as a doctor diagnoses a patient's malady. This system will show what departments should be enlarged, the stock each department requires, the amount of stock on hand, the rapidity of turn-over as well as a complete evidence of the cost price of the business.

In this way the dealer can tell the minimum amount of stock that should be carried in each department. This will prevent over-buying or stock depletion and enable him to place an order the first of the month for requirements during that month.

In this system of bookkeeping there can be no trouble in adjusting insurance in case of fire. This is important. It will facilitate credit transactions and serve as a concrete evidence of good will. It makes possible a complete record of accounts with all firms from whom goods are purchased and permits the dealer at the end of the month to check up his statements and take his cash discount. Every dealer knows he cannot afford to lose his cash discount.

Daily Sales Book or Sales Journal.

The daily sales book is used for all charges and credits. This book is double-ruled with a column for credits and debits. The debit side of this book at the end of each day is entered or posted to the account called the "merchandise account" in the ledger, in order to obtain a daily record of sales. The credit side of the book will show all credits. These credits are transferred to the credit side of the same merchandise account in the ledger.

The Invoice Book.

The invoice book is used for all invoices or purchases made from other firms. Many times a man in the auto maintenance business finds himself at a disadvantage by not knowing how much stock he has received and when it arrived. Frequently, he has a dusty file or a pigeon hole in which he stores his invoices. Invoices are valuable papers and should be kept in a safe. These invoices should be pasted in the invoice book at the time the invoice or goods purchased is received.

Handling the Book.

After the invoice is pasted in the book the amount of the invoice is written in the debit column of the book. At the close of business each month the debit column, that is the column in which is listed the amounts owing to firms from whom the goods were purchased, is posted in the merchandise account of the ledger, referred to in the foregoing, and which will be explained later. In this way the dealer can tell the amount of goods purchased each month.

Credit memorandums are also posted in the invoice book and entered in the credit column to show the amount issued the dealer by merchants from whom goods are bought. This credit is to be posted in the merchandise account of the ledger on the credit side.

At the end of the month it is only necessary to add up the debit and credit sides of the invoice book and transfer the results to the merchandise account.

The invoice book is also used as a receiving book. As mentioned before these invoices have been entered in the invoice book so that when goods are received it is only necessary to take this book to the receiving room and check off goods as they come in. If the goods invoiced are not received a note of the shortage should be made on the invoice.

The Cash Book.

The third book is the cash book, which is used only for cash received and paid out. Cash receipts each day are posted to the debit side of the cash book. The credit side of the cash book will show the amount paid out either by check or in cash. The receipt side items should be posted to the credits of individual accounts and the payment side items to the debits of the individual accounts.

The Ledger.

The ledger is a book ruled with double entry columns in which all accounts are summarized, or in other words, a complete record made of the business done.

First write the name of the particular account at the top of each page, as for example, the stock account, interest and discount account, bills receivable, bills payable, freight and express, and any other accounts pertaining to the business. For example, a cash investment by an individual as we know, results in a charge to cash and a credit to the proprietor's account. If two partners enter into a partnership, each of them investing cash, the transaction results in two entries, each like the one for the individual entry. Two accounts are opened in the ledger, one for each member of said partnership.

The next account should be the merchandise account. This account is charged with all merchandise received and credited with all merchandise sold. An account should be opened with the bank with whom the firm is doing business. The expense account, showing all charges and all expense incurred in doing business, should be opened up. Another is the freight and express account, in which is charged all freight and express. Next, the interest and discount account, which is charged with all interest paid on borrowed money and credited with all cash discounts.

Bills Receivable.

Next is bills receivable account, which is charged with all notes received for merchandise and when a note is paid or disposed of is credited with the proceeds. A bill receivable is a note given by the customer to the dealer for goods bought and to be charged or for open accounts and should be posted to the credit side of the customer's account.

At the end of the year—or any given time—to determine what profit the firm has made, take stock of all merchandise on hand. The merchandise account shows the total purchases and sales, but not the value of the goods on hand and sold.

Profit and Loss.

Open up a profit and loss account. Post all open accounts, such as expense, freight and express, interest and discount, advertising, salesman's expenses and all salaries, to the debit side of this

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account—that is all liabilities are to be posted to the debit side of the account. This account should be credited with the inventory and all other assets of the company. When the total of this account is made it should show the net gain in the business; that is, if all outstanding accounts owing the dealer are good.

The trial balance sheet will show all debit and credit balances. The total of the credits should agree with the total of the debits. Now we come to the balance sheet. This is ruled the same as the sheet used for the trial balance. The balance sheet will only show the assets and liabilities. Total up all accounts due—these are called accounts receivable—and enter on the sheet as such; total all accounts owing to others by the dealer and enter on sheet—these are called accounts payable—and enter as such; total fixture accounts and enter as such; transfer amount of inventory or merchandise account to this sheet; that is, all assets and liabilities are entered on this sheet and should give an insight to the business. Now the dealer is in a position to furnish a financial statement of his business.

LOADING TRUCKS ON CARS QUICKLY AT GMC PLANT.

Loading trucks on railroad cars for shipment is work that requires care and judgment. It must be quickly done and the machines must be protected against damage in transit, for they are subjected to a good deal of buffeting while on the cars. The shipments are made when possible in special cars with end doors, and the machines are driven up skids by their own power into the cars. But the car shortage is such that no railroad offer is refused. When coal cars and gondolas are only available then loading must be done far differently.

At the plant of the General Motors Truck Co., at Pontiac, Mich., the trucks are loaded on these type cars with a traveling crane, which can be positioned anywhere on the trucks and will lift a truck precisely where it is to be anchored. The work is well done and there is a great saving of time and no probability of damage from handling.

NEW STANDARD 2½-TON MODEL 70 TRUCK.

The Standard Motor Truck Co., Detroit, builder of Standard trucks, has now in production a new unit that has been designated Model 70, which is rated at 2½ tons load capacity. This machine is constructed of the standardized units used by this company for 10 years and is built to the well known Standard design, but will have the new Timken axle. Solid tires are listed as regular equipment, but pneumatic tires will be furnished to specification, the forward wheels having 36 by four inches shoes and the rear wheels 36 by seven-inch.

During the year 1918, automobile insurance claims amounting to $382,917 were paid by the companies insuring automobiles in Canada, as shown in the report of the superintendent of insurance, department of finance.

Uses for Old Rubber Inner Tubes

All motorists, and that term now includes many thousand farmers, accumulate damaged or unserviceable tire tubes. What to do with them is a question. But these old tubes can be used to give excellent and varied service.

If cut crosswise in widths from a quarter to a half inch, excellent rubber bands can be made. They may be used in numerous ways, as for holding the pages of note books, or for holding rubber tubes that have been repaired and are carried in the automobile. They may be used for holding the covers of tin boxes filled with small drills, cotter pins or nuts. They also serve for securing small bundles. Various other uses will suggest themselves to the owner. Being so much larger and heavier they are much more useful than the bands usually sold in stores.

Pieces of tubes may be cut with scissors and used for washers for various purposes. These washers will not last as long as washers made for general use, but considering what they are they give service for quite a while. Occasionally the nozzles on spraying outfits will not fit tight and a washer cut from an old tube will serve an emergency purpose and perhaps will save a special trip to town or to a store when work is pressing.

By starting at the end, cutting spirally round tube, one can get as long a strip of the rubber as one wants. These strips may be used to wind hammer and ax handles and iron lever handles on farm implements. Put on some rubber cement on the handles and then wind on the strips of rubber, being careful to keep them stretched fairly tight. There is a little trick to tucking the last end under the last "two times around," but after one handle has been wrapped the others are done easily. These wrapped handles do not blister the hands and the rubber wrapping will be found preferable to wrapping with adhesive tape.

Pieces from an old tube may be used for patching with a vulcanizer if the motorist does his own vulcanizing. The writer has used such patches for vulcanizing and found them very satisfactory. The purchased rubber is better, but in an emergency these pieces of tube may be used. Care should be taken, however, to trim the edges on a bevel so that after the patch has been cured the edges will not chafe the casing.

Have the surfaces clean on both sides. Wash with a cloth dipped in gasoline and then sandpaper them thoroughly. If one does not have sandpaper a fairly good job may be done with an ordinary file or a whetstone. These have given as good results as sandpaper or emery cloth.

By all means save the valve stems. Some times a valve stem is damaged and must be discarded. The valve stem out of an old tube can be inserted, cemented, then fastened by the wing nut and lock nut, and the tube will be as good as it ever was.

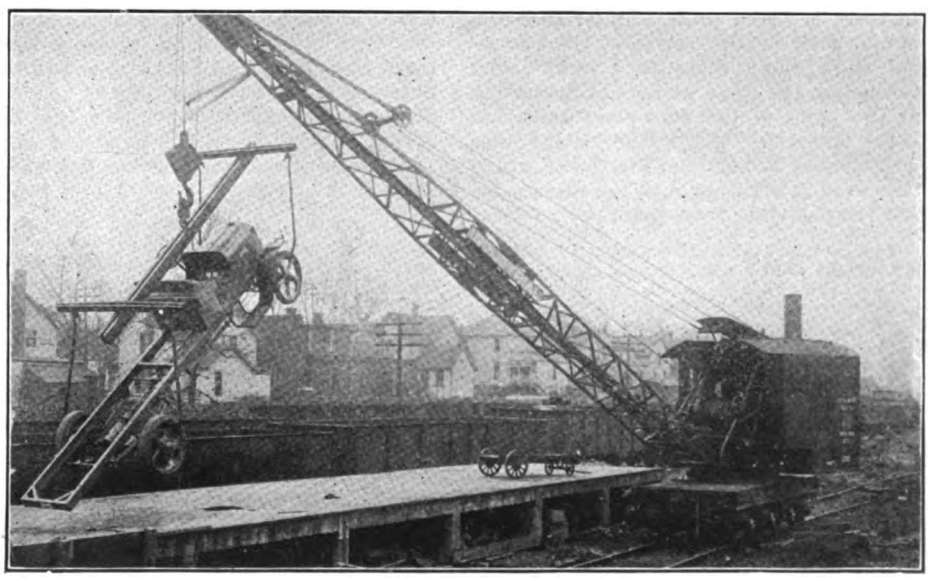
WILL BUILD ADDITION TO FEDERAL BEARING PLANT.

Work has been begun on a large addition to the plant of the Federal Bearings Co., Poughkeepsie, N. Y., which will be completed by the end of winter, and which is expected to increase the production more than 100 per cent. The company is to double its resources by increasing its capital from $1,000,000 to $2,000,000. The business of the company has developed very rapidly and continuance of this growth is believed will justify the expansion.

S. A. E. ANNUAL TRACTOR DINNER.

The annual dinner of the Society of Automotive Engineers during the Kansas City Tractor Show will take place this year at the Hotel Baltimore in that city the evening of Feb. 19.

There are 2,478,552 miles of public roads in the United States, yet only 12 per cent. of this total, or 299,135 miles, are improved with hard surfacing.



Loading Trucks on Coal Cars with a Railroad Steam Crane at the Plant of the General Motors Truck Co. at Pontiac, Mich.

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Up-to-Date Methods of Vulcanization and Tire and Tube Suggestions

Compiled by the Goodyear Tire & Rubber Co.)

D. R. CAIN, instructor in the Goodyear tire repair school, says: "Treat air bags right and they will last long enough to make proportionate cost per repair very moderate. I have noticed in some shops that after a bag has been used it is thrown under the bench, deflated, until needed again. This flattens the bag out and later the lining is likely to crack where the crease comes. Air bags when not in use should be inflated sufficiently to round them out.

"After a bag has been used a number of times it becomes more or less elongated. When this occurs a semi-circular fabric pad should be employed to relieve the internal strain on the bag. This pad should be placed on top of the bag, i. e., against the tread."

When Repairs Loosen.

"What is the matter," asks a repair man, "when the new work pulls away from the tread? It looks just as good at first as any part of the tire—smooth and even—but after a couple of weeks running it comes loose from the old tire."

There might be almost as many causes of this trouble as there are operations in the process of making a repair. On this account it is difficult to diagnose the ailment at long range.

One likely explanation, however, is lack of "follow-up" pressure. If the equipment used is provided with clamps and wood blocks the original tightening of the clamps will not suffice throughout the period of vulcanizing. As the gum softens and begins to flow out the pressure naturally decreases and unless the clamps are tightened up, say every 15 minutes, the rubber will become spongy and the difficulty described might well be the result.

Of course if an air bag is used the necessary follow-up pressure is automatically supplied.

Insufficient buffing is another common cause of repairs loosening. Tread rubber is very tough and thorough buffing is essential to produce the fine pores on the surface of the stock that will allow the cement to work in and form a firm union. A power driven wire brush is much more effective for this purpose than sandpaper or a rasp.

If too much stock is used the excess will flow over the old tread where it is not buffed or cemented. The tread stock will begin to peel back along the edges, with the probability that in time the entire section will be loosened.

New Wrinkle in Tube Repairing.

From a repair man in California comes this suggestion:

"In repairing tubes we often have some with the puncture near the valve base or in the joint where the tube unites, and difficulty is experienced in making the patch cook down evenly all around. To overcome the trouble we use a small bag, such as a tobacco bag, with a little fine sand in it. By placing the bag on the tube over the patch and then the block on the bag, an even pressure on the tube is insured, the sand adjusting itself to the thickness all around."

This is really an excellent idea, but we think we know a method that represents an improvement over it. That is to use a rubber block instead of the wood block and sand bag. The rubber block should be about three-quarters of an inch thick. It may be cut out of an old solid tire or built up of layers of tread stock (G-100). A shallow tin box of the right size can be made to serve as a mold. Cure on the flat plate for about 40 minutes at 60 pounds steam pressure. When the block gets hard from repeated vulcanization it should be discarded.

Remember.

There are three vital elements in vulcanizing—time, pressure and heat. If anyone of these is wrong there will be something lacking in the finished job.

Sinking of Treads—What Causes It?

A middle western tire shop sends this query: "What is the cause of sinking of the tread at the intersection or between the diamonds, when exposed to heat? How can I stop it?"

Blisters—rising up and contracting—cause this condition through stretching the rubber. Remedy the blisters or air pockets and the problem is solved.

CAUSES OF IMPERFECT TREAD CURE IN THIRD CIRCLE MOLD.

Due to the fact that the construction of one-third circle retreaders is made variable in size of cavity, repair men have difficulty in using them. Where the casing size is found to be smaller than the actual size of the retreader it has resulted in many cases in a lump being formed on the tread surface of the casing at the point of the vulcanizer ends. In these instances where the casing size was slightly larger than the cavity which was used it resulted in a depression being formed at this point.

In figure 1 the cause of the bulge in the cure and the method of preventing it is clearly shown. It is merely a matter of proper application of the sand bags in the cavity. Figure 2 shows a cross section of the casing in the cavity with the sand bag properly fitted and the clamp in place. The bag in this illustration is in proper position to insure right tread line pressure. Figure 3 shows the pressure bar bent by continuous use, the dents in the bar resulting from the improper application of the sand bag, and they cause flat spots and an imperfect cure on the tread.

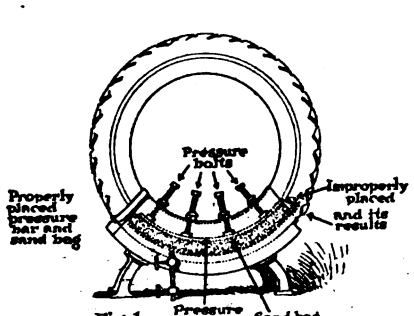


Fig 1

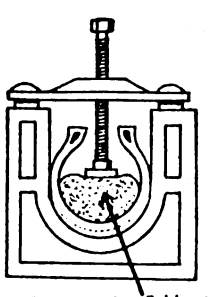


Fig. 2

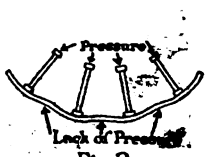
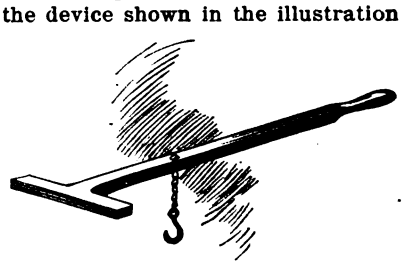


Fig. 3

DEVICE FOR PULLING BEAD MOLDS FROM SECTIONAL VULCANIZERS.

Instead of using a hammer to remove bead molds from sectional vulcanizers, and battering the molds in the process, if the device shown in the illustration is


Detailed Sketch of the Tool.

used, the bead molds can be removed with a minimum of time and labor. The new tool which can be made in any blacksmith shop consists of a three-foot bar of iron either round or square dimensions, one inch wide and ½ inch thick, with a hole bored through the wide dimension 10 inches from one end. The bar should be slightly bent with the concave or "dished" side up. At the end from which the measurement was taken to bore the hole, a flat 10-inch bar of the same size iron is welded, with small fillets to stand the strain of a pull. In the hole in the main bar is attached a blunt hook and a stout chain—the whole totaling but six inches in length.

To use, place the cross bar on top of the vulcanizer, set on the lugs and place the hook under the head molds at the end of the section and lift up. The beads will come out without any trouble.

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Roster of Officers and Membership of National Automobile Chamber of Commerce

THE National Automobile Chamber of Commerce, Inc., has just issued a complete roster of its officers, committees and membership, including also the objects of the organization. These are stated as follows:

To foster the interests of those engaged in the trade or business of manufacturing automobiles and all other self-propelling vehicles; to reform abuses relative thereto; to secure freedom of its members from unjust or unlawful exactions; to diffuse accurate and reliable information as to the standing of merchants and others dealing with members, as to all inventions, patents, processes or devices designed or intended for use in, upon, or in connection with such vehicles and the manufacture thereof, as to the state of the art relative thereto, and as to the condition and development of the trade in which the members are engaged, in the United States and foreign countries; to procure uniformity and certainty in the customs and usages of such trade; to promote the construction of better highways; to advocate the enactment of just and equitable laws affecting members; to settle differences between members; to promote a more enlarged and friendly intercourse among business men engaged in such trade or dealing with persons engaged therein; to acquire by grant, gift, purchase, devise or bequest, to hold and to dispose of such property as the purposes of the corporation shall require, subject to such limitations as may be prescribed by law, including inventions, letters patent and processes, or rights thereunder, for the benefit of its members and not for pecuniary profit.

The offices of the association are given as follows: 7 East 42nd street, New York; Riggs building, Washington, D. C.; Ford building, Detroit, Mich.

Officers and Committees.

The officers, committees, etc., are as follows:

President, Charles Clifton, Pierce-Arrow Motor Car Co.; first vice president, Hugh Chalmers, Chalmers Motor Co.; second vice president, passenger car division, R. D. Chapin, Hudson Motor Car Co.; second vice president, motor truck division, Windsor T. White, White Motor Co.; secretary, C. C. Hanch, Maxwell Motor Co., Inc.; treasurer, H. H. Rice, Chevrolet Motor Co.

Board of Directors—A. J. Brosseau, Mack Brothers Motor Car Co.; Hugh Chalmers, Chalmers Motor Co.; R. D. Chapin, Hudson Motor Car Co.; C. W. Churchill, Winton Co.; Charles Clifton, Pierce-Arrow Motor Car Co.; R. H. Collins, Cadillac Motor Car Co.; John F. Dodge, Dodge Brothers; J. Walter Drake, Hupp Motor Car Corporation; C. C. Hanch, Maxwell Motor Co.; Alvan Macauley, Packard Motor Car Co.; William E. Metzger, Columbia Motors Co.; R. E. Olds, Reo Motor Car Co.; H. H. Rice, Chevrolet Motor Co.; Windsor T. White, White Motor Co.; John N. Willys, Willys-Overland Co.

General manager, Alfred Reeves; assistant general manager, J. S. Marvin; show manager, S. A. Miles.

Committees.

Legislative—Chairman, H. H. Rice, Chevrolet; secretary, Harry Meixell, Jr., N. A. A. C.; D. C. Fenner, Mack; J. I. Farley, Auburn; David S. Ludlum, Autocar; F. I. Barrows, Lexington.

Patents—Chairman, C. C. Hanch, Maxwell; manager, R. A. Brannigan, N. A. A. C.; Windsor T. White, White; C. W. Churchill, Winton; Wilfred C. Leland, Lincoln; William MacGlashan, Studebaker.

Traffic—Chairman, William E. Metzger, Columbia; manager, J. S. Marvin, N. A. A. C.; A. I. Philp, Dodge Brothers; F. C. Chandler, Chandler; William L. Day, G. M. C.; George Dickson, National.

Passenger Car Shows—Chairman, John N. Willys, Willys-Overland; manager, S. A. Miles, N. A. A. C.; H. G. Root, Westcott; Harry M. Jewett, Paige.

Motor Truck Shows—Chairman, M. L. Pulcher, Federal; manager, S. A. Miles, N. A. A. C.; A. J. Whipple, Diamond T; David S. Ludlum, Autocar.

Highways—Chairman, Roy D. Chapin, Hudson; secretary, Pyke Johnson, N. A. A. C.; William E. Metzger, Columbia; Royal R. Scott, Willys-Overland; S. M. Williams, Garford; George M. Graham, Pierce-Arrow.

Electric Vehicle—Chairman, W. C. Anderson, Detroit; Fred R. White, Baker; H. W. Suydam, Milburn.

Membership—Chairman, C. W. Churchill, Winton; J. Walter Drake, Hupp; A. J. Brosseau, Mack.

Insurance—Chairman, William E. Metzger, Columbia; E. T. Strong, Buick; George E. Goddard, Dodge Brothers; Milton Tibbetts, Packard; F. L. Jewett, Paige; E. A. Williams, Jr., Garford; M. L. Pulcher, Federal.

Foreign Trade—Chairman, J. Walter Drake, Hupp, secretary, H. R. Cobleigh, N. A. A. C.; P. S. Steenstrup, General Motors; H. M. Robins, Dodge Brothers; Jay Rathbun, White; E. C. Morse, Willys-Overland; J. P. Roberts, Studebaker, H. B. Phipps, Hudson.

Conservative—Chairman, W. C. Sills, Chevrolet; T. R. Lippard, Stewart; M. Cook, Service; F. E. Bradfield, Velie; C. A. Baird, Cunningham.

Motor Truck—Chairman, Windsor T. White, White; secretary, F. W. Fenn, N. A. A. C.; Ray C. Chamberlin, Packard; George M. Graham, Pierce-Arrow; Victor L. Brown, Sterling; M. L. Pulcher, Federal; R. H. Salmons, Selden; D. C. Fenner, Mack.

Rural Motor Express—Chairman, James L. Geddes, Kelly-Springfield; E. A. Williams, Jr., Garfield; O. H. Browning, International Harvester; A. T. Murray, Bethlehem; George D. Wilcox, Commerce.

Hand Book—Chairman, E. T. Strong, Buick; F. H. Akers, Reo; George A. Kissel, Kissel; Garvin Denby, Denby.

Service—Chairman, E. T. Herbig, Service; H. W. Drew, Packard; W. M. Ladd, Pierce-Arrow; A. B. Cumner, Autocar; W. M. Britton, Republic; C. T. Hillshafer, Chandler; W. B. Riley, Jordan.

Truck Standards—Chairman, D. C. Fenner, Mack; Francis W. Davis, Pierce-Arrow; F. A. Whitten, G. M. C.; E. M. Sternberg, Sterling; F. F. Beall, Packard.

Passenger Car Standards—Chairman, Howard C. Marmon, Marmon; N. E. Wahlberg, Nash; Ralph Davis, Mitchell; George B. Allen, Liberty; L. C. Freeman, Maxwell.

Motor Fuel—Chairman, John N. Willys, Willys-Overland; Alvan Macauley, Packard; C. W. Nash, Nash; John F. Dodge, Dodge Brothers; E. A. Williams, Jr., Garford.

Representing Automotive Industry in Conference with Representatives of Oil Industry—Chairman, John N. Willys, Willys-Overland; Alvan Macauley, Packard; C. W. Nash, Nash; H. L. Horning, representing Motor & Accessory Manufacturers' association; C. F. Kettering, representing Society of Automotive Engineers.

Representatives on National Industrial Conference Board—Charles Clifton, Pierce-Arrow; A. J. Brosseau, Mack.

National Councillors to Chamber of Commerce, U. S. A.—Charles Clifton, Pierce-Arrow, Buffalo, N. Y.; R. H. Johnston, White, Washington, D. C.

Membership.

The present membership in the National Automobile Chamber of Commerce includes 86 makers of passenger cars and 61 motor truck manufacturers. The complete list, with the trade name of the car and address, is as follows:

Passenger Car Manufacturers.

Allen, Allen Motor Co., Columbus, O.; Anderson, Anderson Motor Co., Rock Hill, S. C.; Apperson, Apperson Brothers Automobile Co., Kokomo, Ind.; Auburn, Auburn Automobile Co., Auburn, Ind.

Baker, Baker R & L Co., Cleveland, O.; Brewster, Brewster & Co., Long Island City, N. Y.; Briscoe, Briscoe Motor Corporation, Jackson, Mich.; Buick, Buick Motor Co., Flint, Mich.

Cadillac, Cadillac Motor Car Co., Detroit, Mich.; Case, J. I. Case Threshing Machine Co., Racine, Wis.; Chalmers, Chalmers Motor Co., Detroit, Mich.; Chandler, Chandler Motor Car Co., Cleveland, O.; Chevrolet, Chevrolet Motor Co., New York, N. Y.; Cleveland, Cleveland Automobile Co., Cleveland, O.; Cole, Cole Motor Car Co., Indianapolis, Ind.; Columbia, Columbia Motors Co., Detroit, Mich.; Commonwealth, Commonwealth Motors Co., Chicago, Ill.; Crow-Elkhart, Crow-Elkhart Motor Co., Elkhart, Ind.; Cunningham, James Cunningham Son & Co., Rochester, N. Y.

Daniels, Daniels Motor Car Co., Reading, Pa.; Davis, George W. Davis Motor Car Co., Richmond, Ind.; Detroit Electric, Detroit Electric Car Co., Detroit, Mich.; Dodge Brothers, Dodge Brothers, Detroit, Mich.; Dorris, Dorris Motor Car Co., St. Louis, Mo.; Dort, Dort Motor Car Co., Flint, Mich.

Elcar, Elkhart Carriage & Motor Car Co., Elkhart, Ind.; Elgin, Elgin Motor Car Corporation, Chicago, Ill.

Fiat, F. I. A. T., New York, N. Y.; Franklin, H. H. Franklin Manufacturing Co., Syracuse, N. Y.

Glide, Bartholomew Co., Peoria, Ill.; Grant, Grant Motor Car Corporation, Cleveland, O.

Haynes, Haynes Automobile Co., Kokomo, Ind.; Hollier, Lewis Spring & Axle Co., Chelsea, Mich.; Holmes, Holmes Automobile Co., Canton, O.; Hudson, Hudson Motor Car Co., Detroit, Mich.; Hupmobile, Hupp Motor Car Corporation, Detroit, Mich.

Jackson, Jackson Motors Corporation, Jackson, Mich.; Jones, Jones Motor Car Co., Wichita, Kan.; Jordan, Jordan Motor Car Co., Cleveland, O.

King, King Motor Car Co., Detroit, Mich.; Kissel Kar, Kissel Motor Car Co., Hartford, Wis.; Kline Kar, Kline Car Corporation, Richmond, Va.

Lexington, Lexington Motor Co., Connersville, Ind.; Liberty, Liberty Motor Car Co., Detroit, Mich.; Lincoln, Lincoln Motor Co., Detroit, Mich.; Locomobile, Locomobile Co. of America, Bridgeport, Conn.; Lorraine, Lorraine Motors Corporation, Grand Rapids, Mich.

McFarlan, McFarlan Motor Co., Connersville, Ind., Maibohm, Maibohm Motors Co., Sandusky, O.; Marmon, Nordyke & Marmon Co., Indianapolis, Ind.; Maxwell, Maxwell Motor Co., Detroit, Mich.; Mercer, Mercer Motors Co., Trenton, N. J.; Milburn Electric, Milburn Wagon Co., Toledo, O.; Mitchell, Mitchell Motors Co., Racine, Wis.; Monroe, William Small Co., Indianapolis, Ind.; Moon, Moon Motor Car Co., St. Louis, Mo.

Nash, Nash Motors Co., Kenosha, Wis.; National, National Motor Car & Vehicle Corporation, Indianapolis, Ind.

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Oakland, Oakland Motor Car Co., Pontiac, Mich.; Oldsmobile, Olds Motor Works. Lansing, Mich.; Overland, Willys-Overland Co., Toledo, O.; Owen Magnetic, Baker R & L Co., Cleveland, O.

Packard, Packard Motor Car Co., Detroit, Mich.; Paige, Paige-Detroit Car Co., Detroit, Mich.; Paterson, W. A. Paterson Co., Flint, Mich.; Peerless, Peerless Motor Car Co., Cleveland, O.; Pierce-Arrow, Pierce-Arrow Motor Car Co., Buffalo, N. Y.; Pilot, Pilot Motor Car Co., Richmond, Ind.; Premier, Premier Motor Corporation, Indianapolis, Ind.

Raulang, Baker R & L Co., Cleveland, O.; Reo, Reo Motor Car Co., Lansing, Mich.; Roamer, Barley Motor Car Co., Kalamazoo, Mich.; R & V Knight, Root & Van Dervoort Engine Co., East Moline, Ill.

Saxon, Saxon Motor Car Corporation, Detroit, Mich.; Sayers, Sayers & Scovill Co., Cincinnati, O.; Scripps-Booth, Scripps-Booth Corporation, Detroit, Mich.; Standard, Standard Steel Car Co., Pittsburgh, Pa.; Stearns-Knight, F. B. Stearns Co., Cleveland, O.; Stephens, Moline Plow Co., Stephens Motor Branch, Moline, Ill.; Studebaker, Studebaker Corporation, South Bend, Ind.; Stutz, Stutz Motor Car Co., Indianapolis, Ind.

Templar, Templar Motors Corporation, Cleveland, O.

Velie, Velie Motors Corporation, Moline, Ill.

Westcott, Westcott Motor Car Co., Springfield, O.; Willys-Knight, Willys-Overland Co., Toledo, O.; Winton, Winton Co., Cleveland, O.

Motor Truck Manufacturers.

Acme, Acme Motor Truck Co., Cadillac, Mich.; American La France, American La France Fire Engine Co., Elmira, N. Y.; Atterbury, Atterbury Motor Car Co., Buffalo, N. Y.; Autocar, Autocar Co., Ardmore, Pa.

Bethlehem, Bethlehem Motors Corporation, Allentown, Pa.; Briscoe, Briscoe Motor Corporation, Jackson, Mich.; Brockway, Brockway Motor Truck Co., Cortland, N. Y.; Buick, Buick Motor Co., Flint, Mich.

Chevrolet, Chevrolet Motor Co., New York, N. Y.; Clydesdale, Clydesdale Motor Truck Co., Clyde, O.; Commerce, Commerce Motor Car Co., Detroit, Mich.; Corbitt, Corbitt Motor Truck Co., Henderson, N. C.; Cunningham, James Cunningham Son & Co., Rochester, N. Y.

Denby, Denby Motor Truck Co., Detroit, Mich.; Diamond T, Diamond T Motor Car Co., Chicago, Ill.; Dodge Brothers, Dodge Brothers, Detroit, Mich.; Dorris, Dorris Motor Car Co., St. Louis, Mo.; Duplex, Duplex Truck Co., Lansing, Mich.

Federal, Federal Motor Truck Co., Detroit, Mich.

Garford, Garford Motor Truck Co., Lima, O.; G. M. C., General Motors Truck Co., Pontiac, Mich.; Graham, Graham Brothers, Evansville, Ind.; Grant, Grant Motor Car Corporation, Cleveland, O.

International, International Harvester Co., Chicago, Ill.

Jackson, Jackson Motors Corporation, Jackson, Mich.; Jones, Jones Motor Car Co., Wichita, Kan.

Kelly-Springfield, Kelly-Springfield Motor Truck Co., Springfield, O.; Kissel, Kissel Motor Car Co., Hartford, Wis.; Kleiber, Kleiber & Co., San Francisco, Cal.

Maccar, Maccar Truck Co., Scranton, Pa.; Mack, Mack Brothers Motor Car Co., New York, N. Y.; Maxwell, Maxwell Motor Co., Detroit, Mich.; Milburn Electric, Milburn Wagon Co., Toledo, O.; Moreland, Moreland Motor Truck Co., Los Angeles, Cal.

Nash, Nash Motors Co., Kenosha, Wis.

Oldsmobile, Olds Motor Works, Lansing, Mich.; Oneida, Oneida Motor Truck Co., Green Bay, Wis.; Overland, Willys-Overland Co., Toledo, O.

Packard, Packard Motor Car Co., Detroit, Mich.; Paige, Paige-Detroit Motor Car Co., Detroit, Mich.; Pierce-Arrow, Pierce-Arrow Motor Car Co., Buffalo, N. Y.

Reo, Reo Motor Car Co., Lansing, Mich.; Republic, Republic Motor Truck Co., Alma, Mich.; Riker, Locomobile Co. of America, Bridgeport, Conn.; Rowe, Rowe Motor Manufacturing Co., Lancaster, Pa.

Sanford, Sanford Motor Truck Co., Syracuse, N. Y.; Saurer, Saurer Motor Co., New York, N. Y.; Schacht, G. A. Schacht Motor Truck Co., Cincinnati, O.; Selden, Selden Truck Corporation, Rochester, N. Y.; Service, Service Motor Truck Co., Wabash, Ind.; Standard, Standard Motor Truck Co., Detroit, Mich.; Sterling, Sterling Motor Truck Co., Milwaukee, Wis.; Stewart, Stewart Motor Corporation, Buffalo, N. Y.; Studebaker, Studebaker Corporation, South Bend, Ind.

United, United Motors Co., Grand Rapids, Mich.

Velie, Velie Motors Corporation, Moline, Ill.; Vim, Vim Motor Truck Co., Philadelphia, Pa.

Walter, Walter Motor Truck Co., New York, N. Y.; Ward, Ward Motor Vehicle Co., Mt. Vernon, N. Y.; White, White Motor Co., Cleveland, O.; Wilson, J. C. Wilson Co., Detroit, Mich.

BOOTY VACUUM-CONTROL CARBURETOR

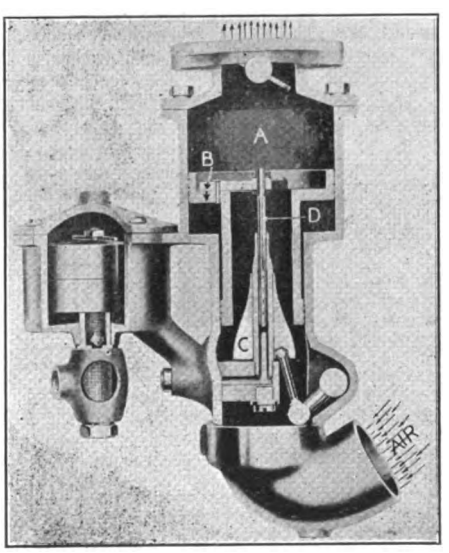
A CARBURETOR that is claimed to be entirely new and original in principle, extremely simple in construction, which is maintained to have exclusive and distinguishing qualities, radically from other carbureting instruments, is the Booty, the details of which have just been made public.

The principle of operation is clearly shown in the accompanying sectional illustration. When the throttle valve is partially open the piston (b) rises and creates an area of opening around the cone (c). This admits the volume of air required by the opening of the throttle, and the grooves in the fuel metering pin (d), which are very shallow at the top and gradually deepen to the bottom, permit the measurement of the ratios of air and fuel required at all loads and speeds of the engine.

Statement is made that the velocity of air through the mixing chamber is constant at all engine speeds and does not vary from the idling to the full load. In this it differs from all other carburetors. The constant velocity of the air is obtained by the movable venturi, which is represented by the bottom of the piston (b) and the contour of the cone (c). The floating piston maintains a constant vacuum in the carburetor, which is very low (approximately one inch mercury column), this giving a very high volumetric efficiency.

Claim is made that water entering the fuel supply pipe with the fuel will not affect the functioning of the carburetor; that water may be poured into the float chamber while the engine is running without affecting its efficiency. This is explained by the low internal depression and the large orifices in the metering pin through which the water is drawn freely and quickly. This self-scouring quality removes dirt, dust or any foreign substance which would prevent the operation of other type instruments.

The proportions of air and gasoline vapor required for perfect carburetion is determined by shape of the cone and the depth of the taper grooves in the metering pin, which are very shallow when the piston is in an idling position, but increase in depth as the pin is raised by the piston. As the piston is lifted the opening around the venturi cone is increased so that the shape of the cone and the graduated depth grooves in the metering pin when calibrated, the one to the other, must supply accurate volumes of gasoline and air.



Cross Section of the Booty Vacuum-Controlled Carburetor, Showing the Principles of Operation.

The design of the Booty carburetor is unusual in that it has but one adjustment and that on the instrument board or steering post, where it can be adjusted by the driver to meet whatever conditions may be experienced. This must not be confused with a primer or choke, as it is a positive adjustment for the fuel. The object of this control is to raise the cone (c), which automatically causes the piston to rise to maintain its fixed and constant vacuum. At the same time the piston (b) is raising the metering pin (d), which increases the depth of the fuel orifices enriching the mixture to whatever degree is desired. Claim is that any desired density of mixture constant throughout the range of the carburetor may be obtained by setting the cone. The rising of the cone will create a rich mixture for starting a cold engine, instead of choking the air by the setting of butterfly valve in air intake.

The manufacturer claims that the Booty carburetor is suited for all makes and types of engines, and that any individual instrument will be equally efficient in use on a car, truck, tractor, aeroplane, marine or stationary engine. All parts are standard and are interchangeable.

KEEPING THE WINDSHIELD CLEAN.

While the windshield is still dry, rub it lightly with cotton dipped in glycerine. Repeat this operation at intervals and the windshield will always afford clear vision in rain or snow.

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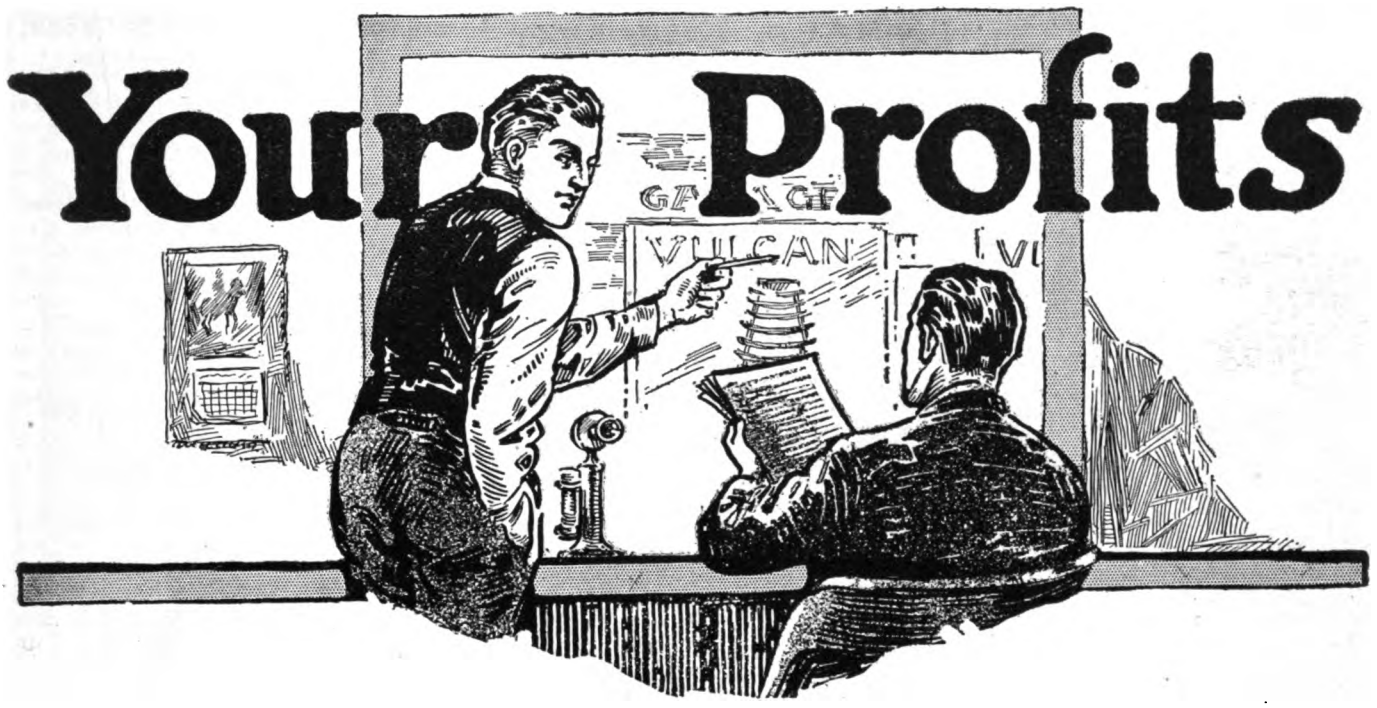

Profit is Proportional

Profit depends on service. As you serve, you profit. Motorists in your territory must have replacement springs. They want the best—they will buy the best, if they can get it. Give them VULCAN—the spring of supreme service—and profit accordingly.

If your Jobber cannot supply you, write us today.

When Springs Break, put on VULCAN

The Replacement Spring

JENKINS VULCAN SPRING COMPANY

Factory, Richmond, Indiana

Branches:

Atlanta, Ga. Boston, Mass. Dallas, Tex.
Minneapolis, Minn. Reading, Pa. Kansas City, Mo.
Richmond, Va.

The VULCAN Spring Rack free with your first order.

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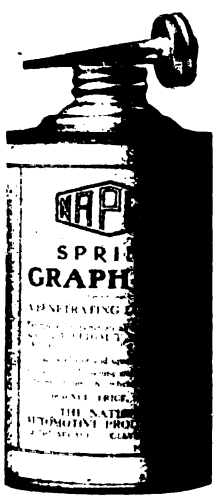
NAPCO GRAPH-OIL, A NEW SPRING LUBRICANT.

The National Automotive Products Co., 331 The Arcade, Cleveland, O., has perfected the formula of a lubricant for the springs of automobiles, which may be effectively applied without spreading the leaves of the springs. This has been named "Napco Spring Graph-Oil," and consists of seven different ingredients, the base of which is a high-grade lubricating oil, together with graphite, creosote and four other penetrating oils. It is said to contain no naphtha, kerosene or gasoline.



"Graph-Oil" is applied to one side of the spring, and it is stated by the manufacturer that it will penetrate between the leaves without spreading, and will come out on the opposite side in from 30 seconds to three minutes time, leaving a graphite deposit between each leaf. It is also claimed that if it is applied to a rusty nut or connection it will sink in around the threads, loosen the bond of rust or corrosion, making removal easy.

Napco Graph-Oil is guaranteed to remove rust, to prevent it from forming and not to collect dust. It is put on the market in 16-ounce cans at a list price of 75 cents a can. The manufacturer will furnish dealers' discount on application.

ELLIS JOINS V. A. NIELSEN CO.

Robert M. Ellis, who is well known in the automobile trade of the East, has joined the firm of V. A. Nielsen Co., manufacturers' sales agent for automobile equipment, 708 Beacon street, Boston. Mr. Ellis has been for some years manager of the Splitdorf Electrical Co. and will have charge of the sales department of the Nielsen Co., which represents, among other well known lines, Connecticut ignition, India ignition and starting cable, and Briggs-Stratton Co.'s Basco switches. In coming to the Nielsen Co. Mr. Ellis becomes secretary and Mr. Nielsen is treasurer.

MASTER CARBURETOR CO. IN NEW QUARTERS.

The Master Carburetor Co. has taken possession of its new plant at Main and 30th streets, Los Angeles, Cal., and is now installed in what is claimed to be one of the largest carburetor factories in the West. The output of Master carburetors will, by the first of March, when the new unit is under full production, be increased many times.

Dort Co. Takes Over Lull Plant

The Dort Motor Car Co., Flint, Mich., has taken over the extensive plant of the Lull Carriage Co. at Kalamazoo, Mich., to increase its capacity for the manufacture of its Fourseason sedan and coupe models. This entails an expenditure of about $500,000, and will add 150,000 square feet of floor space to the Dort production facilities. One of the Lull units has been already turned over and possession of the other will be given May 1. In the first building a complete wood working plant will be installed, together with a new set of boilers in the power house. The daily schedule will include 150 to 200 sets of body parts.

The other four-story building will be devoted entirely to the assembling, painting and trimming of enclosed bodies. At the Kalamazoo plant, which will be operated as a complete unit, the wood parts for open bodies will be made, but the assembly of these will continue at Flint. About 250 men will be employed at Kalamazoo.

This deal does not in any way effect the Dort company's building programme at Flint, where work on the new plant in the east end of the city is being rushed to completion.

GUTHARD MAKES $100,000 SHIPMENT.

The Edgar C. Guthard Co., Chicago, recently shipped a full car load of its Billmont Master wrenches to a group of Pacific coast jobbers. The Billmont is a socket wrench designed to be almost

as universal in its utility as a monkey wrench. The shipment in question consisted of 10,000 of these wrenches, each having a retail value of $10. The necessary sockets, five for each tool, went with each wrench, also a special adapter which permits the use of any standard size socket.

BLACK & DECKER OPEN CHICAGO OFFICE.

Black & Decker Manufacturing Co., Towson Heights, Baltimore, Md., has established a permanent office and show room at 1436 South Michigan avenue, Chicago, in charge of R. G. Ames, whose territory has been extended to cover the entire mid-west. Mr. Ames will be assisted by the following:

F. E. Marrion, who will be in charge of the "missionary" work, so-called, and J. N. LaBalle, who will be located at Chicago. Salesmen working from the Chicago office—Henry Fornare, C. E. Lee, L. C. Lee, T. H. Scaffe, H. P. Archer, L. C. J. Gehring.

COLUMBIA'S NEW GRINDER BOOK.

The Columbia Manufacturing Co., Inc., Belleville, Ill., has issued its Grinder Book No. 26, which is a catalogue of its line of grinders and buffers, countershafts and presses for the heavy hardware mill supply and automotive trades.

The various machines represented have been perfected over a period of 36 years successful manufacturing experience and are designed for simplicity and efficiency, as well as for strength and wearing qualities, and are accompanied by a warranty guaranteeing them free from imperfection of material or defection in workmanship.

BURGESS SALES MANAGER.

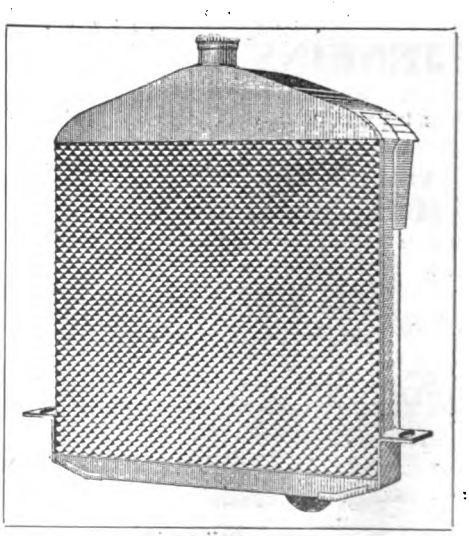
On Feb. 1 the Walter S. Burgess Co., St. Joseph, Mich., manufacturer of the Burgess rebound shock absorbers, completed the formation of its own sales organization with Proctor H. Patten, formerly with the Zinke Co., Chicago, in charge of sales.

LOBER NON-BURSTING RADIATORS.

The Nelson J. Quinn Co., Toledo, O., is putting on the market the Lober non-bursting radiator, which, it is claimed, absolutely, eliminates all trouble from freezing even in extreme cold weather.

Its construction is as simple as it is effective to serve its purpose. Radiator is secured by vertical water ways formed by placing corrugated brass plates face to face. Wide strips of spring brass hold the plates firmly together so that the corrugations form in effect upright water tubes. Should freezing occur, no injury results it is claimed, as the plates merely separate enough to allow for the expansion and, when the water thaws, the springs bring the plates back as they were, undamaged, squarely in line and ready for business.

The Lober radiator is also designed for efficiency in hot weather as well as under conditions of extreme cold, as the extra large size of the radiating surfaces obviates overheating and boiling of the water. Only the best of material is used in its construction, and each one is sold with a positive guarantee.



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WAR DEPARTMENT.
WASHINGTON.

DEPARTMENT OF MILITARY AERONAUTICS.

August 23, 1918.

From: Ralph Earle, 2nd Lieut., A.S.,S.C.

To: Materiel Branch, Supply Section, D. M. A.

Subject: Test of ignition devices.

1. Reference your memorandum of August 22nd, the six Alsop Ignition Devices per your order have been received and four of same have been installed.

2. The first device was installed August 20th on Ford car No. 28. The preliminary test consisted of using spark plugs with broken porcelains which had previously been discarded as worthless. By the use of the device the necessary spark was obtained through these heretofore useless plugs, enabling the engine to function perfectly with them.

3. The second test consisted of filling the crank case with twenty-four quarts of oil which filled same, the oil running out of the breathing pipe, and running the engine until all plugs were sooted to such an extent that all cylinders but one ceased to fire. The ignition device was then thrown in and within a distance of two city blocks all plugs began to fire and continued to do so throughout the test.

4. The other plugs were installed and are now in operation. No further special tests were made as the above was considered amply sufficient to demonstrate the efficiency of the devices.

Ralph Earle
2nd Lieut., A.S.,S.C.

This Wonder DEVICE

as one user says, "comes as near making the impossible happen as anything ever seen."

The "Alsop-All-Spark" WILL PREVENT SPARK PLUG TROUBLES

WE KNOW

It will save fuel and spark plugs—
It will fire dead carbon-choked plugs—
It will cause perfect combustion—
It will guarantee increase of gasoline mileage—
It will do away with changing spark plugs—
It will prevent running engine with a misfire—
It will give a more powerful spark—
It will eliminate carbon and vibration—
It will increase speed and power—
It will fortify any ignition system.

BUT DON'T TAKE OUR WORD FOR IT—HERE IS A GOVERNMENT TEST.

Read it then send for our catalogue of Government Tests and Illustrated Information—or better still send for a device—with money back guarantee. You can install it on any four cylinder car. IT WILL MAKE YOUR CAR RUN AND WILL GIVE YOU A HOT FAT SPARK WHEN EVERYTHING ELSE FAILS. There are no dangerous exposed spark gaps which may set a car afire.

$7.50

WE WANT LIVE DEALERS--LIVE DEALERS WANT THE ALL-SPARK

ALL-SPARK IGNITION CO., Inc. 13-J WATER STREET NEW YORK CITY

(When Writing to Advertisers, Please Mention the Accessory and Garage Journal.)

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New Furber 100 Per Cent. Spark Plug

After several years of experimenting, costly investigation and exhaustive tests, a spark plug has been developed and placed on the market by the Furber Manufacturing Co., 614 Washington street, Lynn, Mass., that is claimed to be 100 per cent. efficient for use under all conditions to be met with in modern gasoline engines and will stand the terrific pounding of the highest compression motor.

Frederick M. Furber, President and General Manager, Furber Manufacturing Co.

Roland T. Parker, Vice President and Sales Manager, Furber Manufacturing Co.

The plug itself, as well as the method of its manufacture and the machinery used, are protected by patents secured both in the United States and abroad. The Furber company states that it is willing to stake the reputation of the Furber 100 Per Cent. Plug on the high quality of its insulation alone. The electrode wires are of special nickel-manganese alloy, which will not burn or fuse. The center electrode is cemented and baked in by a new process which allows for expansion and contraction and at the same time makes it inseparable from the insulator.

Outside of the quality of material used the merit of any spark plug depends largely on the method of securing the insulator within the shell. Continued experiments and tests have shown that a permanently tight joint is impossible when the common methods of making a joint between the insulator and shell are used. The average plug leaks compression; most users of plugs know that if a two-piece plug is tightened enough to make it gas tight, the insulator is generally broken.

In the Furber 100 per cent. plug the insulator is placed in the shell with two gaskets and one hard brass ring, one gasket under the insulator, the hard brass ring and the other gasket on the top shoulder. It is then passed to an automatic machine, which turns the flange of the shell over the shoulder of the insulator, applying 4000 pounds pressure on one small portion of the flange, this being progressively done all the way around the flange until finally 210 blows of the die, each with 4000 pounds pressure, have been applied. Yet at no time has the insulator been subjected to more than 4000 pounds pressure at one time. This process actually rivets the insulators in.

The maker gives a positive guarantee that the Furber 100 per cent. spark plug must give satisfaction or money will be refunded.

The officers of the Furber Manufacturing Co. are: President and general manager, Frederick M. Furber; vice president and sales manager, Roland T. Parker; treasurer, Harry Eisner. Production plans contemplate the manufacture of about 1,000,000 plugs the present year.

JONES IS SALES MANAGER FOR WINTHER.

E. Z. Jones, the new manager of sales of passenger cars for the Winther Motor Truck Co., Kenosha, Wis., has inaugurated a sales campaign which it is believed will prove effective in greatly stimulating the distribution of Winther cars. Distributors are to be offered a five-year contract, developed along lines calculated to assure them of reaping the benefit from the preliminary work which is being done in merchandising the Winther line. The plan to be adopted is the result of Mr. Jones' extensive experience as a retailer, distributor and factory representative in the automobile industry. He was southern district manager for the Kissel Motor Car Co., with headquarters at Atlanta, Ga.. before joining the Winther forces.

The Milwaukee Tank Works, Milwaukee, Wis., has announced an increase in the price of its products, effective Feb. 15, this being accompanied by important changes in wholesale jobbing and resale discounts.

ANNUAL STATEMENT OF GRAY & DAVIS.

Gray & Davis, Inc., Boston, manufacturer of starting-lighting equipment, has declared a dividend of 50 cents a share on common stock, payable March 1 to stockholders of record Feb. 24. This is the first dividend made on the present outstanding issue of 108,904 shares of common stock. In April, 1913, a $5 dividend was paid on common, the following July $30 a share was paid, and in March, 1916, 25 per cent.

The profits for the year ending Dec. 31, 1919, were $465,680; dividends paid on preferred stock during the year, $27,-137; surplus on hand Dec. 31, 1919, $613,-268; surplus on hand Jan. 1, 1919, $248,415.

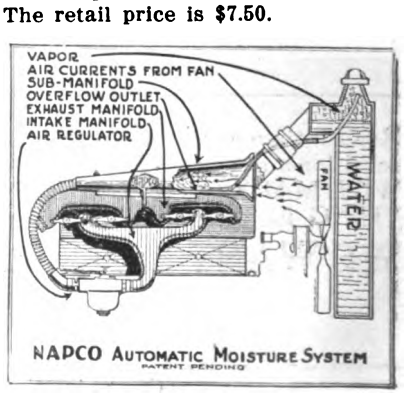
IMPROVEMENT ON THE FORD STOVE.

The National Automotive Products Co., 331 The Arcade, Cleveland, O., is offering to the Ford trade the Napco automatic moisture system, which is designed to supply hot moist vapor to the regular air intake of the Ford carburetor. The working parts of the system consist of a funnel shaped sub-manifold made of aluminum, with a three-inch opening at the large end and tapering down to 1¼ inches at the small end. It is 15 inches long and is placed on top of the exhaust manifold. The bottom side is open and all the heat from the exhaust manifold enters and is driven back into the carburetor air intake by the air currents induced by the fan. A small flexible tubing connects this stove to the overflow pipe and all the moist vapor that would ordinarily pass out through the overflow pipe without being utilized is worked back through the motor automatically as the engine requires moisture.

A simple means is provided to take care of the overflow water either from boiling or in filling the radiator, and it is stated that it is impossible for any water to find its way into the carburetor.

The Napco automatic moisture system can be easily installed in 10 minutes time, is entirely automatic and has no moving parts. One hundred per cent. more mileage, greater power, more speed and flexibility, permitting the engine to pick up faster and run more smoothly in damp weather are guaranteed by the manufacturer, as well as elimination of carbon deposit.

The retail price is $7.50.



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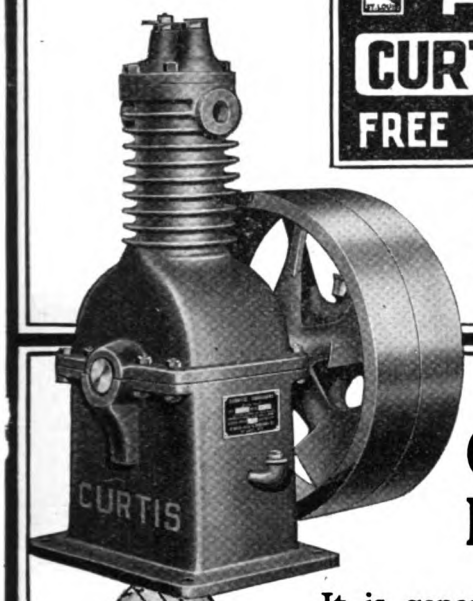
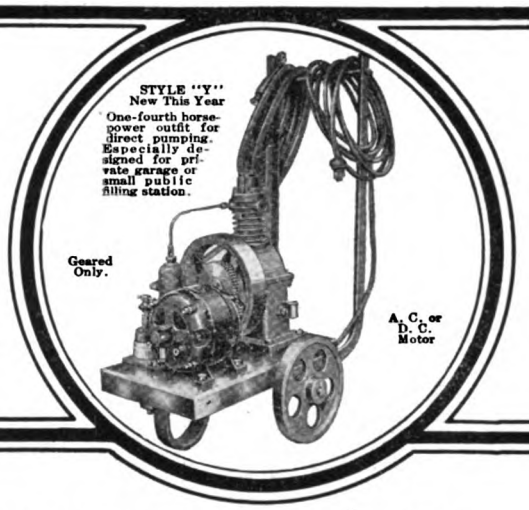
FREE
CURTIS AIR
FREE FROM OIL

The Curtis Sign is 10x14 inches—baked enamel on steel. Furnished FREE with every Curtis Garage Air Compressor—can not be had in any other way.



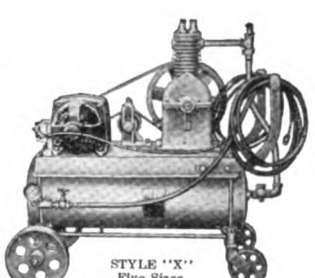


Curtis Free Air Service Brings You New Patrons and Increased Profits

It is generally recognized that compressed air to fill tires frequently carries oil and that this oil has a deteriorating effect on inner tubes. For this reason motorists are discriminating in their use of "free air service"—and are on the lookout for the Curtis sign because they know that Curtis Air is free from oil. It may be that the installation of the CURTIS outfit will be the beginning of a new era of profit-making for you.

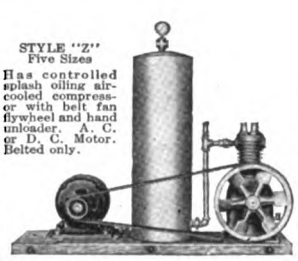
Curtis Air—Free From Oil

Curtis Air Compressors, through a patented construction, prevent oil from getting into the air line—therefore the air delivered is clean, pure and free from oil. The many other exclusive points of superiority, together with the simplicity, sturdiness and dependability of Curtis Compressors make them the popular choice everywhere. With the two new outfits illustrated—Style "Y" and Style "V"—the Curtis line is now complete, offering a suitable compressor to meet every requirement. Ask your jobber or write us for illustrated literature describing the different sizes and types of outfits.

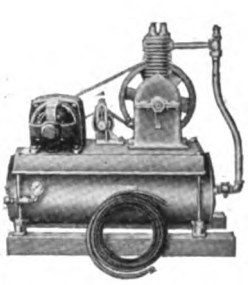


STYLE "X"
Five Sizes
Has controlled splash oiling air-cooled compressor, with belt fan flywheel or with cut flywheel gear. A. C. or D. C. motor. Belted or geared.

CURTIS PNEUMATIC MACHINERY CO.
1621 Kienlen Avenue St. Louis, Missouri
Branch Office: 531-A Hudson Terminal, New York City



STYLE "Z"
Five Sizes
Has controlled splash oiling air-cooled compressor with belt fan flywheel and hand unloader. A. C. or D. C. Motor. Belted only.



STYLE "V"
New This Year
Five Sizes
Has controlled splash oiling air-cooled compressor, with belt fan flywheel or with cut flywheel gear. A. C. or D. C. motor. Belted or geared.

Curtis Pneumatic Machinery Co.
1621 Kienlen Ave.
St. Louis, Mo.

Gentlemen:
Please send me full details on Curtis Air Compressors — your proposition and prices.

Name_____
Address_____
Jobber's Name_____
Address_____

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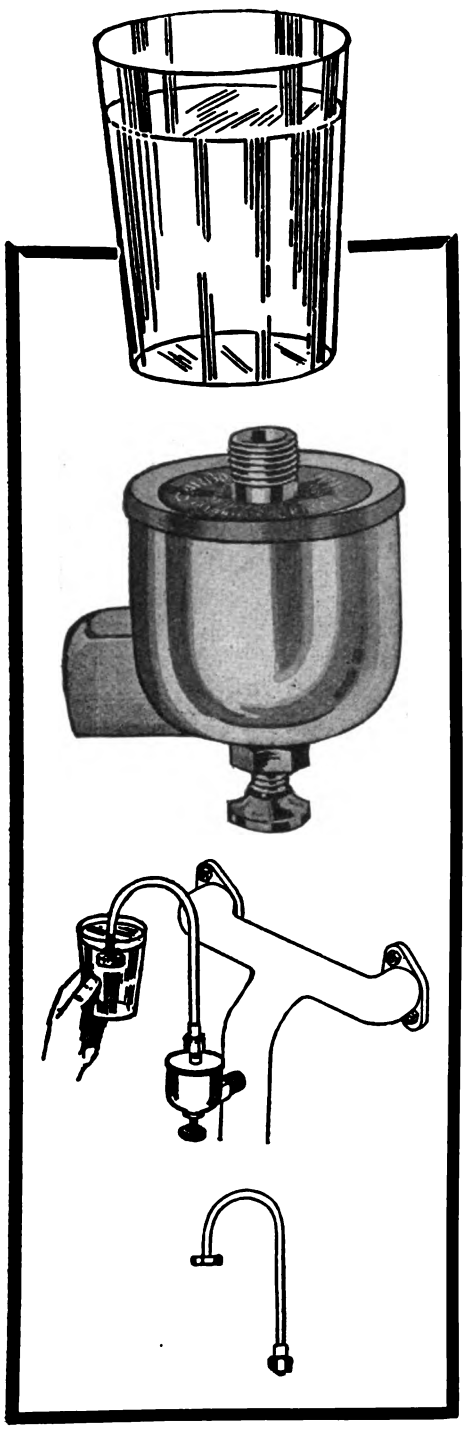

Give That Motor a Drink— And It Will Work Harder

Does carbon in your motor worry you all the time, like it does the thousands of other car owners? There's only one thing to do. Be your motor's doctor and cure it of indigestion.

Once a week, while the motor is hot, give it a glass of water. You won't have carbon troubles then.

Does your car give you only fifteen miles to the gallon of gasoline? There's twenty miles in each gallon, if you want to get it. Why not cure that motor of over-eating and get five miles more!

Equip your intake manifold with a Re-Carbureter. Test it for 30 days. If you do not find it will do all we claim for it, return the Re-Carbureter and we'll refund the $5.00 you paid for it.

This is the way to banish carbon. With a squirt can, put water in the Re-Carbureter intake. Let the hot motor suck in the water. The steam breaks up into oxygen. Pure oxygen eats up carbon on pistons, cylinder heads and rings, with ease. The motor works better than ever after its drink.

If you prefer, the Re-Carbureter Oxy-Generator, which fits the threaded intake of the Re-Carbureter and allows you to feed the water from a cup or glass, is supplied at $1.00.

How you save the five or more miles usually wasted in every gallon of fuel.

The Re-Carbureter re-mixes the gas before feeding the engine. The Re-Carbureter is controlled automatically by the motor. It feeds only what the motor can convert into power.

Without the Re-Carbureter you feed the motor too much. The surplus makes carbon. Some of it leaks into the oil pan and dilutes your lubricant.

There is a third value to the Re-Carbureter. It is an excellent primer when the motor is cold. Squirt a few drops of gasoline or gas and ether into the Re-Carbureter. The motor will fire instantly.

Write for more information. Or better still, place your order now. Our Written guarantee protects you.

Dealers will find the Universal Re-Carbureter a profitable accessory. Get in touch with our proposition.

THOMAS-ARMSTRONG CO., INC.

1777 Broadway, New York City

UNIVERSAL AUTOMATIC RE-CARBURETER AND PRIMER

FOR PLEASURE CARS, MOTOR TRUCKS AND TRACTORS

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AN APRON THAT'S REALLY ACID PROOF

Our chemists solved a great problem when they produced "Invincible" acid-proof fabric—not only 100% acid proof, but pliable and wear proof.

INVINCIBLE ACID-APRON

Used by the largest factories in America in acid, pickling and nickel plating departments. Has withstood the most severe tests.

Furnished complete with neck tape and adjustable chain fastener for waist and in various sizes to suit your needs.

Send Coupon for sample and full information.

IBSCO AUTOMATIC BATTERY STEAMER AND STILL

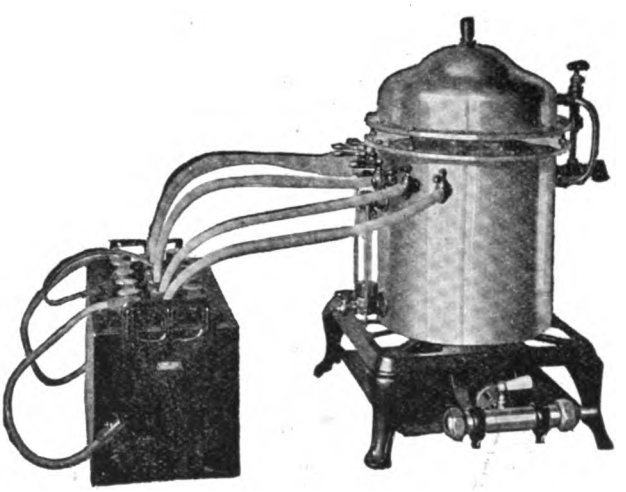
A necessity in every battery station.

IBSCO Steamers and Stills are all made of spun aluminum. No seams; only aluminum and brass come in contact with water. One cell or all can be removed in from three to five minutes. Water is distilled at the rate of about a gallon an hour.

No. 1 IBSCO Steamer and Still has automatic valve. Just attach to city water and turn on. The valve does the rest.

No. 5 IBSCO hasn't the automatic valve. Must be filled by hand. Outside glass gauge shows water level at all times.

Any kind of heating plant or gas burner will operate an IBSCO.



Sales Department

THE BAILEY-DRAKE CO.,

1120 So. Michigan Avenue,

CHICAGO, ILLINOIS

THE BAILEY-DRAKE CO.,
1120 So. Michigan Ave., Chicago, Ill.

Send us descriptive literature and prices on the checked items. **Accessory & Garage Journal.**

( ) Ibsco Battery Steamer
( ) Invincible Acid Apron.

Name.....

Address.....

Name of Jobber.....

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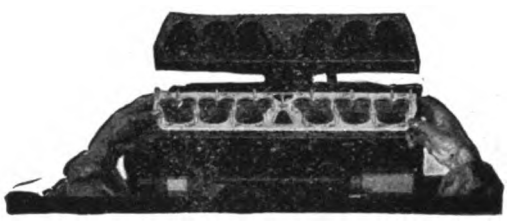
Jobbers Like to Handle Victor Gaskets Because There Is a Type for Every Motor



Showing perfect alignment of Victor Gaskets with studs, combustion chambers and waterways

Jobbers appreciate the fact that we make the most complete line of copper-asbestos gaskets in the country. They are also enthusiastic over the Victor policy of protection on every sale in their territory.

We have in stock at all times more than 300 types of cylinder head gaskets. Including exhaust, manifold, carburetor, spark plug and other types, the Victor line embraces over 4,000 numbers.

Victor quality is indicated by the judgment of a majority of America's largest manufacturers of motor cars in specifying Victor copper-asbestos gaskets as standard equipment.

If you are not now handling the Victor line, write us. Our plan will be as profitable to you as it is to the majority of the leading jobbers in the country.

Pacific Coast Representatives
Allied Industries, Inc.
279 Minna Street
San Francisco, California

South American Representatives
C. J. P. Lucas
Galeria Gumes 558
Buenos Aires, South America

Victor Manufacturing & Gasket Co.
World's Largest Gasket Manufacturers
5750 Roosevelt Road **Chicago, Illinois**

(3)

VICTOR
COPPER~ASBESTOS
GASKETS

The Worlds Standard Gaskets

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Why the Harvey
Unbr
Why M

THE Harvey Boltless Spring has ***no weak spots.*** It is just as strong at the center as it is anywhere else. No metal has been removed at the center, no fractures made—the fibre of the steel is unbroken.

This feature, with that of the special Harvey process of heat treating and tempering each leaf accurately and uniformly, gives the Harvey Spring unsurpassed strength and resilience.

Thus the Harvey dealer is amply protected—every Harvey Spring is guaranteed against breakage or sagging.

The ordinary spring has a weak spot where the hole is punched to accommodate a bolt. Such a spring needs but a little added strain to induce one of the minute fractures starting at the hole to extend and enlarge to the full width of the leaf.

Harvey dealers are aided by a generous supply of sales helps, movie slides, window decalcomanias, inside wall posters and the helpful Harvey book containing specifications for more than 1500 Harvey springs. Write for this book now.

Harvey Spring & Forging Co.
1162 17th St. Racine, Wis.

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Kwik-on-an-off

TRADE MARK

INSTANTANEOUS

At last a dust cap that you don't have to keep on turning forever to put on.

Slip it over the valve-stem and give one turn and it's on.

When you want it to come off—and not till then—one turn in the other direction unlocks it.

Pat. Dec. 24th, 1918
Pat. Sept. 9th, 1919

Price 50 Cents per set of four

Simple, Expeditious, Unfailingly Efficient and Inexpensive

You can be sure that with

SCHRADER UNIVERSAL Kwik-on-an-off

dust caps on your valves, dust and dirt will not get to the valve-cap or inside the valve-stem thereby causing damage to the valve-inside and occasioning a leak.

at your dealer or

A. Schrader's Son, Inc.
Brooklyn, N. Y.

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FORDS are Non-Stallable when Equipped with Dyneto STARTING and LIGHTING SYSTEM

REGISTERED TRADE MARK

You can gain profitable and well-pleased Ford customers by selling them this high-grade, dependable starting and lighting system. It has "big car" quality. It makes Fords non-stallable.

There is a good profit for the dealer.

The Dyneto System is complete with motor-generator, storage battery, battery box, all wiring, switches, brackets, sprockets, etc., etc. Can be easily installed.

It has the same characteristic features as the Dyneto system that has been used continuously since 1913 on America's highest priced light weight car, the Franklin.

Makes Fords NON-Stallable

The big advantage of this system over others is that it makes the engine NON-Stallable. If too sudden application of clutch brings motor to stop, Dyneto instantly takes hold and starts it—**automatically—driver** doesn't have to press a button or move a lever.

In emergency, Dyneto is powerful enough to move car out of danger, without the motor.

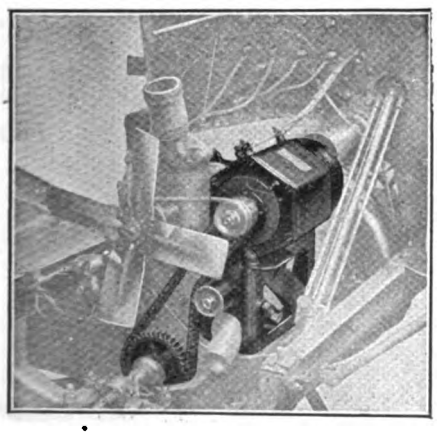
Liberal Discounts To Live Dealers

Only a limited number of these outfits are available for immediate shipment, and orders will be filled in the order in which they are received. Write for discounts for dealers. Better wire quantity you wish reserved for you.

$85.00

Retail F. O. B. Syracuse, N. Y.

Dealers' Discount



DYNETO ELECTRIC CORPORATION

SYRACUSE, N. Y.

Export Representatives:

BENJAMIN WHITTAKER, Inc.

21 State St., New York, N. Y.

56 Ludgate Hill, London, E. C. 4.

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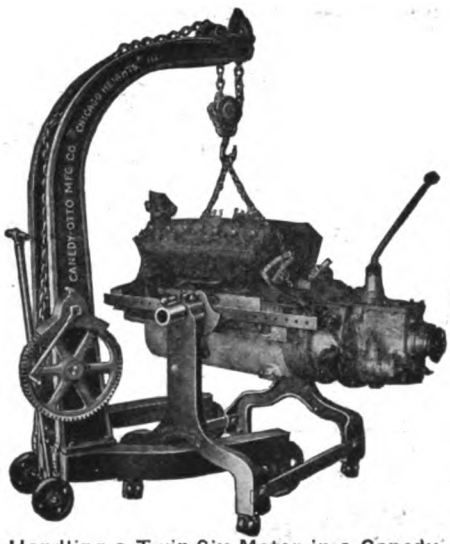
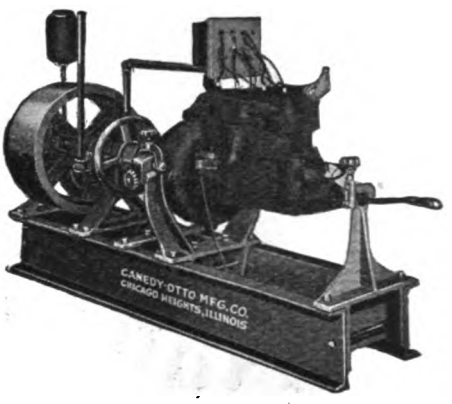
CANEDY-OTTO MFG. CO.



Handling a Twin-Six Motor in a Canedy-Otto Motor Stand with a Canedy-Otto Portable Floor Crane.

Canedy-Otto Screw Cutting Engine Lathe.



Bearing Burning-in Machines.

One of the best investments you can make. Write us today.

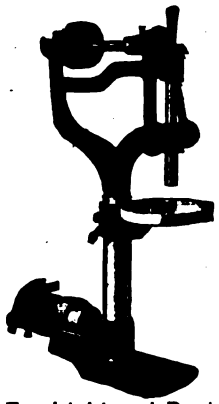
Maximum production efficiency demands absolutely dependable equipment.

For the Garage Repair Shop and Service Station

The selection of right tools answers to a large extent the problem of increased production. It is not good judgment to experiment with unknown or untried lines—confidence should be placed where confidence belongs. CANEDY-OTTO equipment represents favorably known and thoroughly tested value for durability, lasting quality, beauty of finish, and accomplishment of purpose.

Manufacturers of

Radial Drills, Sensitive Drills, Engine Lathes, Punches, Shears, Shrinkers, Counted Shafts, Upright Drills, Post and Wall Drills, Grinders, Buffers, Forges, Blowers, Tuyere Irons, Blast Gates, Bearing Burning-in Machines, Straightening Presses, Connecting Rod Straightening Jigs, Motor Test Stands, Arbor Presses, Portable Floor Crane, Piston Clamps, Rear Axle Test Stands. Tractor Tools and Special Machinery for Ford and Fordson.

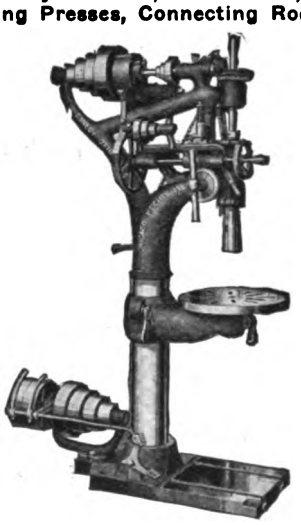


For Light and Rapid Drilling.

Royal Steel Forge No. 37.

Eventually, of course; but why not now? Let us know your needs. It may pay us both to get together. Won't you start it with a letter today?

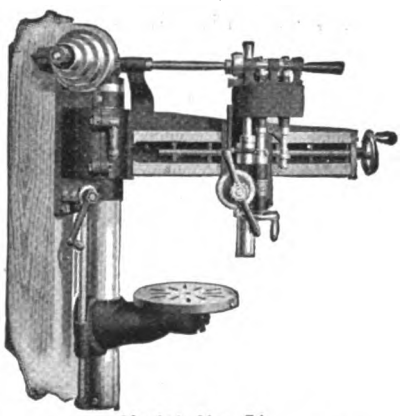
Just investigate—that's all.



No. 36 Canedy-Otto Power Drill.

Your inquiry or trial order is solicited. You will make no mistake by ordering now.

FOR SALE BY ALL Wholesale Accessory Jobbers, Heavy Hardware and Machinery Dealers.



Model No. 51.
No. 51 has Power Feed and Automatic Stop.

Our Attractive catalogue should occupy a prominent place in your files. Yours for the asking.

Grinding and Polishing Machine.

General Offices and Factory

Chicago Heights, Ill.

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He Knows Reliable Lamps

THERE is no trouble ahead for the motorist who safeguards traffic—with Edison MAZDA Automobile Lamps.

Have this striking, life-size "Girl with the Edison MAZDA Automobile Lamps" in your window. She tells the motorist where to get the lamps everyone knows are reliable.

* * *

If the lamps you sell are not backed by MAZDA Service, write at once for the Edison Automobile Lamp Agency Plan. Edison Lamp Works of General Electric Company, Harrison, N. J.

47D-70

EDISON MAZDA

EDISON LAMP WORKS OF GENERAL ELECTRIC COMPANY

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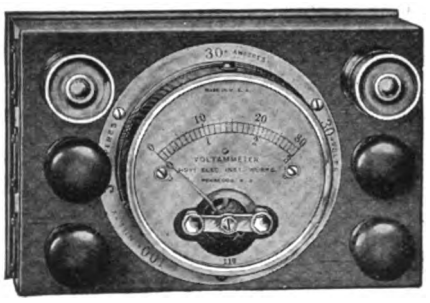
HOYT'S Rotary Meter Multiple Tester

Hoyt Instruments are the dependable Electrical Testing and Recording Machines the world over.

Use a Hoyt Multiple Tester to save time, insure accuracy and to eliminate the necessity of many expensive instruments. One machine performs practically all tests.



Size 4½x3⅜x2⅜ and costs but
$23.00 with a 300-ampere shunt

Send for Hoyt Book "Hunting Down Electrical Troubles." Tells the quickest, most accurate way to find Electrical troubles and explains the use of the Hoyt line.

A POSTAL BRINGS IT

BURTON-ROGERS CO.

Sales Department

HOYT ELECTRICAL INSTRUMENTS

Boston Offiice — 755 Boylston St.

Factory — Penacook, N. H.

Live Dealers Are Coining Good Money

With the Tire Re-Tread

It makes your customers' tire money give double value—makes you a greater percentage of profit than on new tires.

You can guarantee the Tire Retread, because it is the product of tested methods used in the making of high-grade tires.

Our system rebuilds a tire to its original strength or better, getting the full value from the carcass and twice the mileage the original tread could give.

This is a proposition that no wide-awake dealer can overlook, because it actually produces a new and desirable business while it offers real economy to your patrons.

Don't Wait—Apply Today for Territory and Full Information

Tire Re-Tread Compay

1220 Prospect Ave., Toledo, O.

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THIS Year, Sell Reflex Spark Plugs because of what they HAVE done.

—because of the business and profit they meant for Reflex dealers throughout 1919.

BUSINESS, due to such service as the above illustrated plugs delivered in a rough-road-going truck. And "without attention," writes the user—a mid-west trucking establishment.

PROFITS, because prices, discounts and guarantees to you are right.

Simply drop a card for complete information, such as prices, the Reflex advertising campaign, dealer helps, etc.

The Reflex Ignition Co.
1352 West 106th St.,
Cleveland, U. S. A.

REFLEX SPARK PLUGS
KEEP THE CAR ON THE GO!

SERVICE STATIONS

GARAGES and REPAIR SHOPS, everywhere are building large and profitable coil replacement business with JEFFERSON IGNITION COILS, the 100% line — a few standard coils which fit all cars and bear this

TRADE MARK

Jefferson Electric Mfg. Co.
429 S. Green St. Chicago, Ill.

SHALER 5 MINUTE VULCANIZER

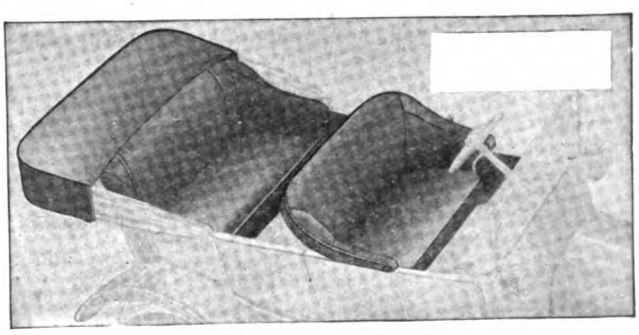
The Easy Way to Mend Tubes

The Shaler makes perfect tube repairs in 5 minutes. Works automatically—without fail. Burns non-flaming chemical fuel. Makes a permanent "feather-edge" repair, stronger than any "stuck on" patch. Cannot injure tubes. Fits tool box. Saves tubes—saves repair bills.

Complete Outfit $1.50—at All Dealers. Price slightly higher west of the Rockies and in Canada. The outfit includes—the vulcanizer, 12 patch and heat units, 6 round for punctures and 6 oblong for cuts. Extra patch and heat units—round or oblong, 75 cents a dozen.

C. A. SHALER COMPANY, 269 Fourth Street, Waupun, Wisconsin

TWO SETS OF SEAT SLIP COVERS for the PRICE OF ONE



REVERSIBLE
(Patented)

These seat covers can be used on either side.

When **one side** is soiled or worn down just reverse and you have a **new perfect fitting set.**

Edges bound and finished both sides with fabric leather binding.

TAILOR MADE AND PERFECT FITTING.

In olive drab material. Double texture waterproof.

FORD TOURING . . PRICE $10.50
(Covering all upholstery and doors.)

Prices Subject to Change Without Notice.

"RUBBERTEX" Brand

If your jobber can't supply you with our "Reversible"—send your order direct to us.

All tacks for attaching furnished.

ACCURATE COVER CO. Inc.
373 Canal St., New York City.

For all Ford's $2.5.
BARRETT
SELF STARTER AND PRIMER
5 YEARS GUARANTEE
IF YOUR DEALER DOES NOT HANDLE THEM WRITE US – 1777 BROADWAY NEW YORK

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A WONDER LUBRICANT FOR CAR AND TRUCK SPRINGS

"Napco" Graph-Oil

Simply apply "Napco" to the sides of the springs with an oil can—

It will make springs work properly.

It will protect springs against breakage.

It will save in repair costs and replacements.

It will stop all spring noises.

It will make the vehicle ride easily.

It will save tires.

It keeps the springs from becoming rusty.

It adds to car service and comfort.

It will penetrate in between the leaves, cover and absolutely lubricate the surfaces of the leaves.

"Napco" used only on one side of a spring will come out the opposite side in from 30 seconds to three minutes without spreading.

A few drops of "Napco" will make easy starting of rusty nuts, bolts and connections, as it penetrates around the threads and loosens the rust.

With "Napco" there is no need to spread the leaves to lubricate them. It makes quick and easy work of a dirty job. Because it is easy to apply, operators and repairers will use it.

Jobbers and Dealers.

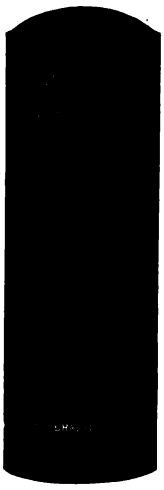
"Napco" Graph-Oil is a guaranteed product. It saves in time and labor. There is nothing like it and it is 100% efficient. It is a wonder worker, something essential in the tool kit, garage, repair and service station. It sells in a big way at a good profit to the trade.

"Napco" is sold in 16-oz. cans—List price, **75 cents.**

A special price when ordered in gallon cans or 50-gallon steel drums.

Send your order today. If demonstration is desired, write for sample can.

National Automotive Products Co.
331 The Arcade
CLEVELAND, OHIO



TANKS

The tightest, safest, strongest tank it is possible to construct by any known method. Process originated by us over twenty-five years ago.

We also make a special portable emergency tank for filling tires. Throw it in your emergency car and take it with you.

Gasoline and Oil Storage Tanks and Pumps

AIR-TIGHT STEEL TANK CO.
Main Office and Works
PITTSBURGH, PA.

"OHIO CARBON PRODUCTS"

"OHIO" BRUSHES

GARAGEMEN TAKE NOTICE
Write for Our No. 6 Car List for Information on New Cars
FOR AUTOMOBILE
STARTING MOTORS AND LIGHTING GENERATORS
THE OHIO CARBON COMPANY
1900 FULTON PLACE, CLEVELAND, O.

It Finds Ignition Troubles

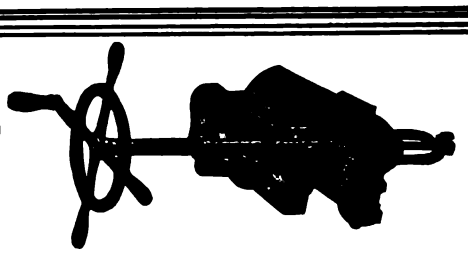
Attached to Any Plug
Stops All Spark Plug Trouble

Universal and Marvel Spark Plug Intensifiers

The spark is always visible. It will make a plug fouled with grease or carbon or with broken porcelain fire perfectly.
When the magneto is not working, a wire short circuited or broken, or the battery out of order, the Intensifier will prove it at a glance. It can be adjusted to overcome almost any ignition weakness. It increases the voltage and spark and makes starting easy. Saves in oil and gas. Adds to power, eliminates carbon and preserves plugs.
Instantly attached to any screw terminal plug and will last as long as the car.
JOBBERS AND DEALERS—This is a wonder worker and sells at a glance. Sold on a money back guarantee. Liberal discounts and prompt deliveries. *Send for full information.*

UNIVERSAL MFG. and SALES COMPANY
554 West Harrison St. Chicago, Illinois

Repairmen, Listen!



Patented May 19, 1914; Dec. 15, 1914; June 20, 1916; June 26.
The Heiser Improved Cylinder Reboring Tool for FORD MOTORS is the only reboring Tool in the world that is self-sharpening. It is the only tool that rebores between centers—this insures a finished cylinder, square with the crankshaft, round, straight, true and free from taper. It is adjustable and the only tool that will rebore different sizes without losing the adjustment. **The best mechanic in the world can't build reputation without proper TOOLS and EQUIPMENT. THE HEISER IMPROVED CYLINDER REBORING TOOL makes good shops out of poor ones and better shops out of good ones. Write today for full particulars.**
HEISER SPECIAL TOOL CO., 2001 Washington Street, Kansas City, Mo.

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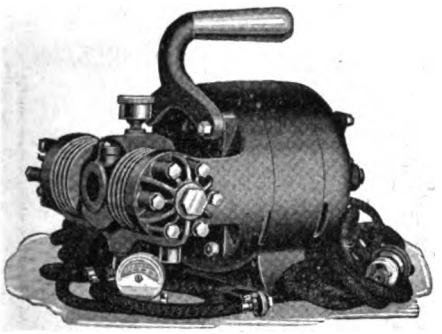
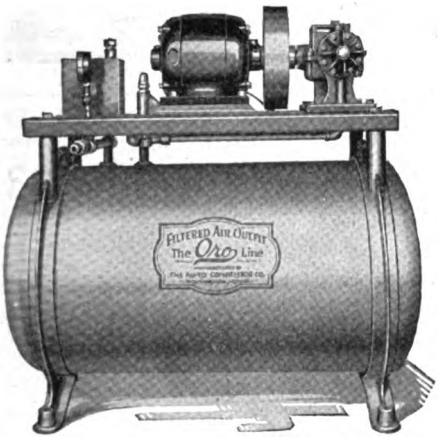
Air Compressors for Every Garage!



The Famous "No. 10"

"Carry it in your hand!"

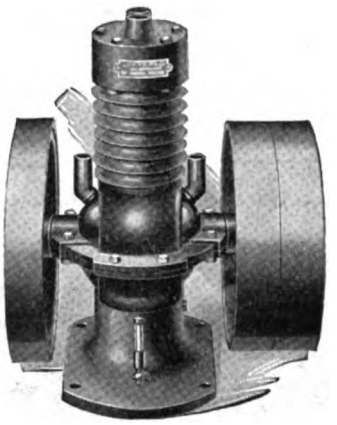
A complete outfit, yet it weighs only 35 pounds. It has motor, compressor, hose, gauge, and gives a pressure up to 100 pounds, supplying 2.61 cubic feet of air a minute.



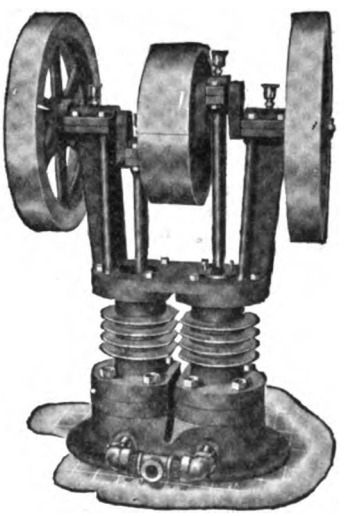
The "Filtered Air" Outfit

This perfect outfit is meeting the approval of all garages and motor car owners. It supplies air that is absolutely free of oil, dust and dirt. A complete outfit, ready to use. This outfit also is supplied with large wheel casters, if desired.

WHEREVER automobiles are known, Oro Air Compressors are used. They mean the most economical, most reliable source of air. These claims have been proved by hundreds of thousands of these machines in daily use.



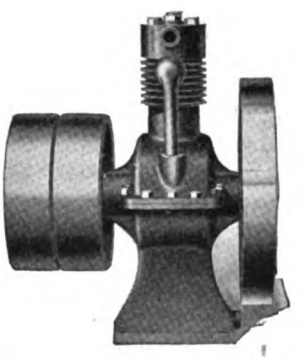
There is an Oro Air Compressor for every garage—public and private. Large outfits that will provide air in abundance for any number of cars; medium sized outfits for ordinary garages; and small outfits for the one or two men shops. There also is the No. 10 for small public or private garages and for spraying and air brush work.



Remember the Name

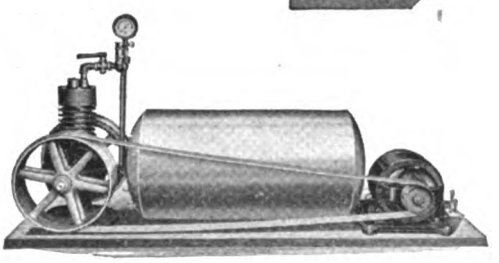
Oro
GOOD as GOLD

To buy an Oro Air Compressor means to secure the best outfit that can be manufactured. The quality of materials, the care and accuracy of the workmanship, and the superior design of the Oro, mean better satisfaction and a longer life of service.



Our guarantee also will interest you. We replace any parts free of charge, no matter what may have caused trouble. We have been building several thousands of these machines every year for the past twelve years and have never yet charged a cent for repairs of any kind.

Buy an Oro Air Compressor and be sure! Write us for information. We manufacture a large line of superior automobile accessories, in addition to the full assortment of compressors.



The Au-To Compressor Co.

303 S. Mulberry Street

Wilmington, Ohio

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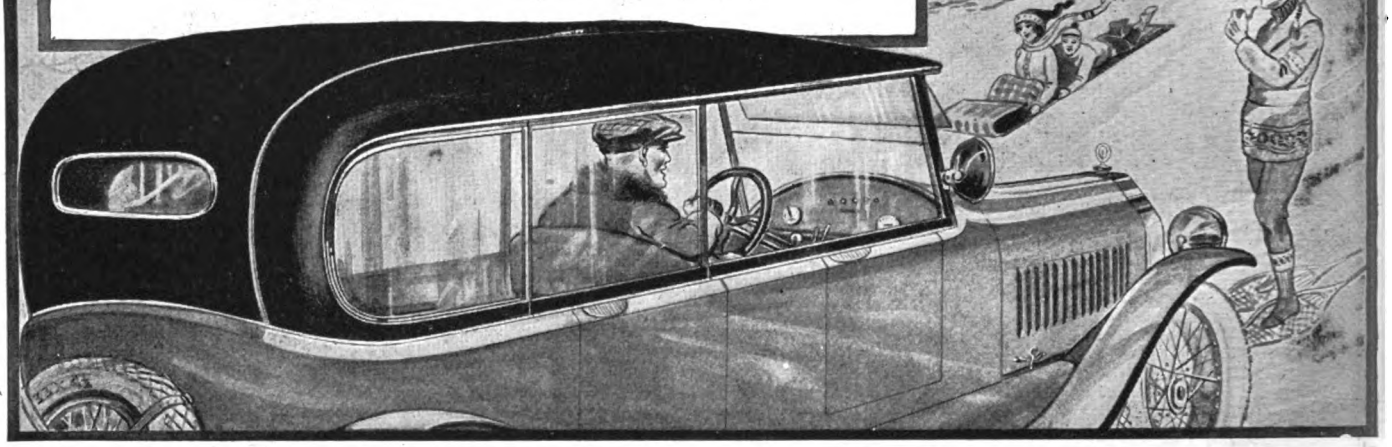
The Most Remarkable Automobile Top Material

LIGHT IN WEIGHT
DEPENDABLE IN QUALITY
NON-CRACKING—NON-BLISTERING

Dridek Is Made to Satisfy
Send to Dept. S for Samples and Prices.

L. J. MUTTY CO., Boston, Mass., U. S. A.

TRADE DRIDEK MARK REG



ALUMINUM SOLDER

For filling defective aluminum castings, mending crank cases, engine bases, aluminum pattern work, or soldering aluminum parts.

Requires no flux or acid, and is used with an ordinary soldering iron or blow-torch.

Flows at a low melting point and machines up perfectly.

Hundreds of the largest manufacturers all over the country are our regular customers of many years standing.

With our ten years experience in manufacturing Aluminum Solder, our facilities for immediate shipments of your orders; and our reasonable prices; coupled with a record of having never received a single complaint against our material, we can assure you of satisfactory service.

Write us for quotations on your requirements.

(Sample 1-lb. package, $1.00)

NATIONAL PRODUCTS COMPANY.
Care P. O. Box-3. KOKOMO, INDIANA.

Make Money Equipping old Fords with classy Club Roadsters, Speedsters, Torpedo & Touring Models.

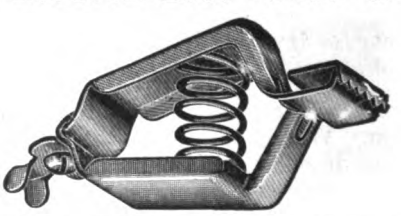
"FIDELITY" BODIES

For Fords $35 and up

Dealers! Send for "The Little Salesman"

Our Dealers' Confidential Wholesale Net Price List of
AUTOMOBILE ACCESSORIES
NEW ENGLAND MILLS CO. 1027-1033 W. Van Buren St., CHICAGO

UNIVERSAL BATTERY CLIPS



Offer a quick and ready means of connecting storage batteries for charging. Simply fit your connecting cords with these clips and snap them over the battery terminals.

No. 21-A—lead coated—1½" spread of jaws.
Sample mailed postpaid for 15c in stamps.
Single Lots, Each, 20c. Lots of 10, Each, 15c.
Lots of 100, Each, 12½c.

MUELLER ELECTRIC CO., 431 High Ave., Cleveland, O.

(When Writing to Advertisers, Please Mention the Accessory and Garage Journal.)

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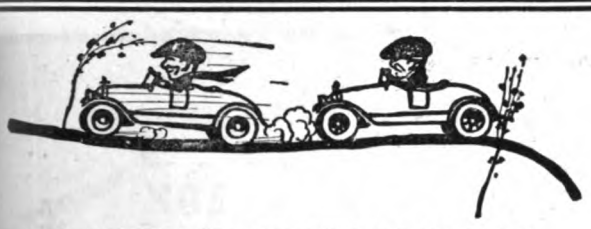


A GREATER COASTING RANGE

Shove a car using Dixon's Graphite Transmission and Differential Lubricant over the top of a decline and let it coast.

Shove another car of the same make, model and weight, but lubricated with ordinary grease, over the same decline, and let it coast—if it will.

The first car will outcoast the second one by a surprisingly large margin.

And so it is in actual driving. Ordinary grease permits frequent and ruinous metal-to-metal contact that sets up a dragging friction and soon wears out the moving parts.

DIXON'S GRAPHITE Transmission and Differential LUBRICANT

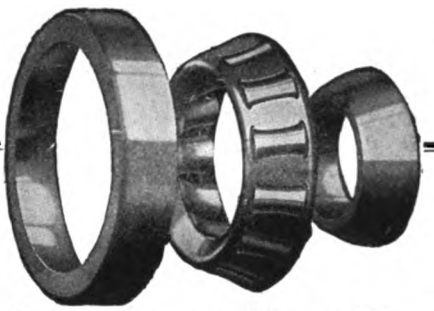
Dixon's Graphite Transmission and Differential Lubricant is sold by practically all good dealers and garage men.

Write for Booklet No. 49-G.

Made in Jersey City, N. J., by the

Joseph Dixon Crucible Company

D X N TRADE MARK Established 1827. D X N TRADE MARK



Replacements Now Ready

For Front Wheels

OAKLAND 34, 34B	**DODGE** all models
MAXWELL 1914-15-16-17-18-19-20	**DORT** 5A, 6, 9, 29, 8, 11, 15
CHEVROLET F, FA, Baby Grand, 490	**FORD** all models
OVERLAND 81, 83, 83B, 90, 4	**ALLEN** 37
ROAMER All models except 1920	**AUBURN** 1916-17-18-19
	SCRIPPS-BOOTH 39
	VIM TRUCK 21, 21

The Shafer is the only 100% load capacity bearing that is made. It stands equally well top load and side thrust. It is an exact replacement for cup and cone bearings, as well as others—is easily installed—automatically self-aligning.

Because the Shafer **concave** rollers are placed at a 20-degree angle against **convex** surfaces of outer race and inner cone they stand every shock on the full length of each roller regardless from what direction the blow comes.

Give your customers better service by supplying Shafer Bearings for their cars. Write for details.

GEO. D. BAILEY CO.

(Shafer Replacement Division)

4503 RAVENSWOOD AVE., CHICAGO, ILLINOIS.

Self Aligning **SHAFER Roller Bearing**

100% Load Capacity From Any Angle

For sale by accessory and hardware dealers or by MAIL POST-PAID 50c EACH

RAIN-SNO CLEAR VIEW WINDSHIELD CLOTH

PREVENTS ACCIDENTS

Just RUB IT OVER THE GLASS and RAIN or SNOW cannot collect to obstruct the vision.

INSIST UPON THE "RED CLOTH"

Which is guaranteed to give continuous use for one year or money refunded. Made only by

SUFFOLK MANUFACTURING CO., INC., DEPT. D.

60 LONG WHARF BOSTON, MASS.

Your Prospective Customers

are listed in our Catalog of 99% guaranteed Mailing Lists. It also contains vital suggestions how to advertise and sell profitably by mail. Counts and prices given on 9000 different national Lists, covering all classes; for instance, Farmers, Noodle Mfrs., Hardware Dlrs., Zinc Mines, etc. *This valuable reference book free.* Write for it.

Send Them Sales Letters

You can produce sales or inquiries with personal letters. Many concerns all over U. S. are profitably using Sales Letters we write. Send for *free* instructive booklet, "*Value of Sales Letters.*"

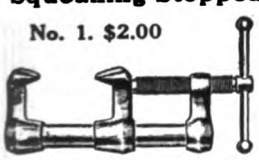
ROSS-GOULD Mailing Lists St. Louis

Keep Springs Greased

Knowlson Spring Spreaders

Squeaking Stopped and 100% Easier Riding

No. 1. $2.00



Nickel-plated and polished.

No. 3. $1.50

Gun metal yoke, screw and handle nickel.

Spring Breakages Eliminated.

Both Guaranteed. Either or Both Delivered. Your Money Back if You Want It.

Don't Ruin Your Springs by Neglecting Them!

They Fit Any Spring. Easy to Operate. Both Drop Forged. Use a Heavy Grease (not oil) for Real Results.

At your Dealers, or Sent Direct.

SPRING LEAF LUBRICATOR CO., Dept. 4, Ann Arbor, Mich.

The **NU-WAY PATCH** *for*

Inner Tubes

A tight, permanent patch applied in two minutes. Tube may be used immediately—no waiting for patch to set.

No cement or sticky gum. No soiled fingers. Patch guaranteed to outlive the tube it repairs. One 50c box makes 10 to 20 patches. Send for sample patch and buffer. Quantity prices to accessory dealers and garage owners. Salesmen wanted

CONGO RUBBER COMPANY

404 OLIVE ST., ST. LOUIS, MO.

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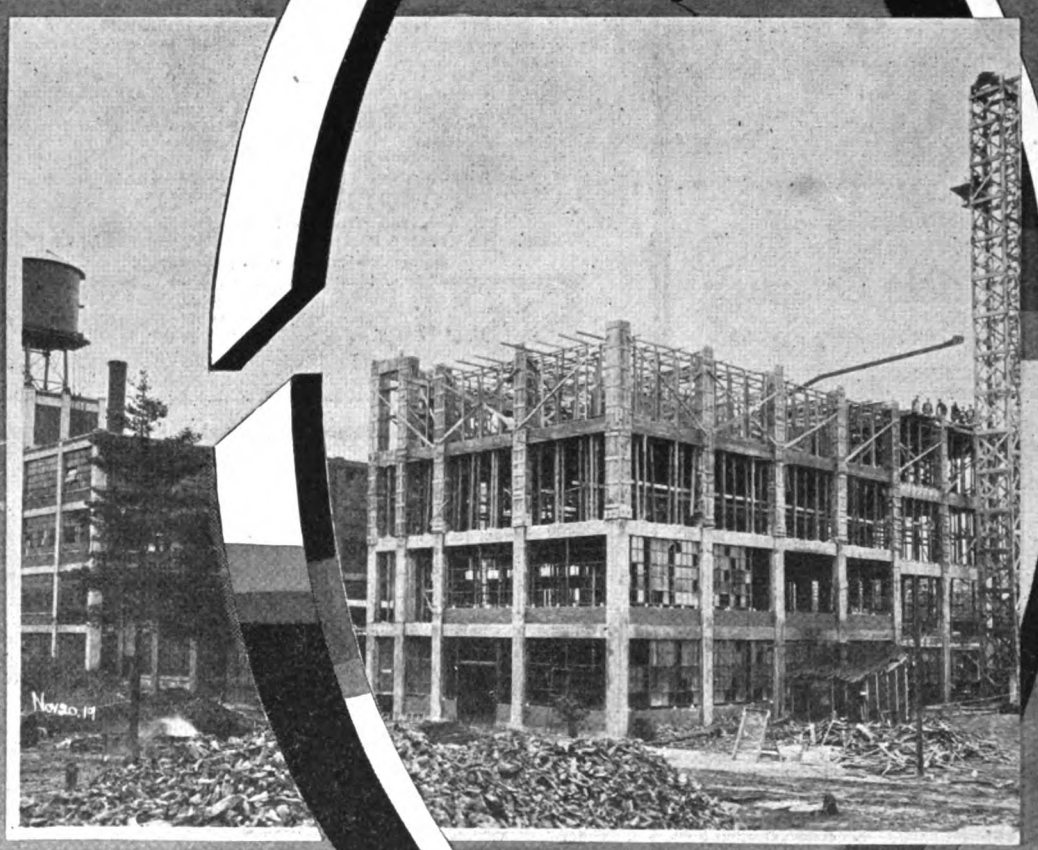
QUALITY
SNAP RINGS

CONSERVE EVERY
ATOM of POWER

An
ever-increasing
expansion means an
ever-increasing Service



"MORE THAN
A MILLION
A MONTH"

THE Piston RING COMPANY

106 SANFORD ST. MUSKEGON, MICH.

(When Writing to Advertisers, Please Ment on the Accessory and Garage Journal.)

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BRUNNER

PERPETUAL MOTION

Some things are impossible, regardless of ingenuity, skill or equipment. Engineers in any line know the limits Nature has established in their field.

Advertising claims or selling arguments which indicate too remarkable performance generally occur where a simple, conservative description would not be convincing.

You instinctively deal with the man or company whose every statement is simple and reliable. Any item bought from such a source is apt to be good - - not spectacular but dependable.

Brunner Manufacturing Co.
Utica, N. Y.

Cincinnati, Ohio.

Kansas City, Mo.

BRUNNER

(When Writing to Advertisers, Please Mention the Accessory and Garage Journal.)

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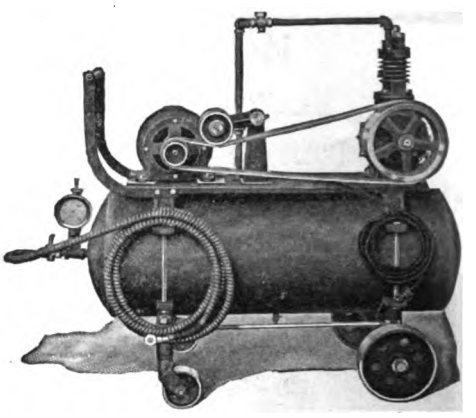
GARDNER AIR PUMPS

Result of 50 years manufacturing experience.

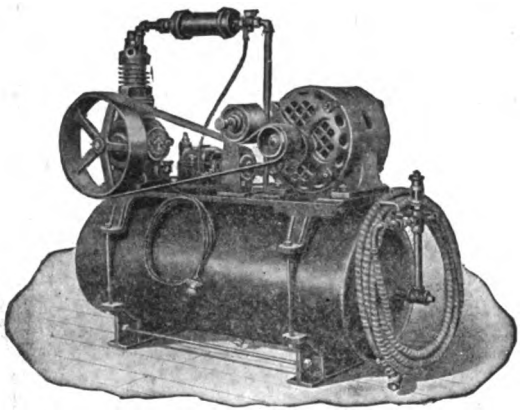
An inefficient air pump makes your air service expensive.
It hurts the quality of your service.
Makes a customer dissatisfied and hurts your business generally.

Install a GARDNER

It will pay for itself in a short time.
It is simple, rugged and efficient.
The fact that many filler stations supplying hundreds of car owners daily use the Gardner air pump is proof that experience had demonstrated it is economical.



GARDNER AIR WAGON



GARDNER AUTOMATIC UNIT

Made in Single and Two Stage Types

Variety of sizes ***Prompt shipment***

There is a Gardner Air Pump to meet the demands of every garage no matter how large or small.

Ask your jobber for prices.

THE GARDNER GOVERNOR COMPANY

138 Williamson Street, Quincy, Ill.

Garage Department

TEN Reasons Why The A1 Battery Charging Clip is Superior

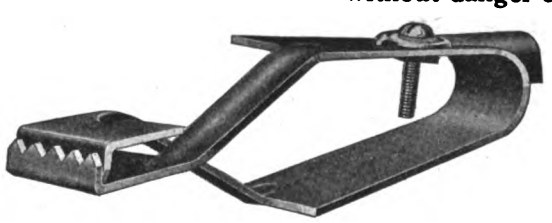
1—Made of the highest grade acid resisting BRONZE.

2—LEAD COATED, adding additional protection from the acid.

3—The only 1 piece clip —gives absolute conductivity to both jaws.

4—No springs to break and allow clip to fall over and short circuit battery or open charging circuit.

5—The pointed teeth insure positive connection.



6—Jaws of clip open 1½". Capacity 50 amperes.

7—The long legs allow clip to be used on batteries where connections are close together without danger of shorting.

8—Has a perfect terminal for wire connection which also protects wire from corrosion.

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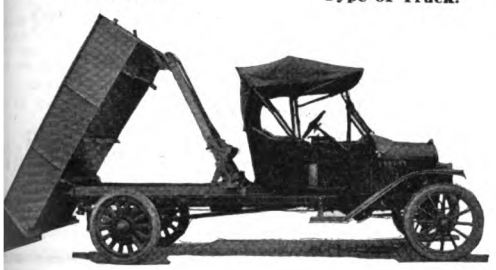

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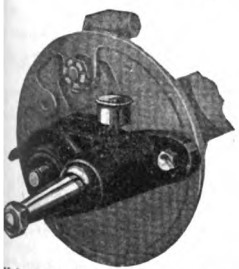

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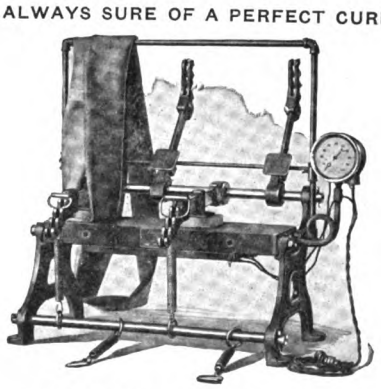

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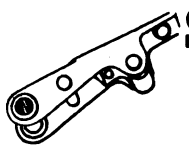

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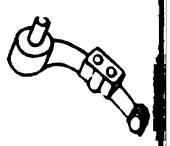

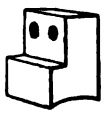

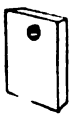

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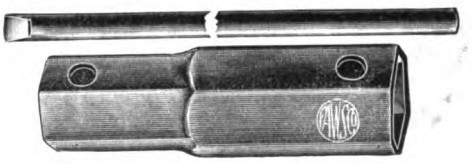

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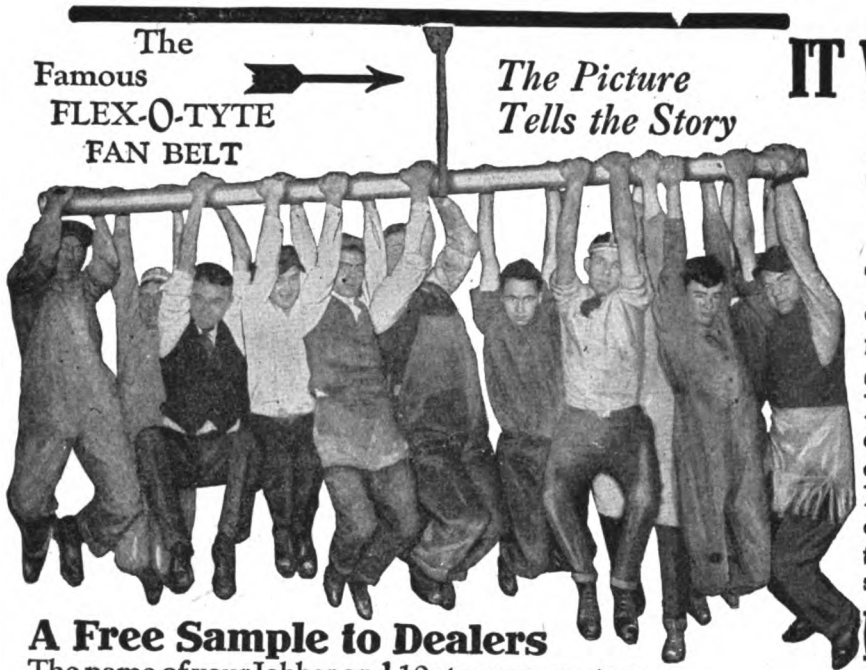

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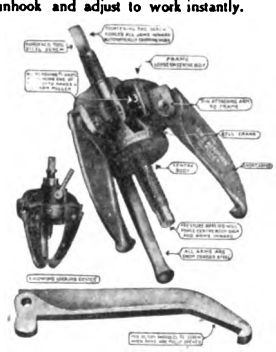

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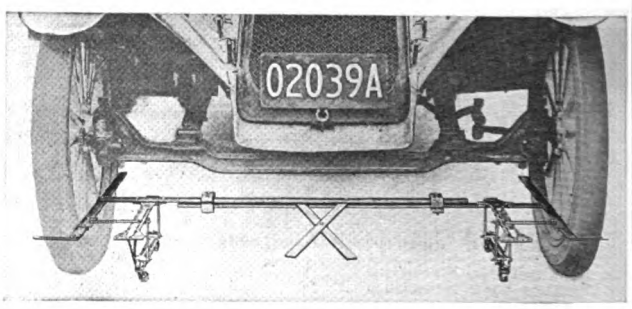

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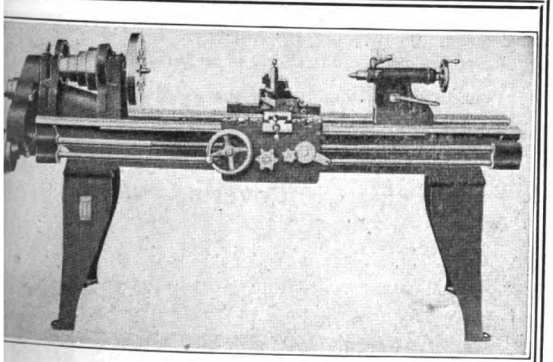

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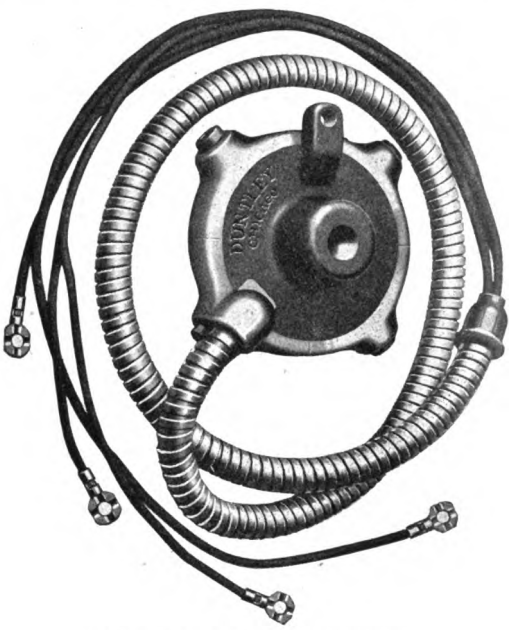

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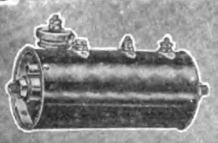

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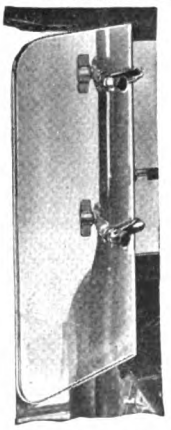

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sold to Dealers through bona fide automotive accessory jobbers. Write us for the name of the distributor nearest you.

Van Briggle Motor Device Co.

INDIANAPOLIS, U. S. A.

(When Writing to Advertisers, Please Mention the Accessory and Garage Journal.)

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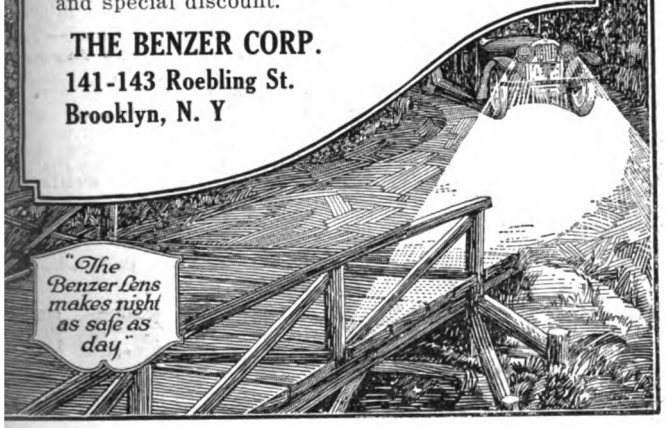
The BENZER LENS

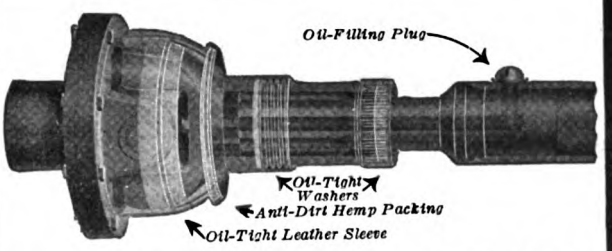
Benzer Lenses satisfy the demand for approved, efficient light. Automobile owners everywhere are being told the merits of Benzer Lenses. The Benzer Lens requires no tilting, no adjustment.

It projects a ditch light, a prominent light, and a distance light all in one. Safety—that's what it means to the motorist. Sales—that's what it means to you.

Write at once for information and special discount.

THE BENZER CORP.
141-143 Roebling St.
Brooklyn, N. Y





"M&E" Universal Joint

(Pat. and Pat. Pend.)

THIS Joint has been run 22,000,000 turns—30,000 car miles—at speeds of 40 to 2000 R. P. M. under varying temperatures, and up to 15° ± angle without change or loss of oil, or injury to packing. The inside leather sleeve holds the oil, while the outside packing keeps out dust and grit.

The new "M&E" Dry Disc Clutch is a moderate priced unit that is unsurpassed for efficiency.

MERCHANT & EVANS Co

NEW YORK PHILADELPHIA WHEELING
BALTIMORE CHICAGO
ATLANTA ST. LOUIS
CLEVELAND KANSAS CITY
DETROIT

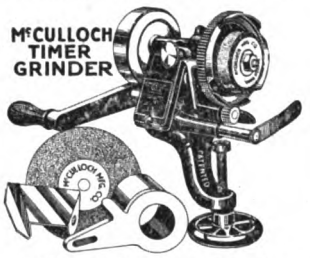
You will appreciate McCulloch Products

The name "McCulloch" on automobile ignition parts signifies products made by engineers in a machine and tool shop. Once used always used because they are dependable.

McCULLOCH WIPE CONTACT

Replaces the old style roller. It slides instead of rolling, eliminating the extraordinary wear on the rotor pin.

List 60c.



Will grind the worn out timers back to usefulness. Driven by hand or power. A necessity in any private or public garage.

List $21.

And the McCulloch Timer

A well made, accurate and simple timing device made right and perfect in every detail. The arrow points to the real feature.

Territory is open for McCulloch Timer Grinder. Dealers and Jobbers write for prospectus.

McCULLOCH MANUFACTURING CO.,
Specialists in Ford Ignition.
216 High Street, Boston, Mass.

SCOE CARBURETOR

MAKES A FORD RUN LIKE A SIX

SAVES ITS COST IN 60 DAYS

Any dealer who puts a Scoe Carburetor on one Ford, opens for himself a neat and profitable line of business.

Simply because this carburetor enables the Ford engine to perform as nothing else can or will.

Write us to send you the Scoe on our 30 Day Trial Plan. Pay half the net—$4.25—on receipt of the carburetor. Put it on a customer's machine and check up its performance for 30 days.

Then pay the balance, or ask a refund, and we will make it without a question.

That surely is a fair offer, and hundreds of dealers have proved it so.

BRISCOE DEVICES CO.

PONTIAC, MICH.

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GARDNER THERMOSTAT CARBURETOR MAKES A SWEET RUNNING FORD

By automatically varying the mixture to meet every varying temperature of the motor the "Thermostat" control of the Gardner Carburetor gives the motor at all times the correct mixture for smooth running.

No matter how cold the weather you can rest assured your Ford will start easily if it is equipped with a Gardner.

And once started, the smooth purring resulting from correct carburetion gives life and pep to the performance of your Ford. It will take the hills with a vim or throttle contentedly in crowded traffic.

All because the "Thermostat" is automatically governed by the temperature of the motor.

The fact that there is a 25 to 50% saving in gasoline is less important than the increased efficiency of the motor.

There is still some excellent territory for dealers.

Gardner Carburetor & Brass Wks.

23 West Hancock, Detroit. Mich.

TRIPLEXD

XXX GASOLINE HOSE XXX

THE FABRIC TAKES ALL STRAINS

All strain is taken by the tough fabric cover of Triplexd.

The flexible metal lining cannot be damaged.

The fabric, woven tightly over a rubber intermediate layer, binds the hose into a leak-proof unit.

Triplexd Pump Hose is guaranteed for one year's service.

METAL HOSE & TUBING CO INCORPORATED
227 Tillary St.
Brooklyn, N. Y.

The metal protects the rubber from gasoline or oil.

WELDERS!

There's economy in using the best fluxes you can find for particular welding jobs. Insure better and stronger welds, more easily and more rapidly made, by using

ANTI-BORAX COMPOUNDS

For Acetylene, Gas and Electric Welding

Anti-Borax WELDING FLUX

Best on the market for all grades of iron and steel. Weld at lower heat. Leave no scale. They cleanse the molten metal, assist fusion and improve the quality and appearance of your work. Guaranteed to give perfect satisfaction or your money refunded.

Write for sample and price list.

ANTI-BORAX COMPOUND CO.
FORT WAYNE, INDIANA

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GOGGLES FOR WELDERS.

Fitted with "Essentialite" Lenses.

THE FIBRE WELD.

Frame: Vulcanized fibre, non-conductor of heat and electricity, non-inflammable and infusible not affected by moisture, leather center, ventilated side pieces, adjustable elastic head band. We have demonstrated conclusively that with these lenses we vanquish the so-called "fatigue-weariness" and headaches caused by Ultra Violet and Infra Red rays. Circulars and prices at request. Price each, prepaid, $3 pr.

Manufactured by

CHICAGO EYE-SHIELD COMPANY

2300 Warren Ave., Chicago, Ill.

SCAIFE COPPER-BRAZED AIR TANKS

are positively guaranteed to hold air indefinitely without loss of pressure.

(117 years old. Founded 1802)

WM. B. SCAIFE & SONS CO.

First Nat. Bank Bldg., Pittsburgh, Pa.
26 Cortlandt St., New York, N. Y.
38 So. Dearborn St., Chicago, Ill.

SCAIFE GASOLINE STORAGE OUTFITS

ARE IDEAL FOR PRIVATE GARAGES.

Send for catalogue.

Pistons For Ford Cars

Ready for Immediate Installation
A Ground Piston Complete With Pins, Rings, and Bushings

Immediate Delivery

Sizes:—Std. .0025 .005 .010 .015 .020 .025 .030 .03125 .033

Price $6.00 Per Set of 4

AUTO SPECIALTIES CO.

P. O. Box 294 Madison Square Station,
New York City, N. Y.

Money Refunded if not Satisfactory

1894 Est'd. 26 years 1920

REPEAT TIRE SALES are made by real performance. A strong oversize tire is a real saving to the distributor, as well as the user, who seldom calls for an adjustment. Delivery at once.

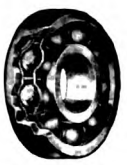
EXCLUSIVE JOBBERS are cashing in with Miller's Improved Tires by **"DIRECT FROM FACTORY"** method, which eliminates high overhead costs. Write today for our exclusive distributors' prices, which makes tire selling more profitable.

Miller's of Anderson Tires. Built up to a mileage leadership and not down to a price. All straight sides, ½ inch oversize. All Ford sizes, ¼ inch oversize.

CHAS. E. MILLER.
Anderson Rubber Works,
1402 Meridian St.,
Anderson, Ind., U. S. A.

NEW DEPARTURE BALL BEARINGS

Strength
Stamina
Service



The New Departure Manufacturing Co., Bristol, Conn.
Conrad Patent Licensee

The Automobile Journal

Is the oldest Automobile magazine published in America devoted wholly to owners of passenger cars.

A quality magazine, with prestige and circulation that brings results to advertisers.

TIMES BUILDING
PAWTUCKET, R. I.

TEST SOD-TOR-LITE IN YOUR REPAIR SHOP 10 DAYS - WITHOUT CHARGE!

See for yourself the time and money that SOD-TOR-LITE saves. It combines three tools in one,—soldering iron, brazing torch and light.

Attach to Prest-O-Lite or Searchlight tank and have a hot point for soldering in a minute or a brazing torch of over 3350 degrees F. or a brilliant illuminating light. Special tips furnished. Write for literature. Satisfaction Guaranteed, or money refunded. Sent on trial. Priced low. Sold on its merits.

Write Box H.

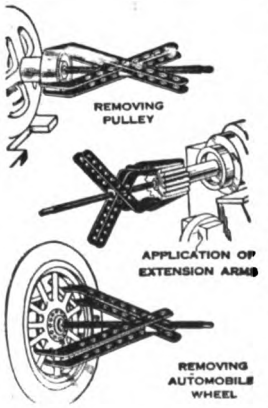
B. E. HICKEN SOD-TOR-LITE CO., Prairie Hill, Mo.

THREE TOOLS IN ONE

SAVES TIME COSTS LESS THAN THREE TOOLS IT REPLACES

"LITTLE GIANT"

GEAR AND WHEEL PULLER



Pulls any gear, wheel or pulley anywhere in a jiffy. Built on the only correct principle. Produces maximum efficiency with minimum effort. Can't twist off or let go. THE HARDER THE PULL—THE TIGHTER THE GRIP. Reduces operating cost and increases the earning capacity of any Repair Shop. Made from best grade drop forge steel. Almost unbreakable. Adjustable up to 13 inches diameter. Satisfaction guaranteed or money refunded. Order or write for details today. Price complete with extension arms, $11.00.

Liberal Discounts to Dealers.

Premier Motor Products Co.
3956 N. Robey St., Chicago, U. S. A.

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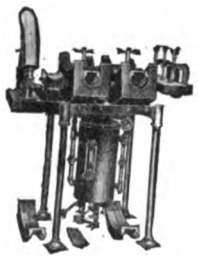
VANDERPOOLS LATEST IMPROVED PATENT APPLIED FOR RETREAD MOULDS

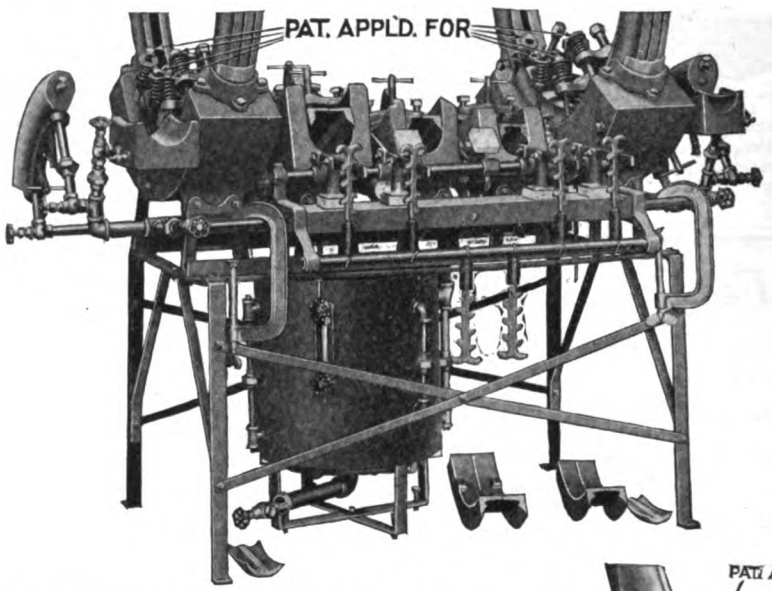
(Exit old methods.) RETREAD Our Way With Sand Bags, Better Than Air Bags.

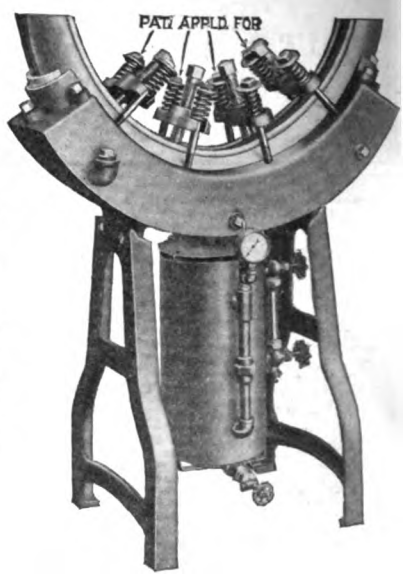
3 Cavity



2 Cavity

Single Cavity





VANDERPOOL FIVE CAVITY is the most improved Tire and Tube repair and retread Vulcanizer made, capacity about $300.00 worth of casing tube and retreading can be done with it in a day. Profit about one-half. Many are selling their old style machines and installing a VANDERPOOL FIVE CAVITY. It covers the business. It's an advertisement in your shop. It's the best to be had. We get hundreds of letters from our pleased customers. We have been making Vulcanizers for about eight years. We make Vulcanizers so they do the best work.

The patent applied for powerful springs on our retread molds forces and holds the tire down while it settles in the ribbed tread molds until Vulcanizing is complete, resulting in better retreads, overcoming separation and blisters. A better retread than with old methods. A size machine to fit most any size shop.

Send for our Tire Repair Manual, 25 cents, and price list of Vulcanizers.

William Vanderpool Company

Springfield, Ohio

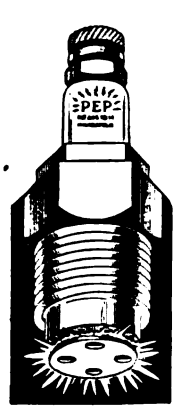
HE'S FOUND THE PLUG THAT IS *RIGHT*

HE'S a repeat customer for somebody. Is it you, Mr. Dealer?

20 repeat orders from one Pep dealer in 90 days came in because the Pep Spark Plug is right. Self cleaning—can't foul from carbon or oil—its ring of blazing sparks makes a snappier, more powerful motor.

Our guarantee—**"Your Money Back If You'll Take It."**

Write for dealer information—the Pep is a business builder.



PEP SPARK PLUG COMPANY,
228 South 6th Street, Minneapolis, Minn. **Retails for $1.00**

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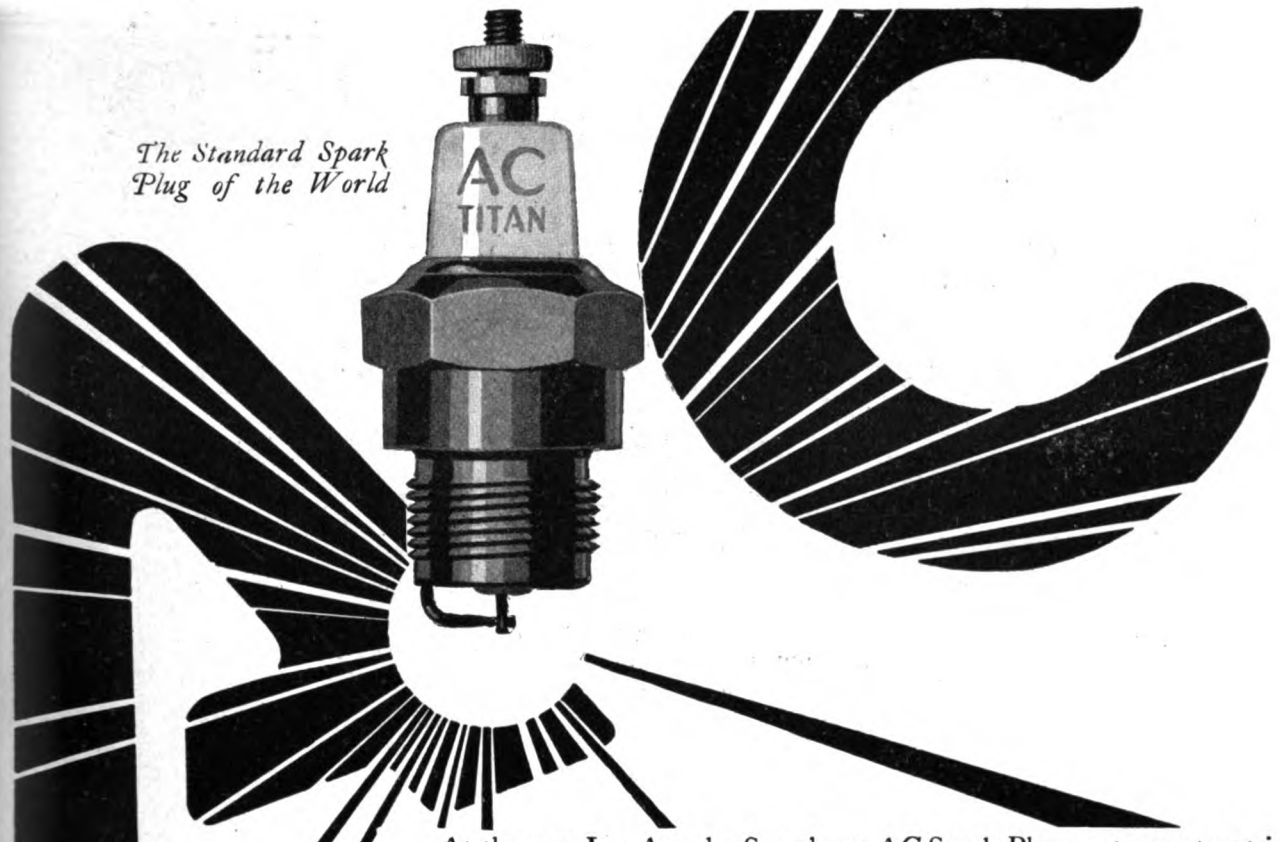
The Standard Spark Plug of the World



At the new Los Angeles Speedway, AC Spark Plugs got away to a triumphant start for another season of gruelling, competitive achievement.

They rode to non-stop victory with Jimmy Murphy and his Duesenberg in the 250-mile inaugural race of 1920.

They stood up, as AC's always stand up, under the terrific engine speeds that were essential to the average that the winning Duesenberg made—103.2 miles an hour.

AC's were the logical choice of the majority of the drivers that participated in the opening race of the 1920 season. In addition to the winning Duesenberg, the cars that finished third, fifth, sixth, seventh and ninth were sparked by AC's.

The positive assurance that their customers can ask nothing of the spark plugs they buy which these spark plugs cannot give is had only by those dealers who concentrate on the AC line.

Write today for complete dealer information.

Champion Ignition Company, FLINT, *Michigan*

These manufacturers use AC Spark Plugs for factory equipment

Acason Trucks
Ace
Acme Trucks
Advance-Rumely Tractors
Ahrens Fox Fire Trucks
American Beauty
American-La France
Anderson
Apex Trucks
Apperson
Appleton Tractors
Argonne Four
Associated Engines
Atco Trucks
Austin Mfg. Co.
Available Trucks
Avery Tractors
A & T Tractors
Bates Steel Mule Tractors
Beaver Motors
Beck-Hawkeye Trucks
Beeman Garden Tractors
Bellanger Freres (France)
Bessemer Trucks
Betz Trucks
Birch
Bour-Davis
Braddon
Bradley
Briggs & Stratton Motor Wheel (formerly Smith)
Brinton Tractors
Brockway Trucks
Buda Motors
Buffalo Motors
Buick
Bullock Creeping-Grip Tractors
Cadillac
Cameron
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Chandler
Chevrolet
Chicago Trucks
Clark Tractors
Cleveland
Cole
Collier Trucks
Comet
Commonwealth
Conestoga Trucks
Continental Motors
Curtiss Aeroplanes
Daniels
Dart Trucks
Davis
Defiance Trucks
Delco-Light
Denby Trucks (Canada)
Diamond T Trucks
Diehl Trucks
Dodge Brothers
Doman Engines
Domestic Gasoline Pumping Engines
Dort
Duesenberg Motors
Duty Trucks
Dynelectric Plants
Eagle Tractors
Elmira
Essex
Excelsior Motorcycles
Fairmont Ry. Motors
Federal Trucks
Falls Motors
Flour City Tractors
Frontmobile
F-W-D Trucks
Galloway Engines
Gary Trucks
Genco Light
Glide
Golden West Trucks
Gramm-Bernstein Trucks
Gray Dort (Canada)
G. B. S. Motors
G. M. C. Trucks
Hackett
Hahn Trucks
Hall Trucks
Harvey Trucks
Hatfield
Haynes
Hendrickson Trucks
Herschell-Spillman
Highway-Knight Trucks
Holt Tractors
Howell Tractors
Hudson
Hupmobile
Hurlburt Trucks
H. R. L. Trucks
Independent Trucks
Jackson
Johnson Motor Wheel
Jordan
J. V. B. Marine Motors
Kalamazoo Trucks
Karavan Trucks
Kearns Trucks
Kent Concrete Mixers
Keystone Trucks
Kissel Kar
Kleiber Trucks
Klemm Trucks
Knox Tractors
Koehler Trucks
Lalley-Light
Lawson Tractors
Leach Power-Plus Six
Liberty
Linn Road Tractors
Locomobile
L. M. C. Trucks
Maccar Trucks
Maibohm
Marmon
Master Trucks
Maxim Fire Trucks
Maytag
McLaughlin (Canada)
Menominee Trucks
Meteor
Midwest Engines
Milwaukee Gasolene Locomotives
Minneapolis Motors
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Pilot
Pioneer Tractors
Pittsburgher Trucks
Porter
Premier
Ranger Trucks
Red Wing Thorobred Motors
Reo
Re Vere
Reynolds Trucks
Riker Trucks
Roamer
Roberts Motors
Robinson Fire Trucks
Rock Falls
Rowe Trucks
Rutenber Motors
R. & V. Knight
Samson Tractors
Sandow Trucks
Sanford Trucks
Sawyer-Massey Tractors (Canada)
Saxon
Scripps-Booth
Scripps Motors
Signal Trucks
Singer
Speedway Motors
Standard "8"
Standard Trucks
Stanwood
Stearns-Knight
Stearns Tractors
Sterling Engines
Sterling Trucks
Stevens-Duryea
Stewart
Stewart Trucks
Stockton Tractors
Stoughton Trucks
Straubel Engines
Sullivan Trucks
Super Trucks
Swartz Lighting Plants
S-S-E-Co.
Texan
Tiffen Trucks
Tioga Tractors
Titan Trucks
Tower Trucks
Trego Motors
Turner-Simplicity Tractors
Union Marine Engines
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H. J. Walker Motors
Wallace Tractors
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Ward La France Trucks
Westcott
White
White Hickory Trucks
Whitney Tractors
Wichita Trucks
Wilson Trucks
Wisconsin Motors
Wolverine Tractors
Woolery Ry. Motors
W. S. M. Motors

U. S. Pat. No. 1,135,727, April 13, 1915, U. S. Pat. No. 1,216,139, Feb. 13, 1917, Other Patents Pending

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BRUNNER

To Meet A Certain Condition

In the cramped quarters of oil stations—small vulcanizing shops or tire and accessory stores, the hum of gears may be objectionable. If so, a belt-driven, ultra-quiet, compressor outfit is the natural choice.

BRUNNER engineers have met this need by developing a special model.

No. 742 Motor-belt-driven assembled outfit is compact—complete, dependable and economical. Just fits the space available in a small establishment, and yet large enough to give satisfactory service in garages serving many cars a day. This is but one of the many BRUNNER models.

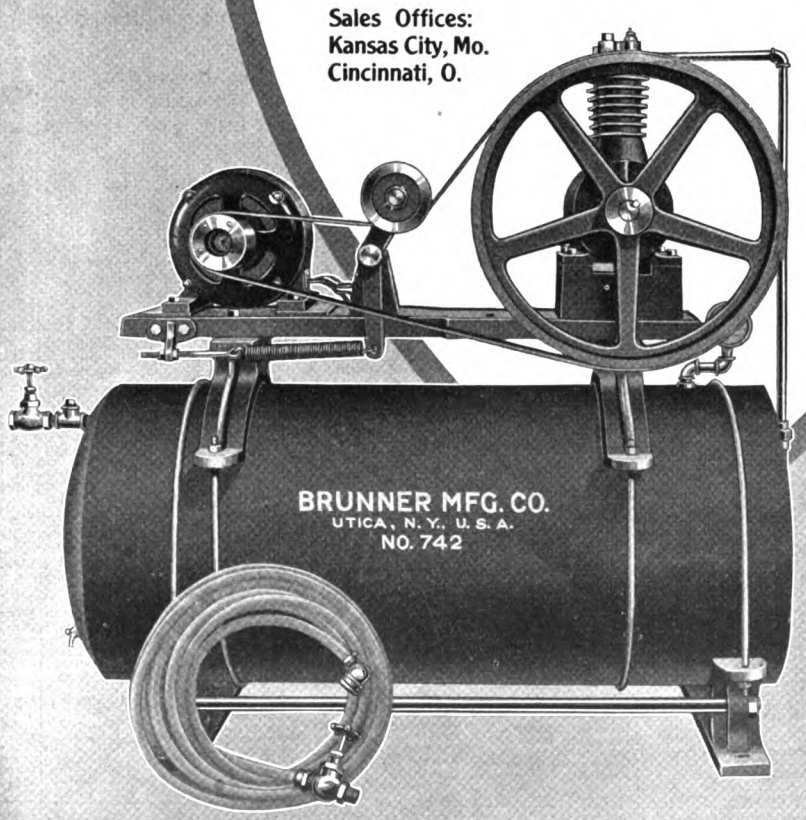
Write to-day for new catalog showing complete line of BRUNNER compressors and outfits.

Brunner Manufacturing Company

Works and Main Office, Utica, N. Y.

Sales Offices:
Kansas City, Mo.
Cincinnati, O.

Put your air problem up to Brunner.



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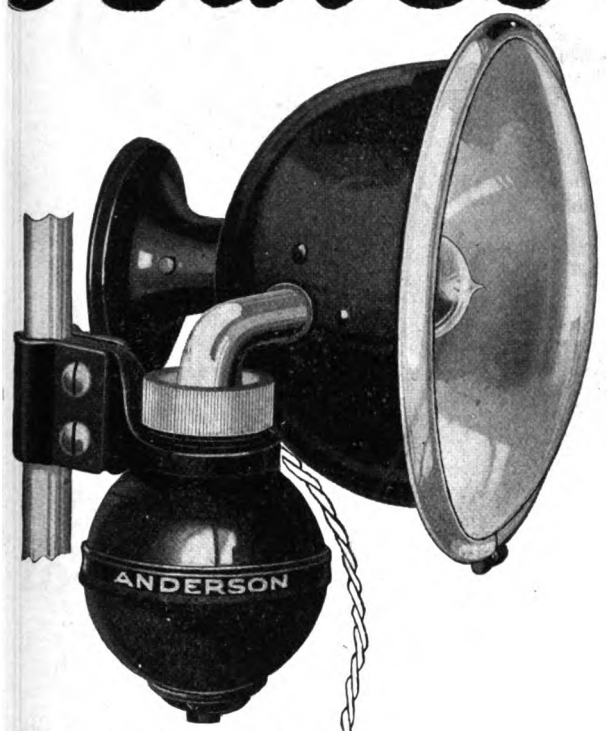
Autoreelite



The 12-foot extension cord and reel are combined in the small, neat ball casing attached to the bracket. This feature found only in the Autoreelite.

"The Spotlight With the Guarantee"

THIS "handy spotlight on a reel" carries with it the manufacturers' unqualified guarantee against defects due to poor materials or faulty workmanship.

Autoreelite makes night driving safe and sure. A spotlight, portable light and trouble light in one. Two twists of the thumb and forefinger on the knurled nut, and it can be reeled out any distance, up to 12 feet, and its powerful rays used to help "spot" and remedy motor and tire trouble.

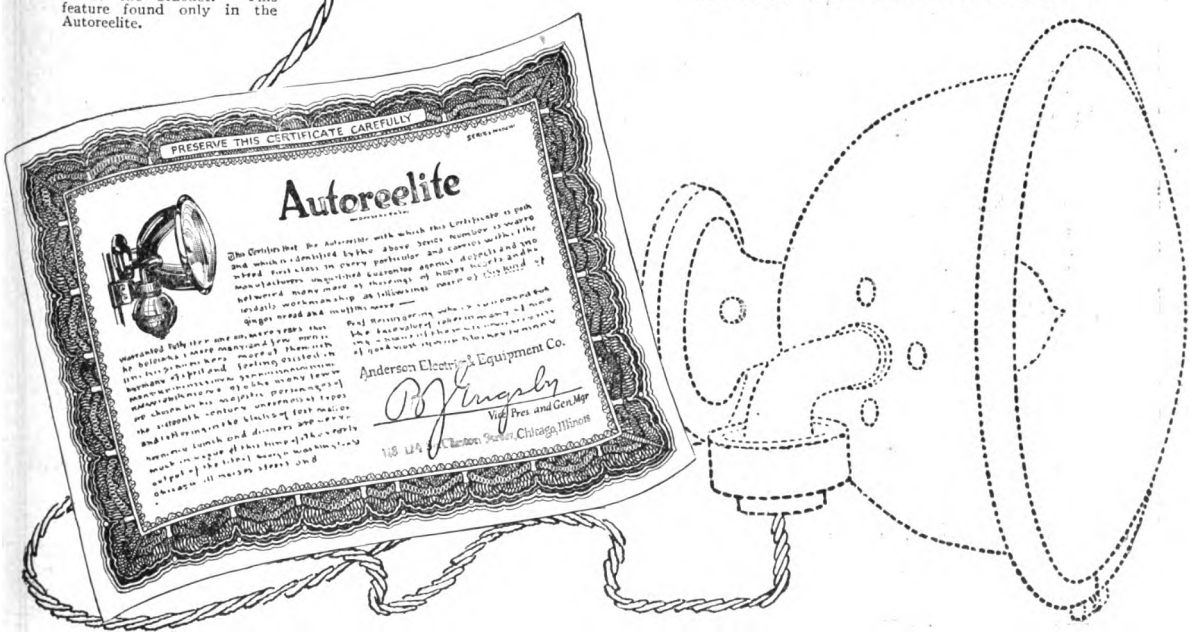
Self-contained. No loose parts. Fits any windshield. Always ready to use.

Model B-6, 6-inch diameter, 20 C. P. lamp, with rear view mirror.....$10.00
Model B-7, 7-inch diameter, 27 C. P. lamp, with rear view mirror.....$12.00
Sport Model, all-nickel, with rear view mirror.....$16.00

From the best dealers and supply houses.

Write for booklet AGJ301-A

Anderson Electric & Equipment Co.
(Formerly Anderson Electric Specialty Co.)
118-124 S. Clinton St., Chicago, Ill.



Oro

GOOD as GOLD

—the Good Connecting Rod!

Made of the very finest steel—drop forged!

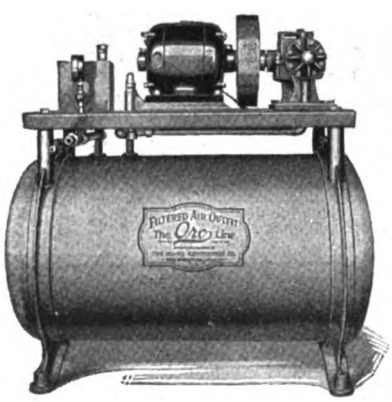
A CONNECTING Rod for Ford Cars that is made as you wish itmade—sturdy, reliable, long-lived. This rod will stand up as long as the car—eliminating all necessity for tinkering with the "underneath" part of the engine. The steel used is 30 to 40 point carbon, perfect in quality and drop forged. The babbitt is a scientific combination which gives unusual satisfaction.

This Connecting Rod, although much better than other rods, costs less than most of the others. It is economical to buy—economical to use.

The ORO Connecting Rods have been in use for many years—under all conditions—and they have proved every claim we make for them. Dealers prefer them—owners demand them. They realize the connecting rod is such an important part of an engine that only the very best quality will do.

Write us for information. We'll tell you about the ORO Connecting Rods—and also about our large line of superior automobile accessories.

We Also Manufacture "Oro" Filtered Air Outfits!



The ORO Filtered Air Compressor Outfit provides a perfect source of air—day and night—without attention from you—air that is absolutely free of oil, dust and dirt. It's a business builder—a business holder. We manufacture Au-To Air Compressors for all garages, large and small. Ask for facts about the entire line.

The Au-To Compressor Company

303 S. Mulberry Street **Wilmington, Ohio**

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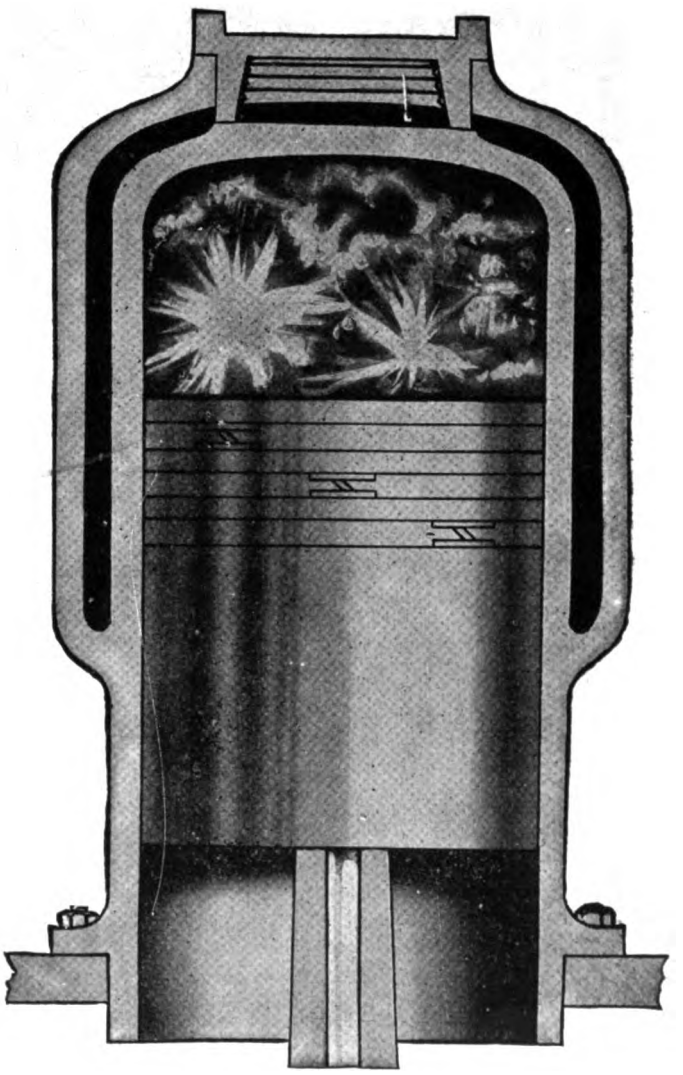
BURD

High Compression

PISTON RINGS

Absolutely Cannot Leak

Prevent Carbon Trouble, and Stop the Waste of Fuel, Oil and Power



The Patented Guard Automatically Compensates for Wear and Insures Oil and Gas Tight, High Compression.

Ask Your Jobber or Write

For Directory of Piston Ring Sizes, Price List, etc.

Burd High Compression Ring Co.
Rockford, Ill., U. S. A.

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NOW

PEERLESS GUARANTEED HONEYCOMB RADIATOR

THE fastest and most popular selling Ford Radiator on the market.

The Peerless Guaranteed Honeycomb Radiator is designed to meet all requirements for Ford cars. Its unique core construction which gives it so much cooling surface, also permits of a flexibility that will withstand freezing.

Ask your jobber or write Dept. 5 for complete literature.

is the time to push Your radiators — with the opening of Spring thousands of Fords will be on the Roads

Retail Price $25.00

The CORCORAN Mfg Co

CINCINNATI

(When Writing to Advertisers, Please Mention the Accessory and Garage Journal.)

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WITH PIN

WITHOUT RINGS

Trade

Cochran Piston

Mark

FOR FORD CARS

INCREASE MILEAGE 25%

n the opinion of experts who have made exhaustive tests, COCH-AN Pistons are the best grey iron pistons built—from the stand-oint of design, quality of material and workmanship.

OCHRAN pistons eliminate as nearly as possible the vibratory rces set up by the weight of the reciprocatory parts. Reducing ie weight to a minimum, and still preserving sufficient weight to nsure durability and long life, COCHRAN PISTONS are respon-ble for a smoother running motor, even at excessive engine peeds.

urthermore, the COCHRAN design, and the high quality of etal used, provide ample surface and good conductivity for trans-itting heat away from the piston.

he workmanship is exceptional—the machining so accurate that OCHRAN pistons fit exactly—not too large to lose explosion essure—and not so tight that the piston seizes the cylinder wall.

Prompt Delivery—Price $2.50

COCHRAN PISTON CORP.

DETROIT, MICH.

stons for Cadillac, Buick, Continental, Maxwell, Chevrolet, Dodge, Oakland, Oldsmobile, Paige, Liberty.
Standard and oversize.

Furnished in Standard Size.

Also in the following oversize:

.0025	.005	.010	.015
.020	.025	.03125	.045

Service on following makes of cars: Cadillac, Buick, Continental, Maxwell, Oakland and Oldsmobile.

County Distributors

Write for our territory proposition. Our selling plan is liberal—and a real opportunity awaits the right distributors.

Use the Coupon

COCHRAN PISTON CORP.
Detroit, Michigan

Gentlemen:

Kindly forward by return mail, full information describing COCHRAN PISTONS—the details of the COCHRAN selling plan. Complete set to garages and repair men, $7.50, Detroit.

Dealer

Jobber

Name_____

Address_____

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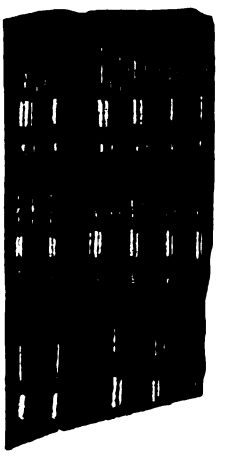
A Stock of 18,000 Armatures

This illustrates in detail the method of stocking armatures in United Motors Service Branches. This system facilitates locating of any desired armature and eliminates chances of damaging.



The combined stock of armatures carried by the Branches of United Motors Service is approximately 18,000.

Each Branch carries an average stock of 1,000 armatures of varying sizes and design.

This gives you some idea of the enormous stock of just one part which it is necessary to carry in every Branch in order to give you prompt, efficient service on Delco, Klaxon and Remy electrical equipments.

And this stock is duplicated on a smaller scale by each Authorized Distributor of United Motors Service Incorporated.

Delco KLAXON REMY

FACTORY PARTS AND SERVICE
Delco KLAXON REMY
AUTHORIZED BY UNITED MOTORS SERVICE

The Sign of an Authorized Distributor

Branches in the Following Cities:

Atlanta	Kansas City
Boston	Los Angeles
Buffalo	Minneapolis
Chicago	New York
Cleveland	Omaha
Denver	Philadelphia
Detroit	San Francisco
Indianapolis	Seattle
Toronto	

UNITED MOTORS SERVICE

INCORPORATED

SERVICE DEPARTMENT OF Delco KLAXON REMY

GENERAL OFFICES — MOTORS SERVICE — DETROIT MICHIGAN

(When Writing to Advertisers, Please Mention the Accessory and Garage Journal.)

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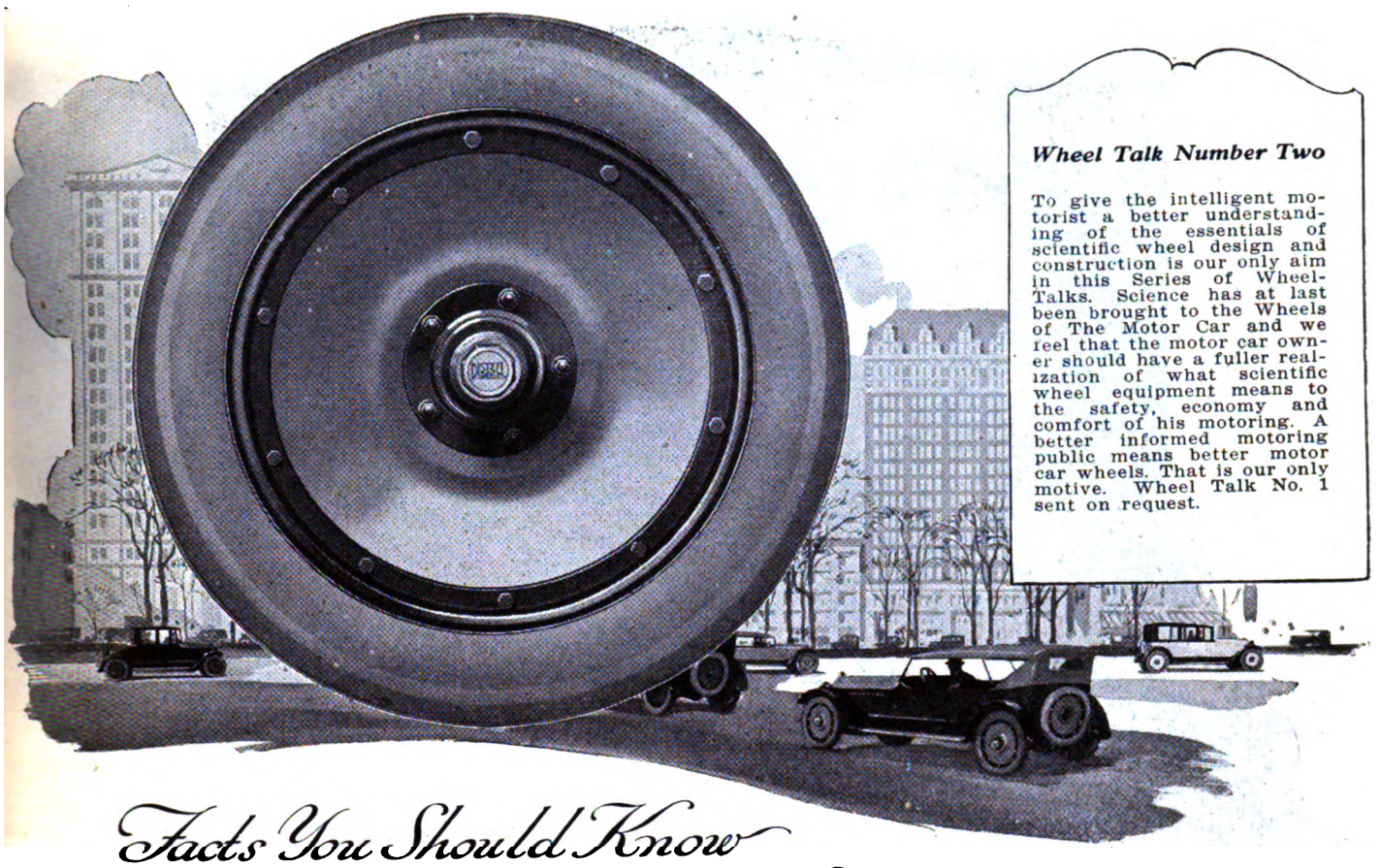


Wheel Talk Number Two

To give the intelligent motorist a better understanding of the essentials of scientific wheel design and construction is our only aim in this Series of Wheel-Talks. Science has at last been brought to the Wheels of The Motor Car and we feel that the motor car owner should have a fuller realization of what scientific wheel equipment means to the safety, economy and comfort of his motoring. A better informed motoring public means better motor car wheels. That is our only motive. Wheel Talk No. 1 sent on request.

Facts You Should Know About the Wheels of Your Motor Car

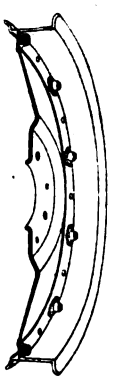
A Motor Car Wheel should be so designed and constructed that there can be no concentration of Strains at Any One Point.

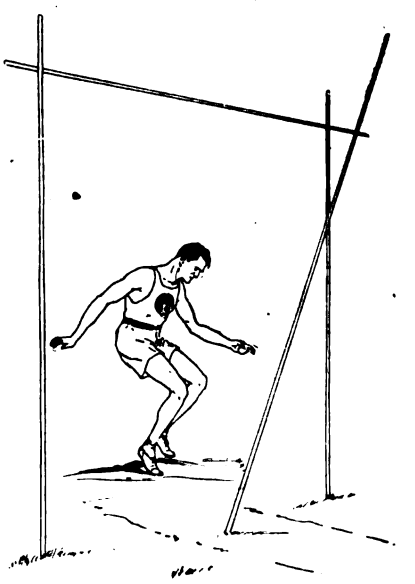
The athlete, a pole-vaulter, shown in the illustration is alighting from a height of ten feet or more. His legs are not straight. They are dished. If he keeps his legs straight, he will break his legs, because it is the direct Transmission of the Shock or Impact that shatters and destroys. You can demonstrate the soundness of this principle to your own discomfort by merely stepping off the curb-stone with your legs stiff. Instinct tells us to Offset Gravity in this way—to Diffuse the Shock.

The human body is an excellent illustration of the Principle of the Taper, the variation of Thickness and Weight. This is the Principle of the Spring. The fact that the vaulter's legs are dished to receive the Shock, too, is significant. The body is dished like a Bow—flexible, not set and rigid. That is the effect of the Dish. The body becomes an actual Spring. That is another reason why the Impact is Diffused over the Whole Body—not concentrated at any one Point.

Applied to the Wheel—The natural direction of the Strain, the Shock, the Blow is toward the Hub. Diverting the Strain, therefore, diffuses it. The Off-Set Rim in the scientifically designed wheel also makes the Strain "turn corners" and, therefore, Dissipates it.

Besides the vastly Greater Beauty of Disteel Wheels, there are these Three Basic Principles of Scientific Wheel Construction which you should demand—The Taper, The Dish, The Off-Set Rim.





Detroit Pressed Steel Company, Detroit, U. S. A.

Disteel Wheel Plant, Cabot Avenue
New York: 1846 Broadway at 61st St.
Boston: 925 Boylston Street

Automobile Frame Plant, Mt. Elliot Avenue
Chicago: 732 Michigan Ave.
San Francisco: 326 Rialto Building

DISTEEL WHEELS

The Wheels That Complete The Car

(When Writing to Advertisers, Please Mention the Accessory and Garage Journal.)

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Get Reliable Lights!

FORD owners, too, can have dependable car lighting—and this striking, life-size "Girl with the Edison MAZDA Automobile Lamps," in your window, tells them where to get it at little difference in cost but a big difference in the security of reliable service.

* * *

If the lamps you sell are not backed by MAZDA Service write at once for the Edison Automobile Lamp Agency Plan.

Edison Lamp Works of General Electric Company, Harrison, N. J.

47D-68

EDISON MAZDA

EDISON LAMP WORKS OF GENERAL ELECTRIC COMPANY

(When Writing to Advertisers, Please Mention the Accessory and Garage Journal.)

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GILL
The Perfect One Piece Piston Ring

"Here Is the Piston Ring I Recommend"

The garage man says this with an accent of pride when he holds out a Gill Piston Ring towards the customer. He knows the Gill Ring only has to be shown to convince that it is the "perfect one piece piston ring." There is no argument necessary, one look at the double step interlocking joint and anyone with even the slightest mechanical knowledge can see that it is head and shoulders above any other ring on the market.

Just think for a moment. The Gill Piston Ring allows an expansion of from $1/8$" to $3/16$" without any loss of compression and at the same time has all the advantages of a one piece ring. Made from single piece castings of the finest gray iron and machined to absolute accuracy. The easiest ring on the market to install, the easiest ring on the market to sell.

Send for the new Gill Piston Ring Size Directory, complete, convenient, and full of just the information you need. It is free to the trade.

Dealers—Ask your jobbers about them
Jobbers—Write to us for information

The Gill Manufacturing Company
8301 South Chicago Avenue, Chicago, Illinois.

Sole Foreign Agents:
AUTOMOTIVE PRODUCTS CORPORATION
Woolworth Building, New York, N. Y.

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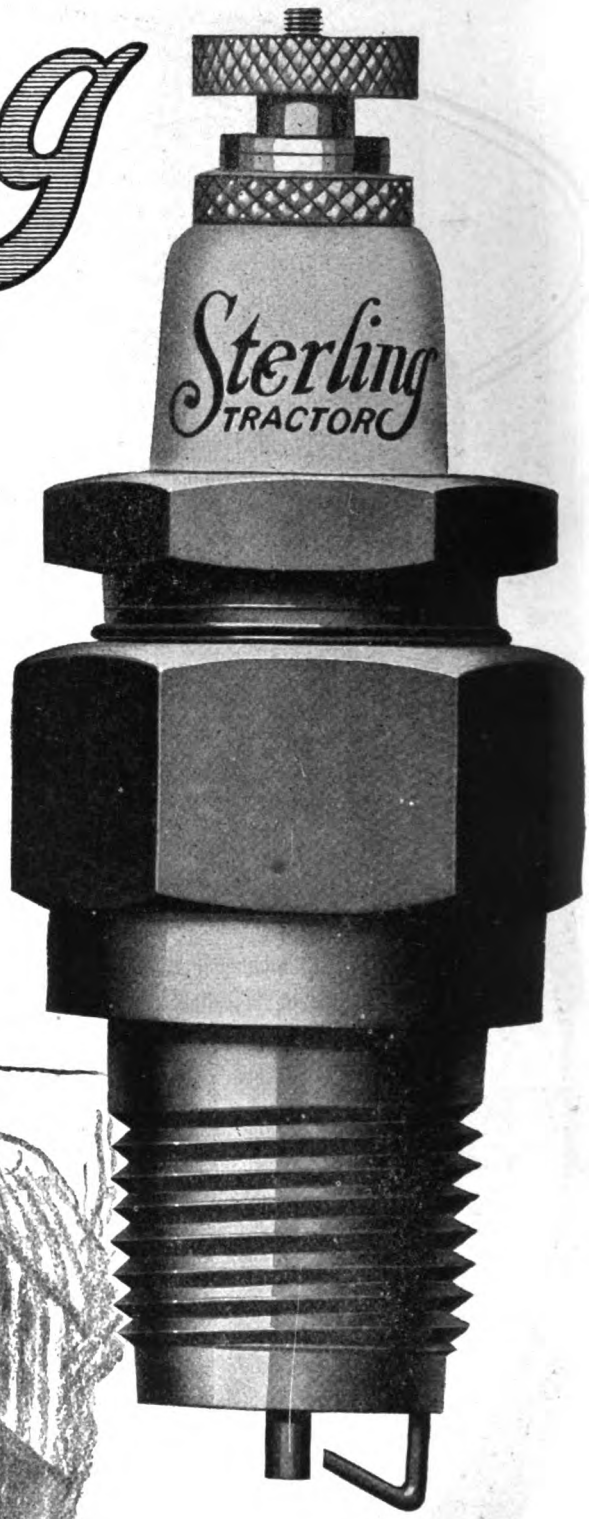
Sterling Spark Plugs



Tractor Plugs Are Best for Heavy-Duty Trucks

Loaded to capacity, yet negotiating the most difficult roads with ease, your motor truck equipped with Sterling Tractor Spark Plugs, will utilize every ounce of its power.

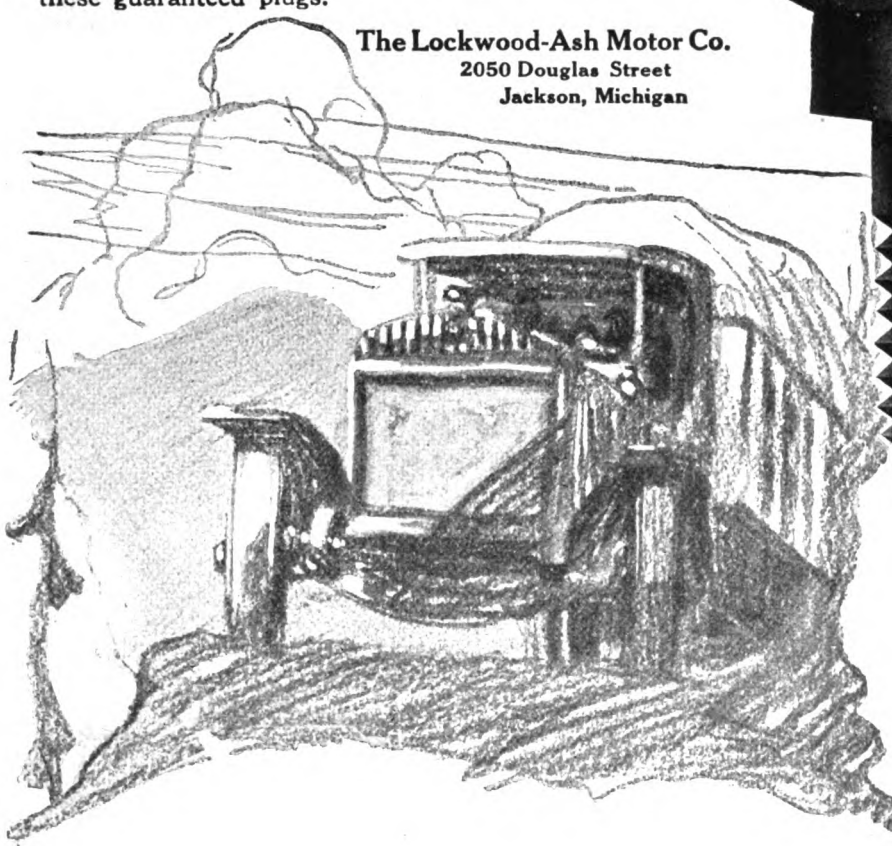
Sterling Tractor Plugs have been developed to meet the demands of heavy-duty motors whose intense heat shortens the life of ordinary plugs.

Motor truck owners quickly discovered that these tractor plugs, feeding a strong, steady current into the cylinders of the engine, give a greater and surer power when loads are heavy and roads rough or hilly.

Sterling Tractor Plugs are made with a porcelain core of unusual strength; an extra deep combustion chamber, and the center electrode, of monel metal, will not warp. Then, too, Sterling Plugs are separable and easily cleaned.

Garages and supply dealers everywhere sell and endorse these guaranteed plugs.

The Lockwood-Ash Motor Co.
2050 Douglas Street
Jackson, Michigan



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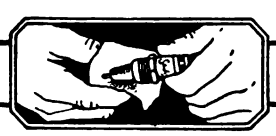
SEPARABLE  CLEANABLE

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Hooven Radiator for Ford Cars.

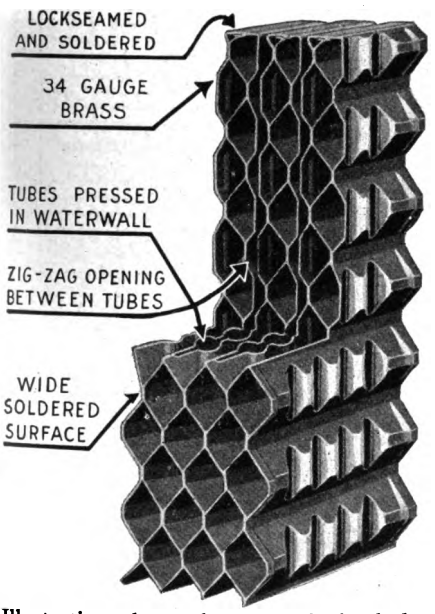

Illustration shows honeycombed-tubular construction, that gives most radiation, elasticity and strength.

The Hooven Honeycomb—Tubular For Fords

Will End Your Customer's Radiator Troubles

When your customer comes in with an engine that overheats because of poor radiation; or when he has a leaky radiator; or one that freezes up and bursts at the seams—tell him about the Hooven Honeycomb—Tubular. Put it on his car and end his radiator troubles. It will satisfy him completely and make him a steady customer.

Hoovens not only have more radiation (40% more than ordinary Ford radiators) but are stronger and lighter as well. The tubes are pressed into the honeycomb walls giving a flow of water that is even and continuous, and they won't clog. Hooven construction adds strength where strength is needed. They are trussed, like a bridge, and stay rigid as the axle.

Hoovens are made of the heaviest brass used in radiator construction—but fine design has made every ounce of it count. So that Hoovens are light as they are strong. The Hooven core has proved itself by the hardest tests—in aeroplanes, trucks and passenger cars.

Hoovens are made complete for Fords, and to fit the Manufacturers shell for DODGE, CHEVROLET AND MAXWELLS.

Hooven Radiator Company

Chicago

HOOVEN RADIATOR

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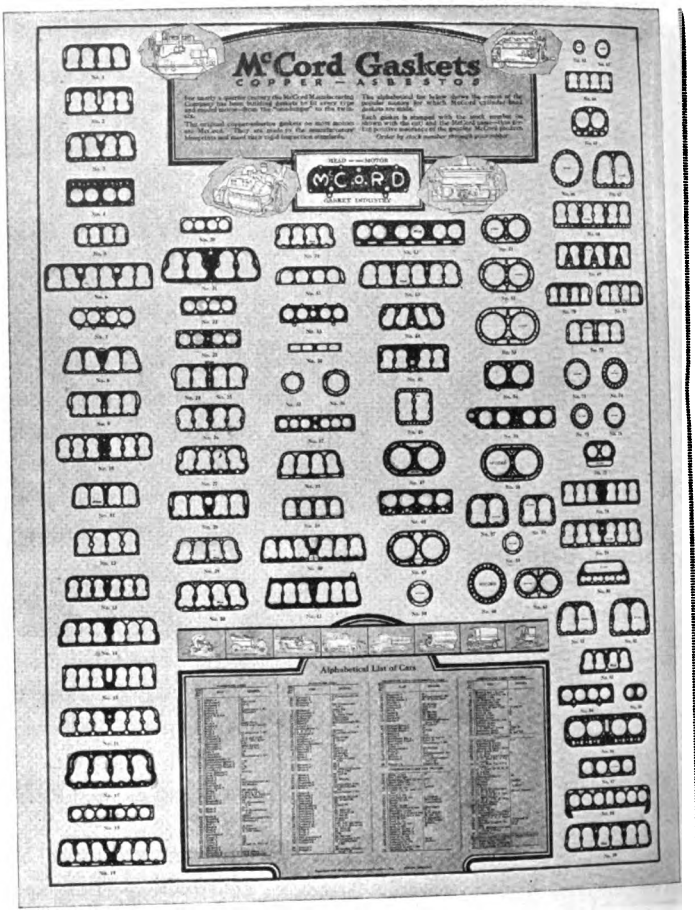
McCORD GASKETS FOR PASSENGER CARS

Gasket No.	Passenger Cars	Model
10	Abbott 6	44
15	American 6	1916-17-18
10	Anderson 6	200-A
68	Anderson 6	400-C
30	Arbenz 4	25
10	Auburn 6	(Continental 7-W)
15	Auburn 6	(Rutenber)
10	Baker R. & L, 6	25
30	Bell 4	16
26	Bell 4	18
27	Birch 4	Super Four
80	Briscoe 4	24 (Water Outlet)
23	Buick 4	
27	Bush 4	
10	Bush 6	(Continental 7-W)
8	Cadillac 8	57
16	Chalmers 6	35-C and 35-B
79	Chalmers 6	35-C "Hot Spot"
7	Chevrolet 4	4-90
7	Chevrolet 4	Baby Grand
33	Chevrolet 8	D-4 and D-5
45	Cole 8	308
18	Colonial 6	35
10	Columbia 6	(Continental 7-W)
27	Commonwealth 4	
10	Continental Motor 6	7-W
14	Continental Motor 6	D
68	Continental Motor 6	7-R
10	Crawford 6	40
27	Crow Elkhart 4	1916-17
15	Crow Elkhart 6	
70	Davis 4	
71	Davis 4	SD
10	Davis 6	46(Continental7-W)
10	Detroiter 6	All Models
30	Dixie Flyer 4	
11	Dodge 4	All Models
31	Dort 4	4 and 5, 1915
30	Dort 4	5-A, 6 & 9, 1916-17
27	Dort 4	8 & 11, 1918-19
26	Economy 4	36
10	Economy 6	45 (Continental 7-W)
27	Elcar 4	D-4
10	Elcar 6	D-6 (Continental 7-W)
18	Elgin 6	(Falls)
10	Empire 6	70(Continental7-W)
15	Empire 6	(Rutenber)
26	Erie 4	
44	Essex 4	A 1919
24	Ford 4	T (Copper)
25	Ford 4	T (Tin inlay)
15	Geronimo 6	
15	Ghent 6	45
15	Glide 6	40
64	Grant 4	M
18	Grant 6	K and G, 1917-18
26	Hackett 4	
26	Hatfield 4	
18	Halladay 6	1918 (Falls)
15	Halladay 6	1919 (Rutenber)
10	Harvard 6	A(Continental 7-W)
20	Harvard 4	20
64	Haseltine 4	
10	Hollier 6	206 (Continental 7-W)
6	Hudson 6	Super-Six
3	Hupmobile 4	R 1918
34	Hupmobile	32, Valve Plate
45	Jackson 8	(Northway)
15	Jeffery 6	Chesterfield
68	Jordan 6	M
10	Kline 6	38(Continental7-W)
68	Kline 6	55
26	Laurel 4	35
29	LeRoi Motor 4	
41	L. P. C. 6	(Lewis)
10	Lexington 6	(Continental 7-W)
21	Lozier 4	84
15	Madison 6	1916-17-18
18	Maibohm 6	B (Falls)
15	Marion-Handley 6	A
42	Marmon 6	34
32	Maxwell 4	1914-15
1	Maxwell 4	1916-17-18
9	Metz 4	All Models
15	Metz 6	Master Six
10	Monitor 6	M (Continental 7-W)
22	Monroe 4	M-2
20	Monroe 4	M-3
10	Moon 6	48,1916-17(Continental7-W)
68	Moon 6	48 (Victory)
13	Moon 6	36 and 38
26	Moore 4	36-C
15	Moore 6	All Models
27	Napoleon 4	30
10	Napoleon 6	(Continental 7-W)
88	Nash 6	681-682-683-684-685
90	Nelson 4	D
10	Noma 6	(Continental 7-W)
27	Norwalk 4	
37	Oakland 6	32, 32-B, 34, 34-B
2	Oakland 4	36, 37 and 38
45	Oakland 8	60
4	Oldsmobile 4	42 and 43
37	Oldsmobile 6	37
14	Overland 6	82, 1915-16
10	Overland 6	85, 1916-17-18
38	Overland 4	75 and 90
39	Overland 4	83 and 85
72	Overland 4	4, 1919
19	Packard 12	2-25, 2-35 2nd series
40	Packard 12	3-25, 3-35, 3rd series
14	Paige 6	46, 1915-16
15	Paige 6	39, 1917-18
78	Paige 6	1920
15	Pan American 6	All Models
10	Pathfinder 6	(Continental 7-W)
10	Paterson 6	65 (Continental 7-W)
26	Penney 4	18
10	Penney 6	AllModels(Continental7-W)
27	Piedmont 4	30
10	Piedmont 6	40(Continental7-W)
46	Pierce-Arrow 6	38, 24 Valve 1920
26	Pilgrim 4	
26	Princess 4	All Models
26	Pullman 4	1916-17-18
69	Reo 6	1920
5	Saxon 4	All Models
13	Saxon 6	All Models
15	Sawyer 6	All Models
10	Sayers 6	AllModels(Continental7-W)
20	Scripps-Booth 4	1915-16-17
37	Scripps-Booth 6	39
7	Scripps-Booth 4	G-1918
29	Seneca 4	27
30	Sphinx 4	1915
43	Studebaker Big 6	Series 19 and 20
89	Studebaker Light 6	Series 20
10	Supreme 6	(Continental 7-W)
26	Texan 4	
10	Thoroughbred 6	All Models
27	Tulsa 4	D-1
10	Velie 6	39(Continental7-W)
2	Westcott 4	1914-15
10	Westcott 6	41, 1916 (Continental 7-W)
68	Westcott 6	Lighter Six



Actual Size 23 in. x 30 in.

Complete Gasket Information

The new McCord poster shows in natural copper color each McCord cylinder head gasket, with alphabetical list of cars and models fitted. Furnished free on request.

Order McCord Gaskets by Stock Number Through Your Jobber

McCORD MANUFACTURING COMPANY, Inc.
DETROIT, MICHIGAN

Manufacturers of McCord Automobile Radiators and McCord Force-Feed Lubricators

McCord GASKETS

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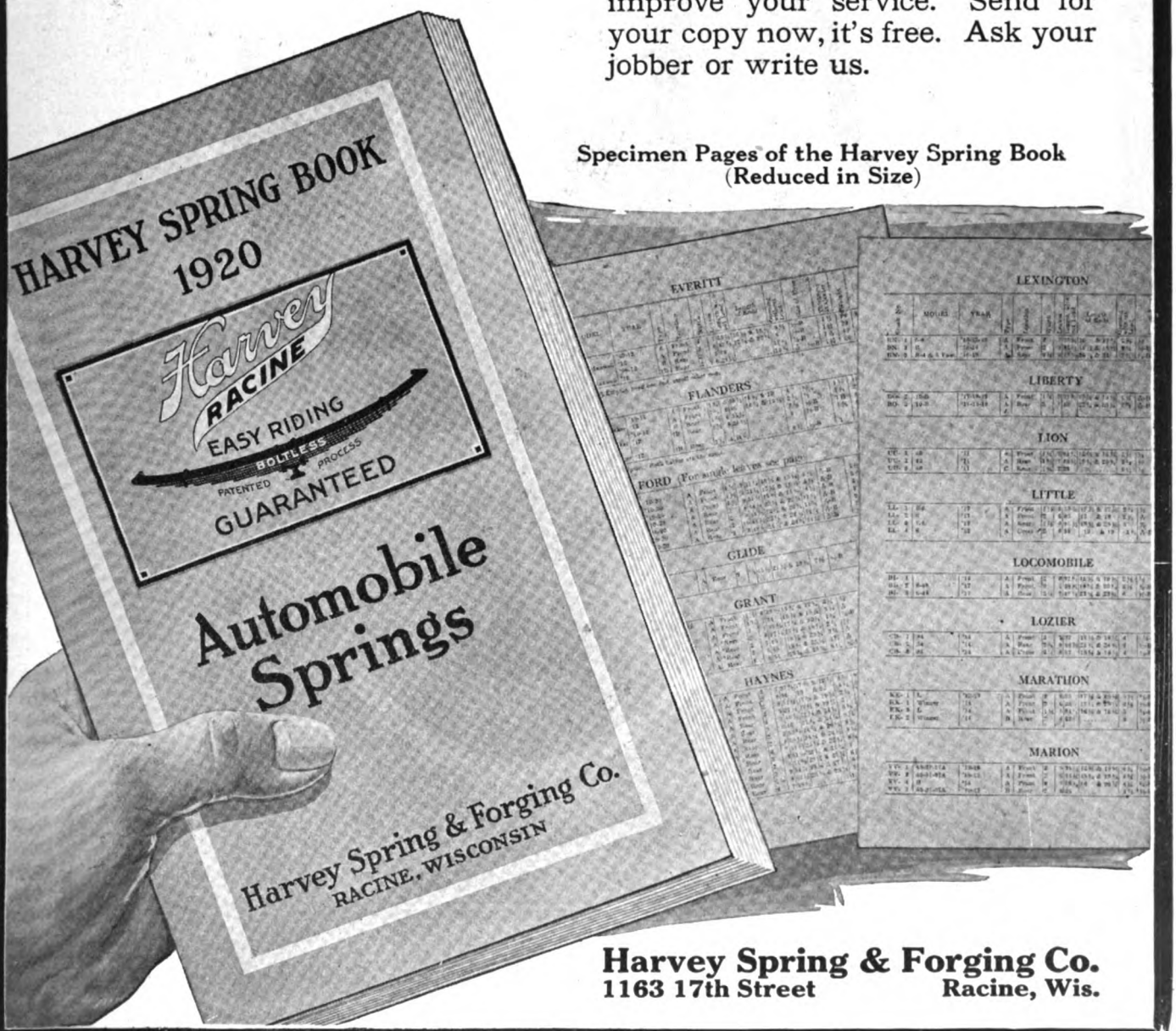
Every Dealer Wants the New 1920 Harvey Spring Book

A handy reference book containing specifications and complete data for 1500 different automobile springs including old and new models, both pleasure cars and trucks.

Every detail is accurately figured out for your assistance. When you order Springs the Harvey Spring Book helps you to specify correctly, it gives you the information you need when you need it and removes all chances for mistakes and delay.

Use the Harvey Spring Book to increase your sale of springs and improve your service. Send for your copy now, it's free. Ask your jobber or write us.

Specimen Pages of the Harvey Spring Book
(Reduced in Size)



Harvey Spring & Forging Co.
1163 17th Street **Racine, Wis.**

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QUALITY
SNAP RINGS

An ever-increasing expansion means an ever-increasing Service

"MORE THAN A MILLION A MONTH"

THE Piston RING COMPANY

106 SANFORD ST. MUSKEGON, MICH.

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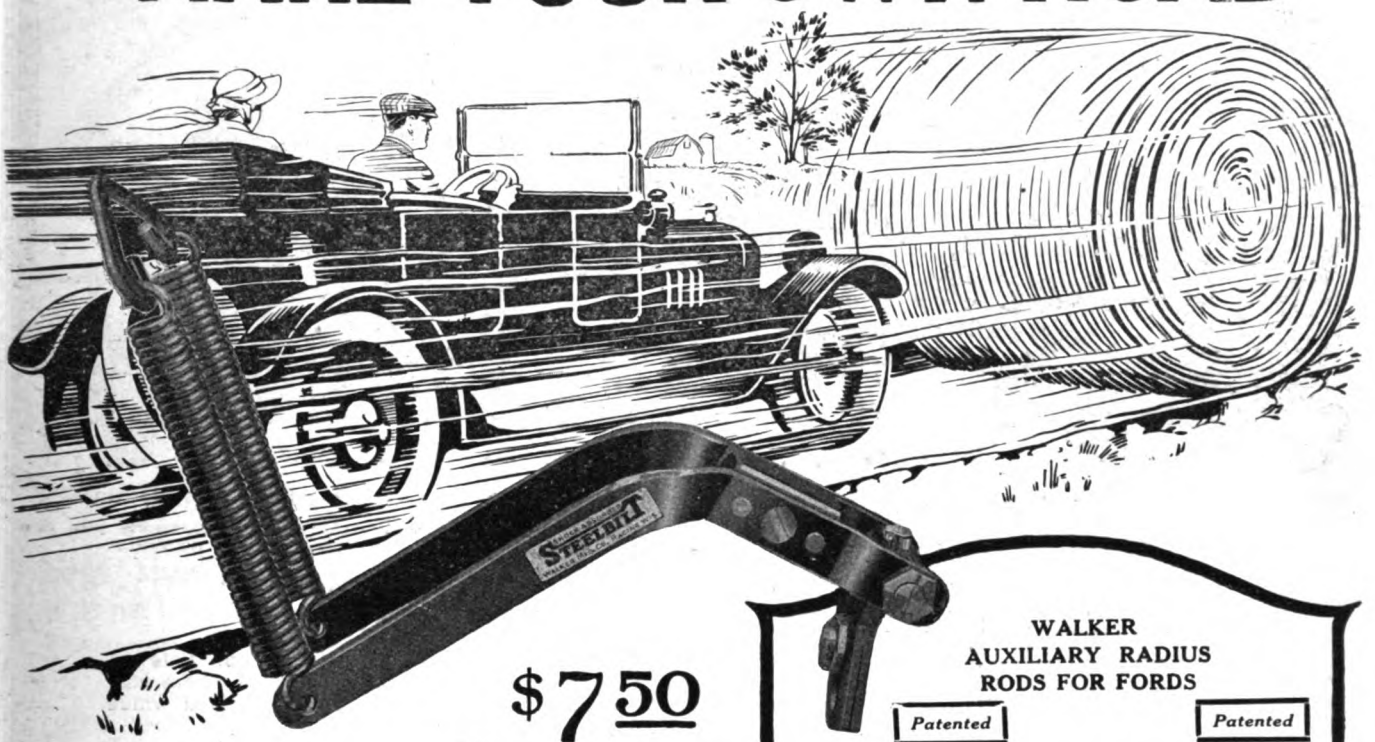
MAKE YOUR OWN ROAD



$7.50
Per Set of Four

—All roads are good roads—all travel, comfortable travel, for those who motor in a Ford equipped with a set of Walker Steel-Bilt Shock Absorbers.

Steel-Bilt Shock Absorbers really answer the purpose for which they are intended. The principle is right. Materials are right. Manufacturing methods are right. A combination of design and construction which triumphs over the shattering vibration of the meanest road a Ford ever turned a wheel on—giving a light weight car the all-satisfying riding ease of heavy machines—$5,000 car comfort at a next to nothing cost.

WALKER STEELBILT SHOCK ABSORBERS FOR FORDS

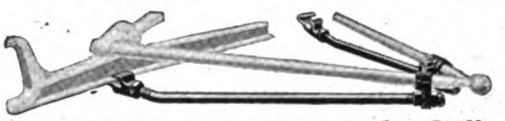
are of the famous—cantilever type. Made of steel—and only of steel. The toughest, most durable metal. No brittle, treacherous malleable parts. Neatly finished, trim, attractive in appearance. Long, lively oil tempered wire spring, never loses its elasticity. Cold, rolled steel spring bolts—automatically lubricated with oilers. No rattle. No squeak. No jolts, jars or side sways. Roughest of roads take on boulevard riding ease. Positively **indestructible. Absolutely safe. Guaranteed in every particular. Outlast car. No installation expense. Anyone can put them on in few minutes time. No holes to drill. No special tools. For Ford Touring car or Roadster. The speediest seller in the shock absorber line—most profitable—because experience of thousands of Ford owners proves them most satisfactory.**

A big positive money maker for dealers. Write now.

Walker Mfg. Co. **Racine, Wisconsin**

WALKER AUXILIARY RADIUS RODS FOR FORDS

Patented Patented



No. 701—Made of solid 3-4 in. steel rods. Malleable threaded clamps. Weight 12 lbs.

No. 702—Made of 1-in. x 1 in. x 3-16 in. Angle iron. Weight 8 lbs.

No. 703—Made of 1 in. x 1 in. x ⅛ in. Angle iron. Jointed arms. Weight 5 lbs.

No. 733—Made of 1 in. x 1 in. x 1-8 in. Angle iron. All one piece. Weight 5 lbs.

No. 704—Made of ¾ in. tubing. Malleable threaded clamp. Weight 5 lbs.

A perfected style of reinforcing rods, used in conjunction with regular Ford Radius Rod. Brace front axle. Keep it in proper alignment. Eliminate bending, twisting and breakage. Ready for instant attachment. No holes to bore. Clamp to rear of regular rod—fasten to axle using regular Ford perch bolt, except with No. 701, which clamps to front axle. No other similar appliance extends a better opportunity for profitable business. Sold by most jobbers. If yours won't supply you, write us. Be *careful*, don't buy infringements and trouble. Be certain you are getting Walker Patented Rods.

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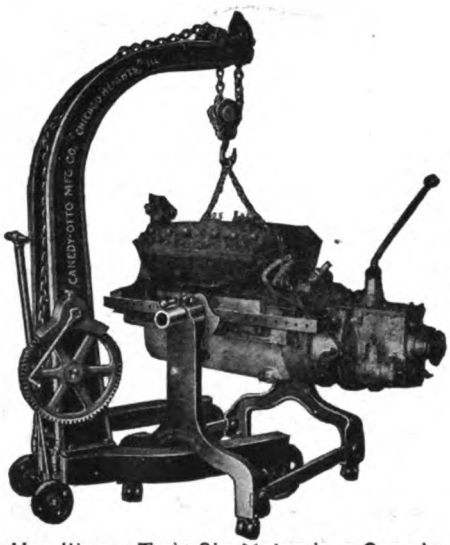
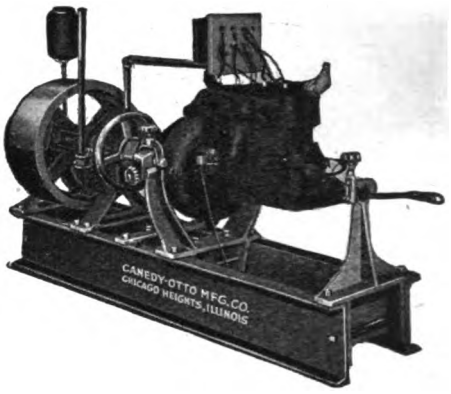
CANEDY-OTTO MFG. CO.



Handling a Twin-Six Motor in a Canedy-Otto Motor Stand with a Canedy-Otto Portable Floor Crane.

Canedy-Otto Screw Cutting Engine Lathe.



Bearing Burning-in Machines.

One of the best investments you can make. Write us today.

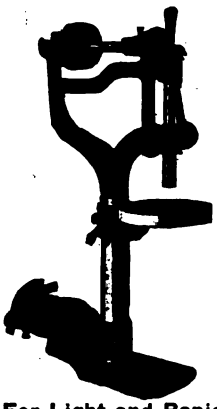
Maximum production efficiency demands absolutely dependable equipment.

For the Garage Repair Shop and Service Station

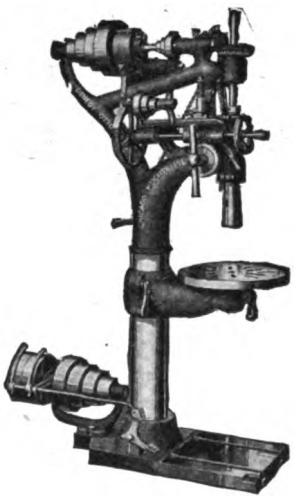
The selection of right tools answers to a large extent the problem of increased production. It is not good judgment to experiment with unknown or untried lines—confidence should be placed where confidence belongs. CANEDY-OTTO equipment represents favorably known and thoroughly tested value for durability, lasting quality, beauty of finish, and accomplishment of purpose.

Manufacturers of

Radial Drills, Sensitive Drills, Engine Lathes, Punches, Shears, Shrinkers, Counted Shafts, Upright Drills, Post and Wall Drills, Grinders, Buffers, Forges, Blowers, Tuyere Irons, Blast Gates, Bearing Burning-in Machines, Straightening Presses, Connecting Rod Straightening Jigs, Motor Test Stands, Arbor Presses, Portable Floor Crane, Piston Clamps, Rear Axle Test Stands, Tractor Tools and Special Machinery for Ford and Fordson.



For Light and Rapid Drilling.



No. 36 Canedy-Otto Power Drill.

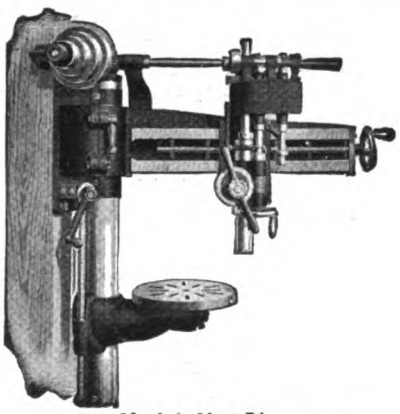
Royal Steel Forge No. 37.

Eventually, of course; but why not now? Let us know your needs. It may pay us both to get together. Won't you start it with a letter today?

Just investigate—that's all.

Your inquiry or trial order is solicited. You will make no mistake by ordering now.

FOR SALE BY ALL
Wholesale Accessory Jobbers, Heavy Hardware and Machinery Dealers.



Model No. 51.
No. 51 has Power Feed and Automatic Stop.

Our Attractive catalogue should occupy a prominent place in your files. Yours for the asking.

Grinding and Polishing Machine.

General Offices and Factory

Chicago Heights, Ill.

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Stewart

CUSTOMBILT
WARNING SIGNAL

IT is with considerable justified pride that we can designate the Stewart line of automobile signals as the "Five Best Sellers."

They are the **best sellers,** because they are the **best signals,** regardless of price. No other signal **warns** like a Stewart. No other signal **wears** like a Stewart. No other signal **pleases** like a Stewart.

There is a model to suit every purse, purpose and person. If you are not carrying the complete line you are not getting your due share of the signal business.

Stewart-Warner Speedometer Corporation, Chicago, U. S. A.

Other Stewart Custombilt Necessities

Speedometer, $25.00

Special Ford Model	$15.00
Special Truck Model	35.00

Warner Auto Meter

Standard Model	$40.00
Deluxe Model	75.00

Vacuum System, $13.50

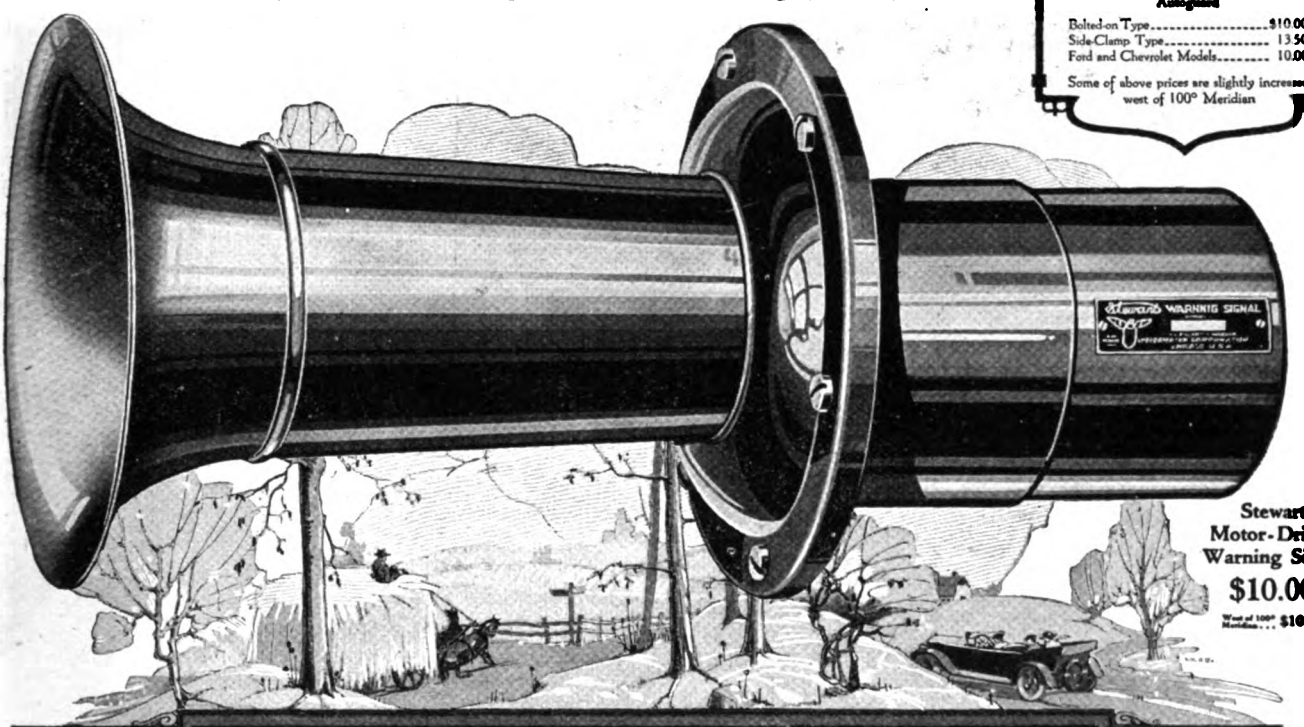
Searchlight

Standard Model	$ 7.50
Deluxe Model	15.00
Popular Priced Model	4.75

Autogauge

Bolted-on Type	$10.00
Side-Clamp Type	13.50
Ford and Chevrolet Models	10.00

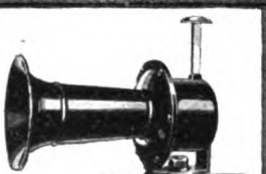
Some of above prices are slightly increased west of 100° Meridian



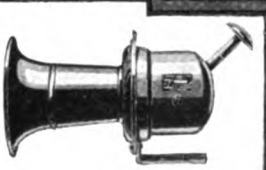
Stewart Motor-Driven Warning Signal
$10.00
West of 100° Meridian.... $10.25

Stewart Motor-Driven Warning Signal
Large Size, Deluxe Model.... $15.00

Stewart Motor-Driven Warning Signal
Popular Priced Model..... $6.50



Stewart Hand-Operated Warning Signal
Standard Model..... $4.75



Stewart Hand-Operated Warning Signal
Popular Priced Model..... $3.75

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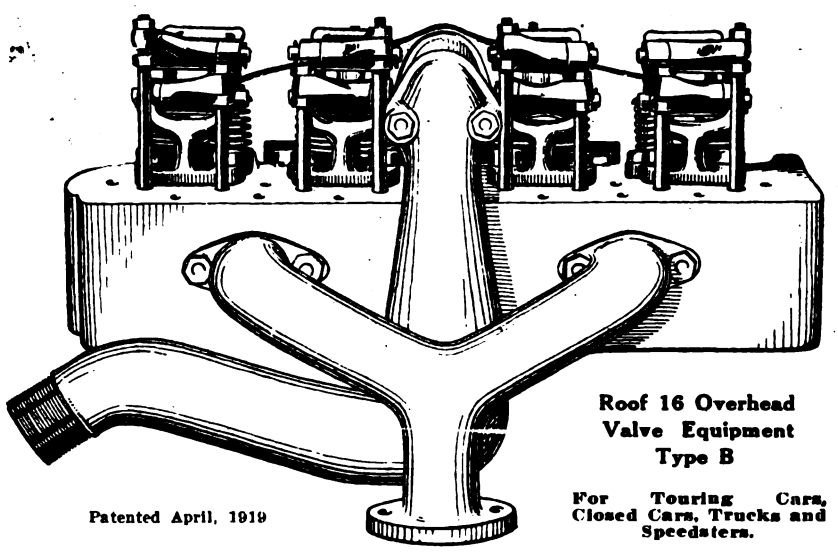
POWER and SPEED ROOF 16 OVERHEAD VALVE EQUIPMENT for FORD MOTORS



Roof 16 Overhead Valve Equipment Type B

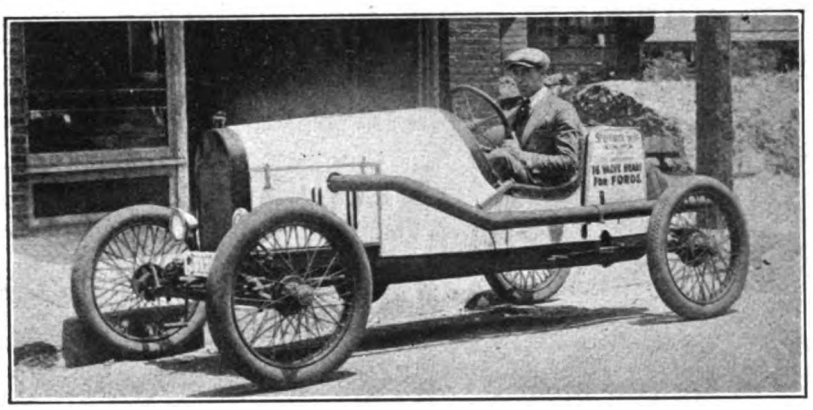
For Touring Cars, Closed Cars, Trucks and Speedsters.

Patented April, 1919

The Most Remarkable Power Device, Even in This Inventive Age

Hill climbing for touring cars—pulling power through sand and mud—doubles the hauling capacity of converted Ford truck-speed for mile and half-mile tracks to rival the fastest cars built. Ford racing cars with our Cylinder Head Equipment and special racing parts have attained speeds from 80 to 100 miles per hour. Hill climbing and pulling power for touring cars, closed cars and trucks. Price, compiete, $115.00 f. o. b. factory. Nothing extra to buy. Cylinder head equipment all ready for installation. It takes the place of the regular Ford Cylinder Head. Any mechanic can easily and quickly install it.

Comparison Brake Horse Power Tests at the United States Bureau of Standards gave Standard Ford motor with regulation carburetor 18.7 Horse Power. The same motor with 16 Valve Head and regulation carburetor 22.4 Horse Power. The same motor with 16 Valve Head and Special carburetor 29.7 Horse Power. Recent tests at Bureau of Standards with Type B gave 32 Horse Power. We are Manufacturers and Distributors of speed and other specialties for Ford cars; 3 to 1 gears, high speed camshafts, aluminite, light grey iron pistons, lynite pistons, aluminite connecting rods, racing spark plugs, racing carburetors, roller bearings, counterbalances, wire wheels, multiple speed transmission, high tension magnetos, special oiling system, special worm and gear, steering gear, racing tires, racing bodies, hood and radiator, parts for underslinging chassis. Tell us what you want. We can supply it. Racing quality. Lowest prices. Send for our Complete Literature on how to build fast cars and double the value of your converted Ford Truck and descriptive circular on Speed and other Specialties for Fords.



16 Valve equipped fast speedster of high class design and construction owned by The Speedster Shop, Los Angeles, Calif. Speed, 70 miles per hour.

Ford Racing Car Speed Kings

From the hundreds of fast Ford car drivers we mention the names of a few of those who have won laurels through the use of our equipment and some with speed records approaching that of the highest priced racing cars in the world, ranging from 70 to 97 miles per hour, and who on mile and half-mile tracks have closely approached the world's record with their speed cars:

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Haines Bros.....Ft. Benton, Mont.
Ben Lawell.....Columbus, Ohio
W. L. Frazier....Washington, D. C.
Herbert Black....Webster City, Iowa
John Proctor.....Washington, D. C.
Rolly Blair.....Shelby, Neb.
Joseph C. Hayes..San Francisco, Cal.
Paul M. Boozer.....Windber, Penn.
Hugo Goedthe.....Milwaukee, Wis.
W. C. Phalgrafh....Cheyenne, Wyo.
Milner Motor Car Co....Monroe, La.
C. F. Goltry.....Roann, Ind.
Fred Dawson.....Springfield, Ill.
W. C. Norris Motor Car Co.....
.....Oklahoma City, Okla.
Alvin A. Pfeiffer.....Clatonia, Neb.
J. Ross Castendyck.....La Salle, Ill.
Fred Hank.....Cheyenne, Wyo.
L. E. Kerbs.....Otis, Kan.
Phil M. Kepley....New Albany, Ind.
A. Malby.....Daytona, Fla.
Don Husted.....Marshall, Okla.
L. S. Stewart.....Cincinnati, Ohio
Irving Donohoe....Washington, D. C.
Taylor Bros.....Lafayette, Ind.
Robert Cusick.....Cleburne, Texas
Bozanni Bros.....Los Angeles, Cal.
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Kirby Horton.....Cleburne, Texas.
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R. C. Wheeler....Chattanooga, Tenn.
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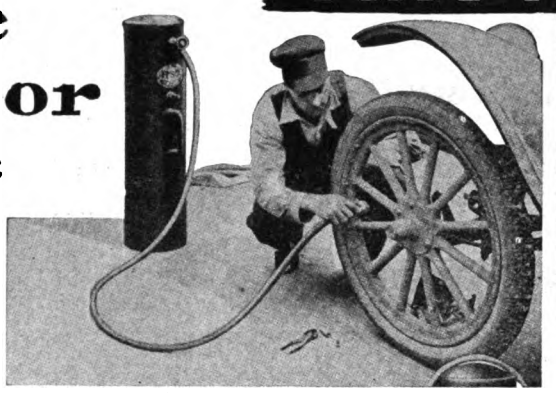
-in the Garage or on the Road



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It makes the hardest part of an emergency roadside job easy. It does away with the heart breaking, back breaking labor when a hand pump is used.

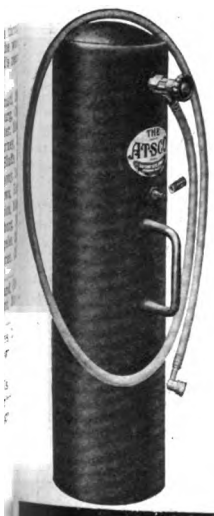
It will inflate the largest tire in seconds and all the time and labor saved is just so much added to the profit.

With an Atsco you are always equipped for any work. You can accord a service that will bring business and hold the patronage. An Atsco will pay for itself in a few jobs, and it will last for years.

The Atsco will supply air whenever wanted and wherever needed. Its utility in the garage or repair shop is constant. Anyone can use it. It is light and easily carried about and so strongly made that it will withstand the hardest abuses.

Instead of needing but one Atsco tank, many service stations and garages find use for several. This is full proof of Atsco economy in time and labor. It makes clear why every garage, repair shop and service station should use an Atsco. Where service counts an Atsco is essential.

List Price $30.00 F. O. B. Pittsburgh



Atsco tanks can be filled by any compressor system. They are 36 inches long and 10 inches diameter, constructed with genuine copper brazed seams and suitable for 250 pounds working pressure or 500 pounds test pressure.

The equipment includes a standard tire filling valve, the best pressure gauge made, a protection valve cap for filling at a compressor system connection, and an eight-foot hose, everything that is necessary.

We specialize construction of garage pressure tanks, and have in stock or build to specification tanks of any size or pressure requirements. Our tanks are used by most of the producers of compressor and air storage systems.

These tanks are genuine copper brazed construction and the seams and joints are far stronger than the stock metal. They will not crystallize or crack and are guaranteed air tight.

We make pumps and pressure tanks for all purposes.

TANK MAKERS FOR NEARLY THIRTY YEARS

Produced only by

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OFFICE AND WORKS

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Even if the road is as bad as this----

A SPIREX radiator will keep your Ford motor cool.

Deep mud, sticky mud gumbo, sand---will not overtax the ability of the SPIREX to keep the motor cool.

Think of what an advantage it would be to no longer be hampered by over-heating troubles---no more stopping in the middle of the road to let the motor cool. You can do away with all the annoyance of a steaming and hissing radiator---by equipping your Ford with a SPIREX.

The Ford SPIREX is absolutely guaranteed to have 42% more cooling capacity than regular Ford equipment—and there is a Special SPIREX that is guaranteed to have 67% more cooling capacity.

Make your Ford equal to the hardest road conditions by ordering a SPIREX radiator today.

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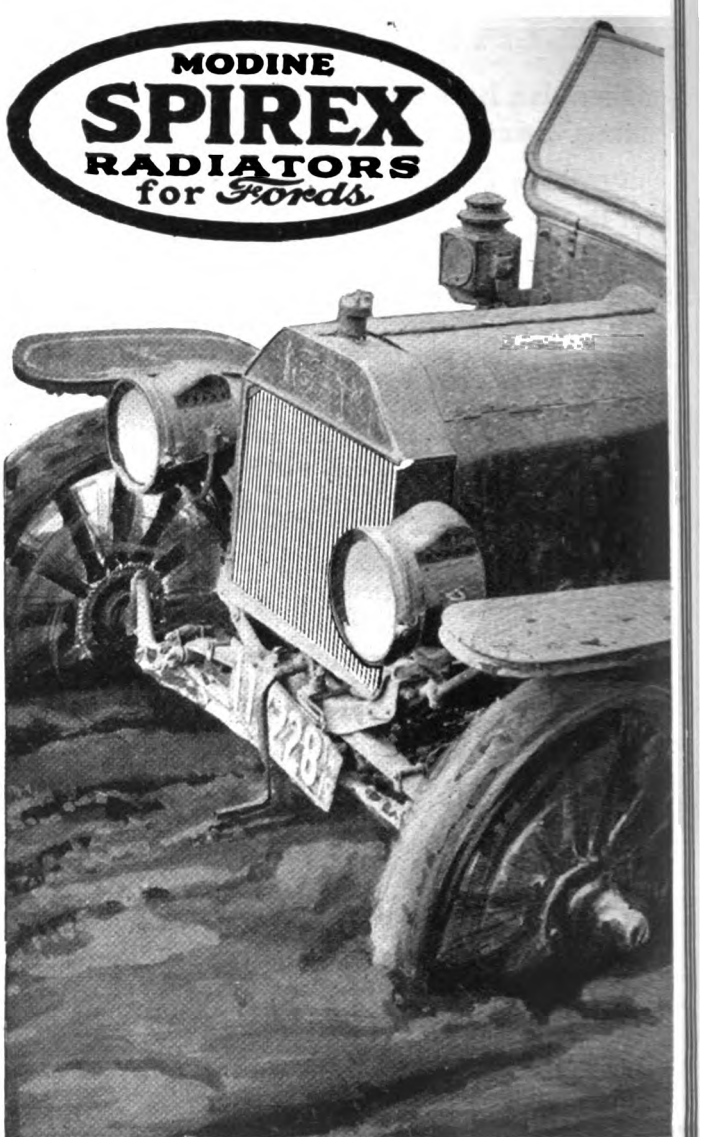

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IBSCO Steamers and Stills are all made of spun aluminum. No seams; only aluminum and brass come in contact with water. One cell or all can be removed in from three to five minutes. Water is distilled at the rate of about a gallon an hour.

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No. 5 IBSCO hasn't the automatic valve. Must be filled by hand. Outside glass gauge shows water level at all times.

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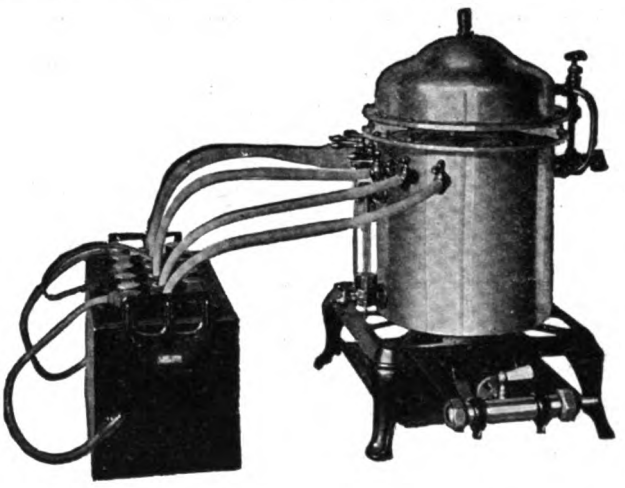

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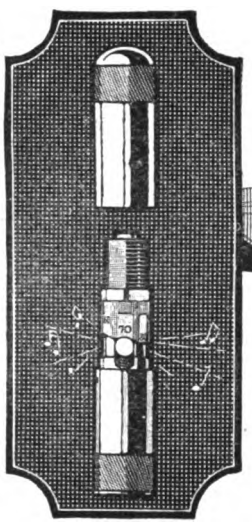

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"You're Safe, Now!"

WHEN your Whistler Pressure Regulator announces *enough*, you can spin merrily along your way. No danger of blow-outs from over-inflation or give-outs from under-inflation.

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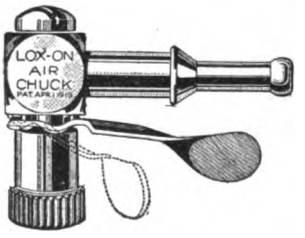
"DOESN'T RUB THE RUBBER"



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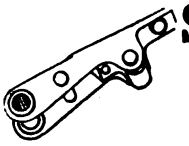

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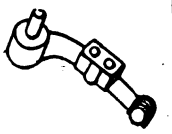

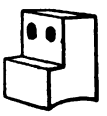

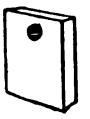

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For 1917-18-19-20 Models Only.

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Induces a Larger Volume of Air to Pass Through Radiator.
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Reduces Risk of Overheating.
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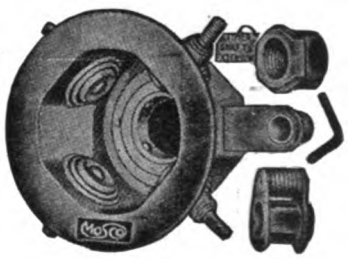
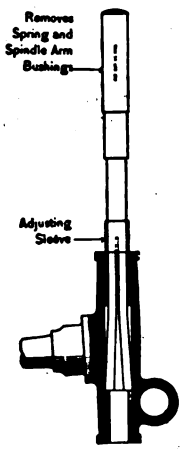


The IDEAL TIMER for the Ford high speed, short stroke engine because form contact is the only one which is correct both electrically and mechanically. This is made by a hardened tool-steel brush coming in contact with steel balls, which are kept in proper position by means of a spring with plug on the end pressing against them. The impact of the brush causes the balls to turn so that a fresh surface is presented for each contact. The brush comes in contact only with the four balls, touching no fibre or insulation. This is a decided improvement over the ordinary type timer, where the roller is constantly wearing grooves in fibre ring which holds contacts. The balls are so located that each has a track of its own on the brush, this insuring a maximum amount of wear.

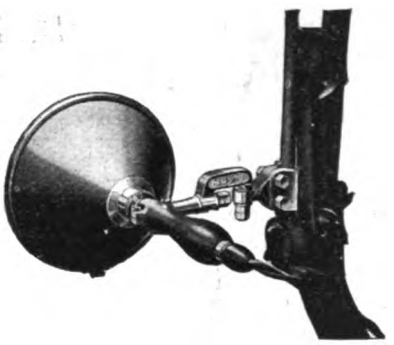
PRICE $3.00.

BEAMOLITE SPOTLIGHT



A custom made, quality equipment, strongly constructed, giving a powerful light—a light that lends dignity to any car. The bracket is of Universal type, made from non-rusting metal, heavily nickel plated and so designed and made that it "stays put" in any position.
The reflector is made of brass, silver plated, on nickel, and highly finished. It affords maximum lighting effect and can be thrown in any direction (even backward).
It can be easily and quickly removed from the bracket when there is need of a trouble lamp. The bulb can be quickly replaced by removing the rim screw.

PRICE, $15.00.



JIFFY BUSHING REMOVER

For Ford, Dodge, Dort, Chevrolet, Saxon, Overland and all Cars, Trucks and Tractors having ½" spindle bolt.

Made of steel, case hardened.
Indispensable to repairman and owner who does his own work. Pays for itself in a few minutes.
The only tool now in use that will remove steering knuckle, spindle arm and spring bushings.

PRICE $1.50.

"Built for those who demand the best."

MOTOR SPECIALTIES COMPANY

WALTHAM, Manufacturers, MASS.

MOTO EQUIPMENT

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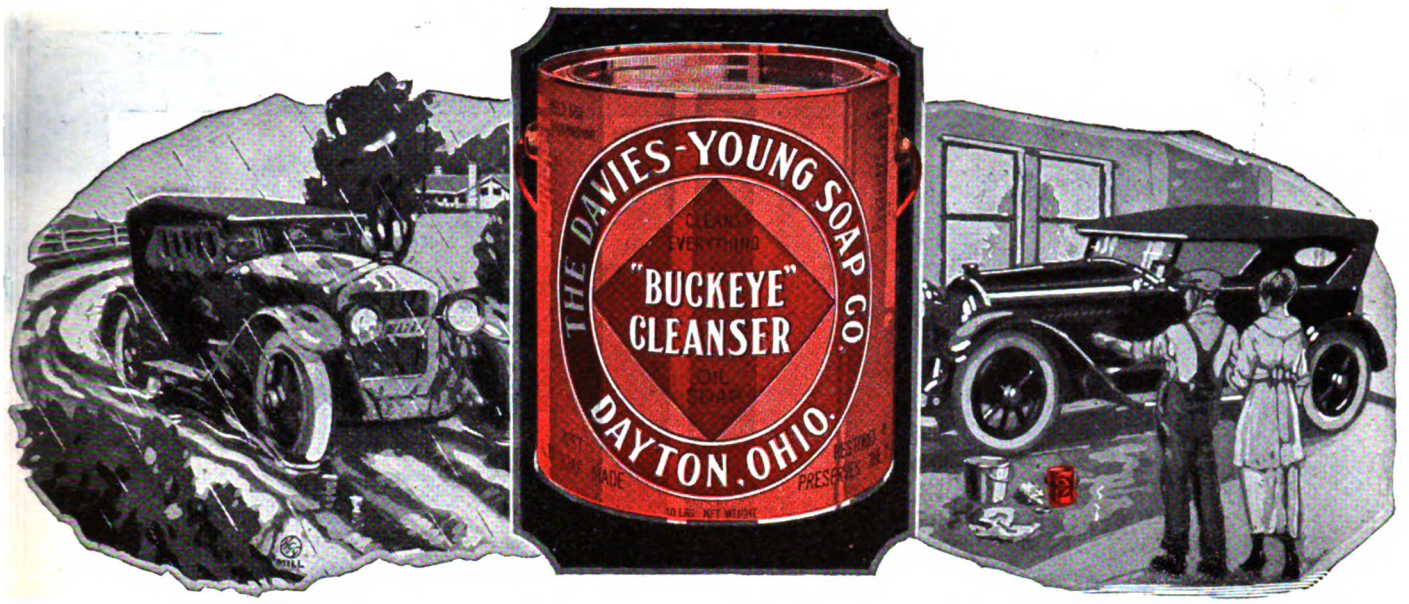

Mud and Rain—Snow and Sleet

play havoc with the costly polish and finish of the motor car—unless it is properly cleaned and dried immediately

THE three chief reasons why an auto loses its luster after a grilling drive through the mud and sleet, are—

(1) it is not washed at all; or,

(2) it is washed without soap; or,

(3) it is washed with the wrong kind of soap.

Soap must be used to remove all the dirt, but it must be the right kind of soap. The only safe thing to do is to use a soap that has been tried and tested, and has proven its merits over a stretch of fifteen years. That soap is the Buckeye Cleanser.

It is made of pure vegetable oil, without a trace of grit or alkali, and designed especially for highly polished surfaces. It not only cleans, but also preserves and lengthens the life of the polish. It keeps the car from looking "run down at the heels."

After a hard trip, use Buckeye Cleanser, and you will be surprised —and pleased—at the results.

Sold by Auto Supply Dealers, Hardware Dealers or wherever auto accessories are handled

THE DAVIES-YOUNG SOAP COMPANY
DAYTON, OHIO

Coast Sales Agents:
Allied Industries, Inc.
San Francisco
Los Angeles Seattle

Denver Sales Agents:
Paramount Lubricants Co.
Denver, Colorado

Southern Sales Agents:
The Colley-Minnich Co.
Atlanta, Georgia

BUCKEYE CLEANSER *THE AUTO SOAP THAT CLEANS & POLISHES*

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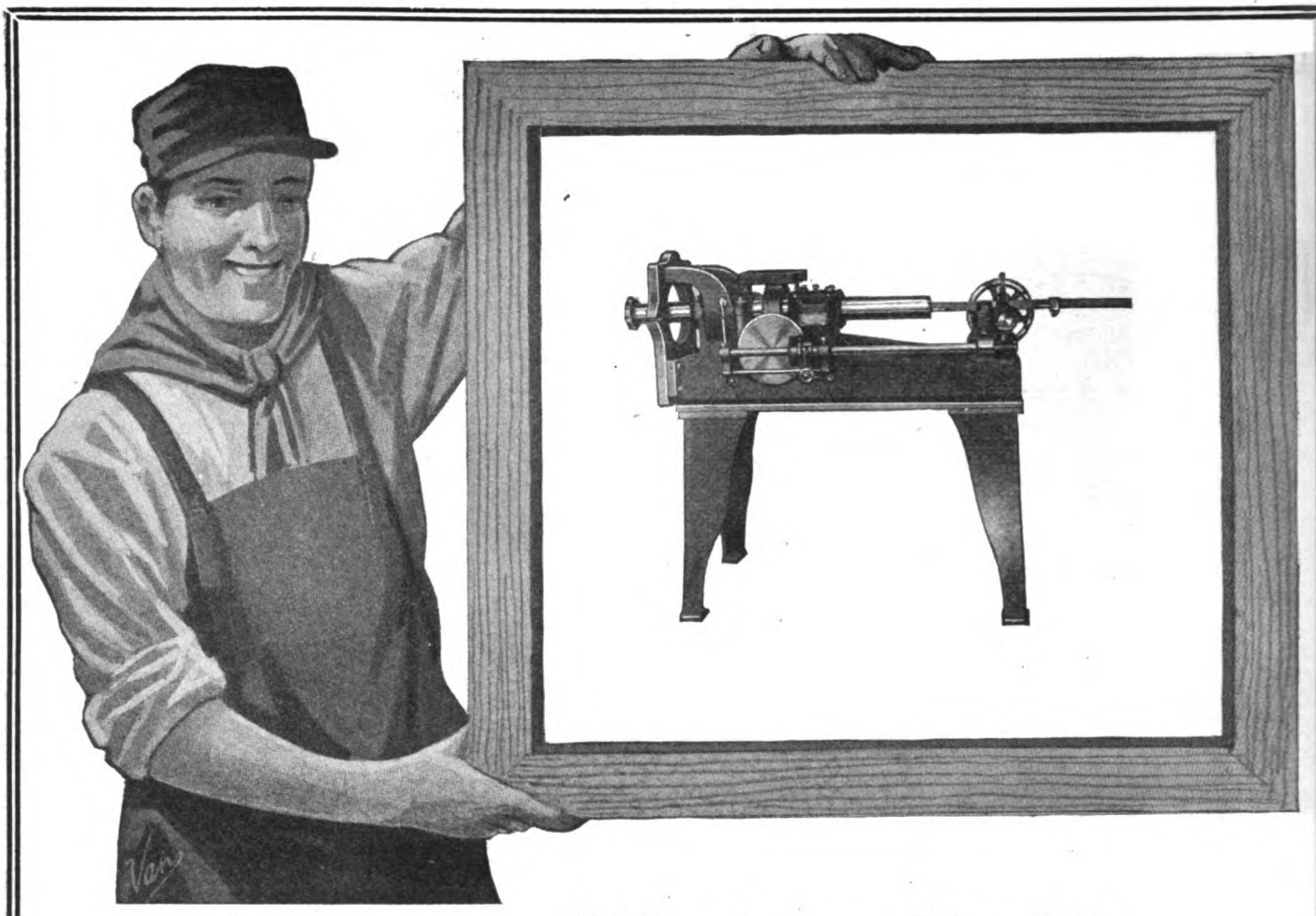

A Picture of Business Health

You'll never need a doctor for your business if you have a Marvel No. 5 in your shop. It is always in shape—is spack and span—ready for work. It always does a high-class job and is the greatest little money maker you ever saw. It works faster and does better work at less cost than any machine ever invented and handles any gas engine cylinder from a MOTORCYCLE TO A TRACTOR.

Marvel Cylinder Re-Boring Machine No. 5

In your shop will double your man-power—will turn wasted time into profitable hours—will establish you in the Re-boring business and show a profit on your books.
The Marvel No. 5 is power-driven—automatic—accurate and speedy. It has been endorsed by hundreds of schools and colleges and automotive repairmen.

GET THE PROFIT

There's a lot of extra money floating around in your community and you can get it with a Marvel No. 5. Think of the hundreds of owners of motor cars, trucks and tractors whose cylinders need reboring. Cash in on it. Get in shape to rebore them on a Marvel No. 5 and fit them with Marco Oversize Pistons.

MARCO PISTON SERVICE

WRITE US TODAY

We will outline our entire proposition. We will tell you what a Marvel No. 5 will do for you—Will show you the profit you can expect. We will explain how, through our Co-operative Business Building Advertising, we help bring customers to your shop and how the Marvel No. 5 will hold them.

MARCO PISTON SERVICE

Marvel Machinery Company

516 Loan & Trust Building, Minneapolis, Minn.

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The ACCESSORY and GARAGE JOURNAL

VOL. IX. PAWTUCKET, R. I., MARCH, 1920 No. 11

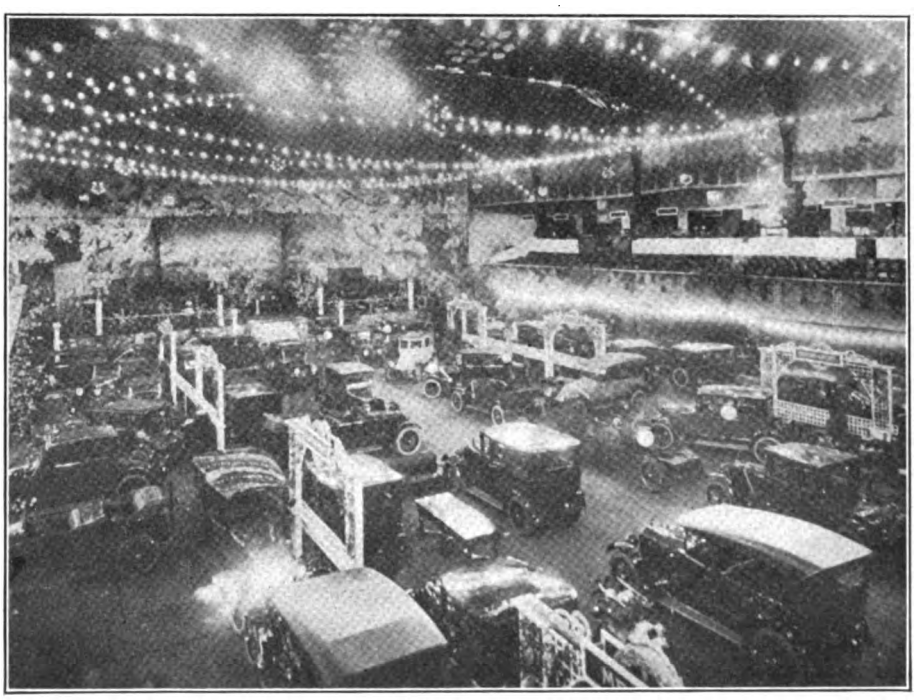
Boston Show Makes New Record for Volume of Sales

Deliveries of Cars and Trucks Is Now the Big Problem of Dealers and Manufacturers Largest Number of Machines Ever Shown Has Attracted Throng of Eager Buyers.

MEASURED by any standard the 18th annual show of the Boston Automobile Dealers' Association and the Boston Commercial Motor Vehicle Association, which was opened in Mechanics' building March 13, and which will continue until March 20, is the largest ever seen in Boston. It is larger than ever before because it has filled the well known exhibition structure and the South Armory in Irvington street, and approximately 100 applications for space were denied. Had the management been able to allot stands to all applicants the show would have included upwards of 500 separate exhibits.

Manager Chester I. Campbell, who has managed all of the Boston shows, and who has intimate knowledge of all exhibitions in which the industry has participated, maintains that the Boston show this year is by far the largest ever staged in America and were it not for the limitations of the buildings it could have been at least a third larger.

The main show is in Mechanics' building, as in previous years, and every inch of available space has been allotted. Paul Revere and Talbot halls have been given over to cars and accessories, and the cafe, which has been a feature of previous shows, has been discontinued and the area apportioned to exhibitors. The show has no displays that are not identified with the automotive industry. As a rule the spaces are smaller than ever, the endeavor of the management being to provide for as many as possible with least space that can be practically used.



Grand Hall, the Main Division of the Passenger Car Department, Seen from the Balcony, Looking Toward the Stage.

The two associations and the Y-D club, an organization of veterans of the A. E. F., obtained the use of the South Armory, and the drill shed of this structure was divided among the early applicants for space. In the two buildings there is in use upwards of 165,000 square feet of exhibition area, which is larger than was used in either of the main shows at New York and Chicago.

Following the custom Grand and Exhibition halls in Mechanics' building are set apart for passenger cars, the basement of the building for trucks and truck parts and accessories and service station equipment, and the balcony of Grand hall and the second floor of the remainder of the structure are devoted to a few cars and to a very large number of accessories. As a whole the show in this building is better departmentized than ever before.

In the South Armory, however, the display is general, and in this the excellent judgment of the management was evident. The entire center of the floor is allotted about equally to cars and

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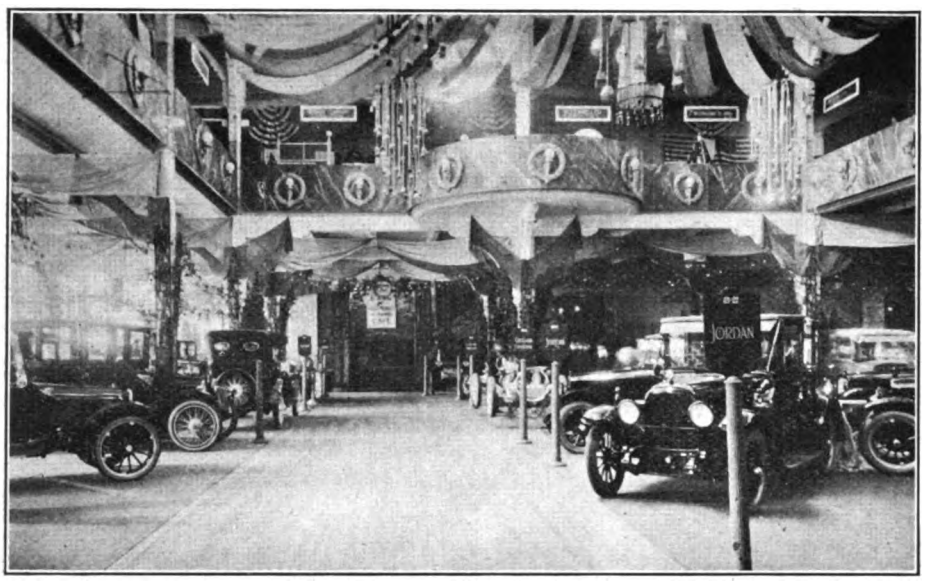

The Main Floor of Exhibition Hall, Looking Down the East Aisle Toward the Entrance to Grand Hall, Showing Passenger Car Exhibits.

trucks, and about the walls are arranged the accessory stands, so that every visitor who circled the floor of necessity passed every exhibit. This affords equal opportunity for attention, no matter what the location. The two exhibition buildings are two short blocks apart, and equally accessible from railroad terminals and main automobile routes. The admission is by one ticket.

Cars, Trucks and Tractors.

The show includes the largest number of passenger cars ever seen in New England, there being in all 91 different makes, some of which are shown for the first time in any show, and others for the first time in New England. Of these 81 are displayed in the main building and 10 in the Armory. In the truck department are 68 different makes of machines, 48 of these being in Mechanics' building and 21 in the Armory. In addition there are nine tractors, three built for general farm work and six that are generally characterized as garden types. This makes a total of 169 different machines. Besides this there is a total of about 275 different exhibits of accessories, equipment, supplies, parts and some construction units.

The show as a whole bids fair to be wonderfully productive—in fact more productive than any previous exhibition, and the attendance has been remarkable considering the fact that a very large part of New England is yet snow bound and the remainder of the section is flooded by rivers and lakes unprecedently swollen by thawing and frequent rains.

Dealers Nearly All Over Sold.

If there is to be any forecast of the results of the show it will be that the dealers as a rule are now over sold if deliveries are to be made within a reasonable period. The exhibits made were brought to Boston with extreme difficulty and many of the dealers were compelled to pay express charges and the cost of special service to have machines intended for display delivered prior to the show. The railroads have been fearfully congested and most of them have embargoes on some classes of freight, and the machines that were brought into Boston were delivered at expense that would be prohibitive for regular transactions.

The visitors are buying, and with rare exceptions they want machines quickly. As a matter of fact the winter conditions have caused unusual wear of all cars and trucks used, and there is no question that many machines have been subjected to such hard use that they will be replaced, and this is reflected by the exceptional demand for early deliveries.

Business Has Been Good.

In practically every instance the exhibitors have found good business—in fact much better than was anticipated, and even now the factories are being bombarded with orders for machines to be shipped as quickly as possible. There is no means of determining the sales as compared with previous years, but all of the exhibitors are well satisfied, and they believe that when the exhibition ends that they will have the largest number of orders ever produced by a show. The attendance at the main building has been the largest ever recorded, and it has been better than was expected at the Armory.

The first two days the Armory exhibitors believed that they would hardly be satisfied with results, but when they realized that the visitors were present because of buying interest, and that they were not overrun and hampered by throngs that were merely curious or sightseeing, they admitted that when business was the standard for judgment they were not only surprised, but satisfied, and some went so far as to state that they would rather exhibit in the Armory than in the main building.

Exhibitors Are Well Satisfied.

With this degree of satisfaction there is reason to believe that the Boston shows in future will be in two buildings, simply because it cannot be held in one as in past years.

Because the number of exhibitors is so large and the exhibits have been carefully chosen, the show has more to interest this year than ever before. Last year the truck department was given over from the fact that the United States government was using the basement for storage purposes and the building could not be vacated, and the dealers held sales room exhibitions. These were far from satisfactory, however, and the return to the former plan of operating impelled the largest number of truck dealers ever exhibiting in Boston to apply for space.

Many Cars Shown for First Time.

The cars that were displayed for the first time in Boston included the Argonne, Cleveland, Commonwealth, Ferris, HCS, Huffman, Maibohm, Noma, Revere, R & V-Knight, Stephens and Stevens-Duryea, and in addition the Autowa Ford, the Brewster and the Renault are new; the first named being a converted Ford chassis and the last two mentioned being machines that have not

(Continued on Page 92.)

The Main Floor of the South Armory, Given Over to Cars, Trucks, Tractors and Accessories, Seen from the Balcony of the Drill Shed.

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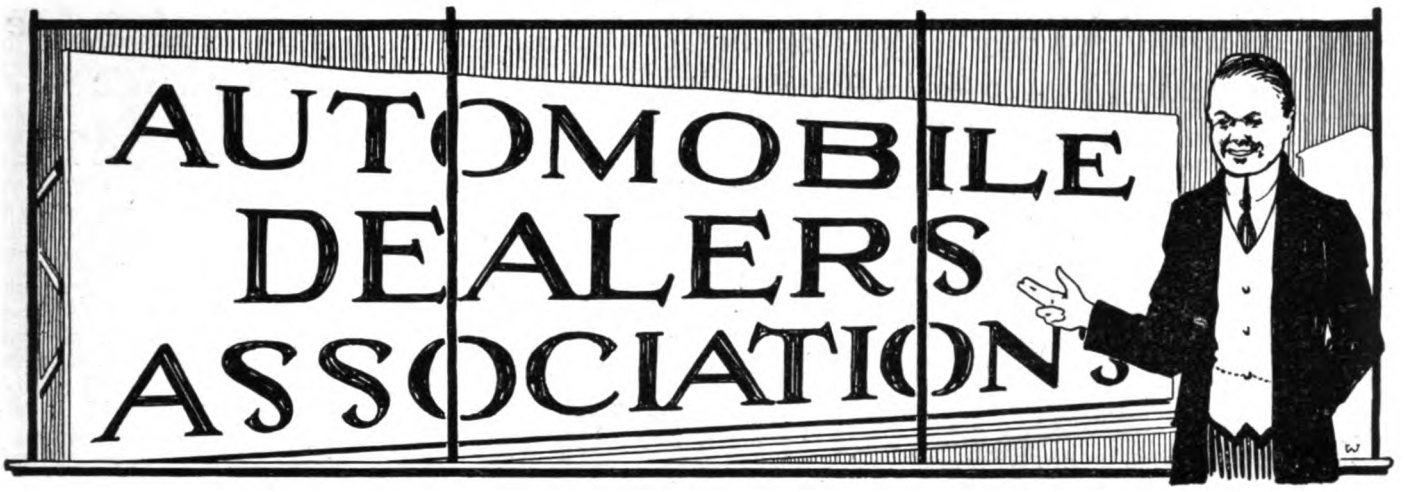


Portland Repair Men's Association

Launched upon it's sixth year of active existence, the Portland Garage and Repair Men's association boasts of a membership of more than 200 garages, repair shops and accessory concerns, while its efforts are paving the way for regional organizations in Oregon, with a state association in the offing.

In December, 1914, a group of 15 optimists banded together in an effort to eliminate many bad practises which had crept into the activity of the crafts and to supplant the feeling of suspicion and enmity with one of respect, if not friendship. All of these things have been remedied. Practically all members of the automotive crafts are welded together in an enthusiastic organization, while craftsmen and public are protected from unfairness in price and quality of workmanship.

The association publishes a trade journal, "Automotive News," which is not only mailed to all members, but is sent into every garage, repair and accessory shop in the State of Oregon. It has grown into a 32-page magazine, dealing with the problems of the frade.

The publication of this magazine has been taken over by James S. Cassell, 817 Dekum building, Portland.

ILLINOIS ASSOCIATIONS JOIN N. A. D. A.

During the last three months, 13 new automobile trade associations have joined the National Automobile Dealers' association, as follows:

Springfield Automobile Dealers' association, Jacksonville Automotive Dealers' association, Decatur Automobile Trades' association, Logan County Auto Dealers' association, Lincoln; Automotive Association of Mattoon, Galesburg Automotive Dealers' association, Quincy Automobile Trades' association, Auto Trades' asociation of Champaign county, Alton Automobile Dealers' and Accessory association, Hannibal Automobile Dealers' association, Fort Wayne Auto Trades' association and the Terra Haute Automobile Dealers' association.

ST. PAUL RETAIL TIRE DEALERS ORGANIZE.

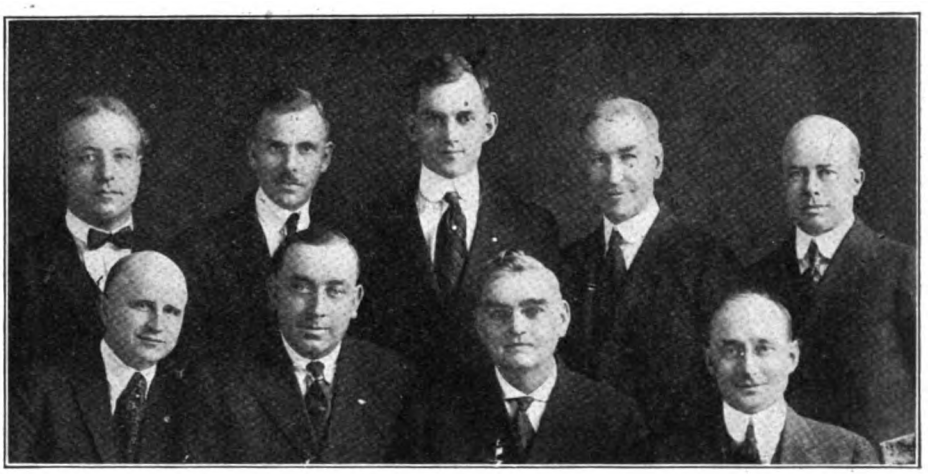
Fifty tire dealers of St. Paul, Minn wer presetn at a recent meeting called in that city to form an association of retail tire dealers. F. C. Moyer of the Goodyear Tire & Rubber Co.'s branch office at Minneapolis outlined the need of such an organization for purposes of cooperation and to maintain high business standards. Among the other speakers were E. P. Farley of Minneapolis, representing the tire association in that city; C. P. Ayres of the Goodyear branch, J. J. Coates of the Northwestern Supply Co., St. Paul; Arthur Randall of the Northwestern Tire Co., St. Paul, and William Lewis of the Firestone Tire & Rubber Co. Milton Rosen was made chairman of the committee on organization and to arrange for the second meeting.

DEALERS ORGANIZE AT DANVILLE, VA.

The automobile dealers of Danville, Va., have formed a trade organization for the mutual benefit of dealers and car owners. The officers are as follows: President, A. B. Crowell; vice presidc Charles K. Carter; secretary and treasurer, W. C. Hilderman.

INTERMOUNTAIN ASSOCIATION FORMED.

The Intermountain Automobile Dealers' Association has been organized at Salt Lake City, Ptah, embracing Utah, Northern Nevada, Southern and Central Idaho and Western Wyoming. The oficers are as follows: President, Russell Richards, Salt Lake City; vice president, Gordon Bliss, Blackfoot, Ida.; secretary-treasurer, Charles Backes, Salt Lake City. Headquarters are at 210 Judge building, Salt Lake City.



Official Family, Portland Garage and Repair Men's Association, for 1920—Top Row, Left to Right: Fred Dundee, Director; V. C. Unden, Director; Will J. Lester, President; A. N. Stanton, Director; H. M. Nisbet, Secretary. Bottom Row, Left to Right: James H. Cassell, Editor; Virgil Cooper, Vice President; A. E. Foss, Director; G. G. Gerber, Treasurer.

The association has affiliated with the National Automobile Dealers' Association, and through that organization has individual and territorial representation covering the Northwest.

DATES FOR DEALERS' CONVENTIONS.

Following are the dates set for conventions of automotive dealers in various parts of the country:

March 25, Texas Automotive Dealers' Association, Dallas; March 26, Southwestern Kansas Dea.ers' Association, Hutchinson; April 2, Columbus, O., Auto:motive Dealers' Association, Columbus; April 5, Washington Dealers' Association, Washington, D. C.

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Convention of Illinois Dealers

The Illinois Automotive Dealers' Association opens in the Senate chamber of the State Capitol at Springfield at 10 o'clock Monday, March 22, with H. B. Pinkerton, state vice president of the National Automobile Dealers' Association presiding as temporary chairman. The address of welcome will be given by the president of Springfield Commercial Men's Association. Features of the meeting will include forums devoted to special interests of car, truck, accessory and tire dealers, the leaders being, respectively, Mr. Pinkerton of Peoria, Mr. Nichols of Chicago, Mr. Bass of Peoria and Mr. Sparks of Champagne, and short addresses as follows:

"The Necessity of Organization," H. B. Harper, president of the National Automobile Dealers' Association; "Dealers, Get Together," Harry G. Moock, general manager, National Automobile Dealers' Association; "Our State, Our Business, Our Association," L. A. Piel, president, Chicago Automobile Trade Association; "Automotive Merchandising," George Fritz, national field secretary, Automotive Equipment Association; "White Paint," Charles Hendy, Jr., manager, Ford Motor Co., Chicago; "Road Building from the National View Point," Pyke Johnson, Washington, D. C., representative, National Automobile Dealers' Association; "Road Building in Illinois," Henry Paulman, president, Henry Paulman & Co., Chicago; "Automobile Merchandising," Ed. S. Jordan, president, Jordan Motor Co., Cleveland, O.; "Motorization of the Farm," A. H. Kroh.

FORTY BRIDGEPORT DEALERS FORM ASSOCIATION.

The automobile dealers of Bridgeport, Conn., to the number of 40, recently assembly at the Black Rock Country Club and formed an association with the following officers: President, L. J. McCracken, Overland-McCracken Co.; temporary secretary, Louis Pawlett, Pawlett-Wilson Co.

OFFICERS OF NORTH DAKOTA DEALERS.

Following are the officers of the newly formed North Dakota Association of Automobile and Truck Dealers: President, Lee Gowell, Valley City; vice president, G. N. Kenisto, Bismarck; secretary, Harry Miller, Jamestown.

AFFILIATE WITH NATIONAL ASSOCIATION.

Among the local automobile dealer associations that have affiliated with the National Automobile Dealers' Association since Jan. 1 are the following: Detroit, Mich.; Hartford, Conn.; Providence, R. I.; Pasadena, Cal.; Worcester, Mass.; Cincinnati, O.

FORT SMITH DEALERS TO BUILD EXHIBITION BUILDING.

The fact that the Automobile and Accessory Dealers' Association of Fort Smith, Ark., was obliged to postpone its automobile show pending the completion of a privately owned building suitable to house a display of the magnitude to which the exhibition developed, has caused the inauguration of a movement to build a permanent exposition in which such events can be adequately staged.

The association passed a resolution endorsing the plan and a committee was appointed to work in conjunction with other local organizations in formulating a method of procedure in getting the movement under way.

A unique feature of the Fort Smith show will be an old fashioned auction sale of used cars. Each local dealer will furnish one car to be put on the block and it will be sold to the highest bidder without reservation.

ARKANSAS DEALERS JOIN NATIONAL ASSOCIATION.

Harry G. Moock, general manager of the National Automobile Dealers' Association, announces that the Arkansas Automobile Dealers' Association has affiliated with the national body, so that membership in the Arkansas association automatically entitles a dealer to affiliation in the National Automobile Dealers' Association.

ARIZONA AUTOMOTIVE DEALERS TO ORGANIZE.

Robert E. Magner, field secretary of the National Automobile Dealers' Association, has been at Phoenix, Ariz., to assist George H. Reuben in the organization of the Arizona Automotive Dealers' Association. Mr. Reuben has been, for three years, president of the Phoenix Dealers' Association, and is a vice president of the national association.

NEWARK DEALERS TO SUPPORT SERVICE ASSOCIATION.

Nearly 100 men in the automobile trade of Newark, N. J., had a get-together meeting recently to further the interests of the Automotive Service association of Newark. The dealers in attendance expressed themselves as heartily in favor of the association movement and expressed a willingness to support the association in its activities.

FORM FAYETTE ASSOCIATION.

The motor car dealers of Fayette county recently met at Oak Hill, W. Va., and formed the Fayette Automobile Dealers' association. The aim of the organization will be to not only bring the dealers into closer relation, but also to cooperate with citizens and officials of the county in pushing to completion and maintaining permanent roads of the section.

Virginia Dealers Are Enthusiastic

One of the features of the recent annual convention of the Virginia Automobile Dealers' Association, which was held at Richmond, Va., during the progress of the automobile show of the Richmond Automobile Trade Association, was the presence of the members of the state association at the show as the guests of the Richmond dealers.

At the convention the following officers were elected: President, J. A. Kline; vice presidents, John M. Fisher, Roanoke; W. Clyde Duval, Farmville; T. R. Toone, Norfolk; H. L. Gurrant, Danville; P. L. Bromeley, Winchester; treasurer, B. H. Rawlings; secretary, Louis Phelps.

These dealers represent nearly 600 automobile merchants in the state, who will handle a volume of business this year of $40,000,000, and were very enthusiastic as to the automobile outlook as well as to the prospect of having better roads in the state, improving automobile business as well as the value of property everywhere.

The association voted to affiliate with the National Automobile Dealers' Association. Fifty new members were admitted and the reports of the officers showed the association to be in a flourishing condition.

CEDAR RAPIDS DEALERS BOOST WATERLOO SHOW.

Following an annual custom the motor car dealers of Cedar Rapids, Ia., accompanied by a band, made a one-day visit to the automobile show at Waterloo, Ia., held under the auspices of the Blackhawk County Motor Trades Bureau. The Waterloo and Cedar Rapids dealers have the habit of visiting each association's show every year. This year the Cedar Rapids representatives were entertained at a banquet at the Galloway club by the Blackhawk organization.

FORT WAYNE DEALERS' OFFICERS.

Following are the officers of the Fort Wayne Automobile Dealers' Trade association, recently elected: President, Matt Jones; vice president, Ward Becker; secretary, C. Schiefer; treasurer, Fred Pennell. The association presented the retiring president, A. L. Randall, with a gold watch and chain. Mr. Randall has presided over the association since its organization, five years ago.

BALTIMORE ASSOCIATION IMPROVING HEADQUARTERS.

The Baltimore Automobile Dealers' Association is making extensive improvements on its headquarters at 1002 North Charles street, and when completed the association will have one of the most lavishly furnished club rooms in the South.

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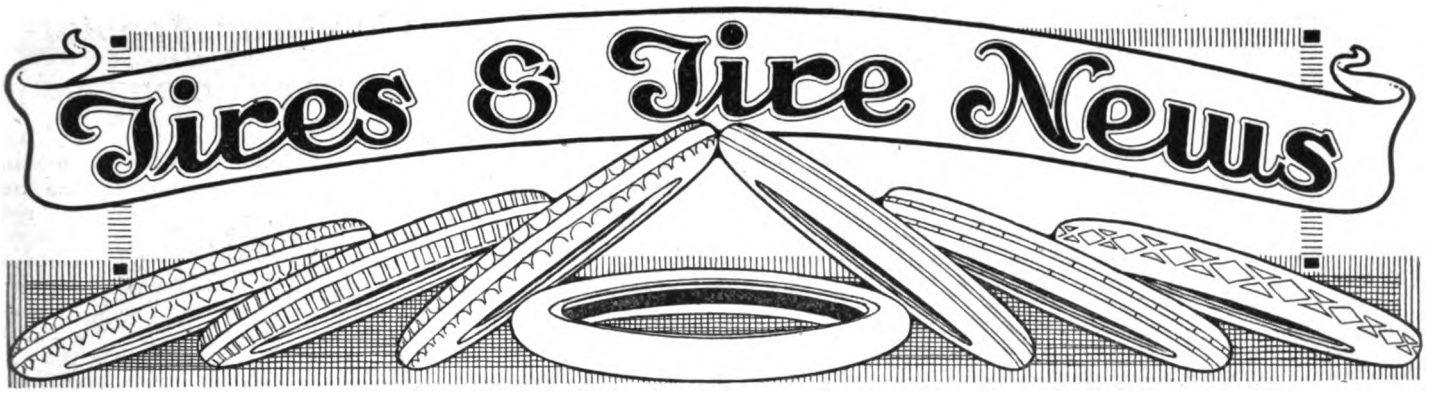


New Goodyear Girls' Dormitory

WITH an increase in population within the past few years of over 175 per cent., or from 60,000 to approximately 200,000, Akron, O., the rubber metropolis of the world, today is confronted by a house and room famine so a cute that it has become necessary for the city's large rubber goods and tire manufacturing concerns to undertake the construction of houses and dormitories for as many of their employees as possible. Thousands of homes now are under construction in Akron, but reports of the steady daily influx of hundreds of men to work in the rubber factories, indicate that many more thousands of homes will be needed this year before even the slightest relief can be afforded for the acuteness of the housing situation.

In addition to its extensive home building program for employees, the Goodyear Tire & Rubber Co. of Akron is paying particular attention to the task of relieving the rooming shortage for its women employees, and now has under construction a large girls' dormitory at Goodyear Heights, a new residential subdivision of Akron, located near the company's factory and main offices. Both utilitarian in purpose and architectural design, the building will provide accommodations for 192 girls, and will include reception parlors, club rooms, sewing rooms, an immense lounge and adequate space for a large dining room.

Complete in every detail the dormitory, which is expected to be ready for occupancy by June 1, will be maintained under supervision of the social service department of the Goodyear company, directed by Miss Clara Bingham. When completed it is expected to create new channels for unlimited expansion of the already extensive scope of Goodyear recreational and social service work among its women employees.

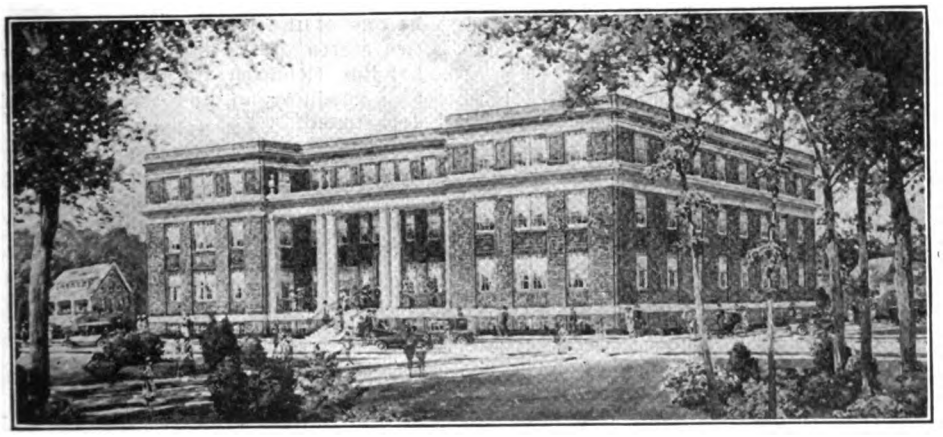
There are now 2600 women among the company's 28,800 Akron employees, 1500 in the factory and the remainder in the general and factory offices. It is planned to make the dormitory privileges accessible to both office and factory girls without discrimination, and to operate the dormitory fundamentally as a place of temporary abode for new girls coming to Akron, thus providing them with suitable homes until they can find acceptable living accommodations elsewhere in the city.

The dormitory building will be three stories high with a frontage of 125 feet and depth of 92 feet. It will be of red pressed brick with white ornamental stone facings and will include 96 sleeping rooms, each room having running water and two large wardrobe closets and being so arranged as to accommodate two girls. Leading from the main corridor on the ground floor will be the dormitory wings at either end, with an immense lounge in the center wing, also matron's headquarters and four small guest parlors. Directly above the lounge, on the second floor, will be a commodious sewing room, also reading and writing rooms. In the basement will be laundry facilities for use of the girls, and dining room accommodations.

That the Goodyear company is expending every possible effort to promote recreational and social service advantages for its women employees is shown not alone by the building of the dormitory, but by its extensive program of social service as maintained by Miss Bingham. Factory and office girls are provided with large rest rooms in both the office and factory buildings, in addition to which there are rest rooms for girls in the new $1,000,000 Goodyear club house, now nearing completion. Goodyear girls also have gymnasium privileges, private shower baths and locker rooms, a large community room and class rooms where domestic science classes are conducted for their benefit.

Goodyear office girls make use of the office lounge every Friday noon for general assemblages, at which times musical programmes are given. Departmental teas are given from 4:30 to 5:30 o'clock every Friday evening. Miss Bingham also has organized a Junior Girls' club for girls under 18 years of age, and encourages office girls taking an active part in the Goodyear Three Arts club, which has planned to present on elaborate scales both "Robin Hood" and "The Sign of the Cross" early in April.

In athletics Goodyear girls have several basketball teams and hockey teams. Deaf mute girls in Goodyear employ have their own basketball fives, characteristic "silent efficiency" having demonstrated itself in the teams' success against all opponents. Only recently Goodyear officials were persuaded to give the deaf mute factory girls an opportunity at office work. Skeptical at first, they were agreeably surprised at the high degree of efficiency and ability shown in various forms of office work by young women deprived of both the faculties of speech and hearing. To such extent have the deaf mute girls succeeded in office work that the company now has under contemplation the establishment of a business course for all deaf mute Goodyear girls.



Fine New Dormitory Being Erected at Akron, O., for Girls Employed by Goodyear Co.

PENNSYLVANIA RUBBER'S DIVIDEND.

The directors of the Pennsylvania Rubber Co., Jeannette, Pa., have declared the regular quarterly dividend of 1¾ per cent. on preferred stock and 1½ per cent. on common, payable March 31 to stockholders of record March 15.

The fire department of Detroit, Mich., after exhaustive tests, is supplanting cushion rubber tires on its motorized apparatus with pneumatic cord tires.

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Republic Rubber to Increase Capital

The stockholders of the Republic Rubber Corporation, Youngstown, O., are to vote on a proposition to increase the stock of the company by $4,500,000, which would give a total of outstanding stock amounting to $20,000,000. It is proposed to issue 850,000 additional shares of common stock, bringing the total authorization of common stock up to 1,500,000 shares. President Norwood of the company states that the net business of the corporation has grown from $6,500,000 in 1916 to $16,500,000 in 1919.

HEAT INCREASE OF PRESSURE IN TIRE SMALL.

Frequent observations conducted by tire experts have demonstrated that the vast majority of motorists keep their tires under-inflated. This is really the "white plague" of the pneumatic tire. It loosens the tread from the fabric, giving it a rough, wavy appearance, that soon renders it unfit for use.

In order that the correct amount of air in tires may be readily ascertained, a standard table for all makes of tires is shown, as follows:

Rim Sizes	Inflation Pounds	Rim Sizes	Inflation Pounds
28x3	60	33x4½	70
30x3	60	34x4½	70
29x3½	60	35x4½	70
30x3½	60	36x4½	70
31x3½	60	37x4½	70
32x3½	60	38x4½	70
33x3½	60	40x4½	70
34x3½	60	42x4½	70
36x3½	60	33x5	80
32x3	70	34x5	80
34x3	70	35x5	80
30x4	70	36x5	80
31x4	70	37x5	80
32x4	70	39x5	80
33x4	70	41x5	80
34x4	70	43x5	80
35x4	70	36x5½	80
36x4	70	37x5½	80
37x4	70	38x5½	80
40x4	70	39x6	85
42x4½	70		

C. A. Jones, Assistant Manager Mechanical Goods Department, Goodyear Co.

TWO NEW TIRE COMPANIES.

The Shenango Tire & Rubber Co. has formed at Dover, Del., with a capital of $1,000,000, for the manufacture of rubber goods. The incorporators are William F. O'Keefe, George G. Steigler and E. E. Aberle, Wilmington, Del.

The Tourist Tire and Rubber Co. has been formed at Dover, Del., with a capital of $500,000 to manufacture automobile tires. Incorporators: G. P. Felty, Pittsburgh, Pa.; F. N. Boyle and M. H. Thomas, Gerrick, Pa.

COTTON USED IN TIRE MANUFACTURE.

It is estimated that nearly four per cent. of the cotton production of the world for 1920 will be consumed in the manufacture of pneumatic automobile tires, a total consumption of approximately 400,000 bales.

The 1920 production of tires in the United States should approximate 40,000,000 to equip nearly 1,500,000 new cars and to maintain about 7,000,000 now in operation.

D. R. Burr, Manager, Mechanical Goods Department, Goodyear Co.

Cotton promises to remain indefinitely as indispensable in tire making as rubber.

Many motorists wonder how much cotton goes into the manufacture of pneumatics. Tires now contain an average of four pounds—an increase of one pound, due to the increasing number of pneumatic truck tires, which require more cotton because of their size. Much of the cotton used is Egyptian or Peruvian. The larger companies use the cream of the world's crops—the 1⅛-inch staple or better. A few of the larger companies will make more than half the year's output—the remainder will be divided among more than 230 smaller concerns.

The McClaren Rubber Co. of Charlotte, N. C., announces the appointment of the Owen Tire Co., 177 Portland stret, Boston, as the distributor of McClaren tires for New England.

Goodyear Appointments Announced

The Goodyear Tire & Rubber Co., Akron, O., has made the following promotions: I. R. Bailey, manager of the mechanical goods department, to become assistant sales manager; D. R. Burr, formerly assistant manager of the mechanical goods department, to become manager of that department, and Mr. Burr is succeeded in turn by C. A. Jones, who has been manager of the hose, railroad supplies and rubber band departments of the mechanical goods division.

I. R. Bailey, Assistant Sales Manager, Goodyear Tire & Rubber Co.

Mr. Burr has been with the Goodyear Co. since 1913, when he was assistant manager of the mechanical goods department of the Chicago district. In June, 1916, he was transferred to Akron and was made Mr. Bailey's assistant.

Mr. Jones was born and educated in Akron, joining the Goodyear forces eight years ago. Prior to that he was with other rubber concerns engaged in estimating costs on rubber specialties and as assistant in charge of production.

JOYNES TIRE CO. AT NORFOLK.

The Joynes Tire Co. of Richmond, Va., has taken possession of what is said to be one of the largest and most modern tire stores in the South. This concern handles Goodrich tires and tubes, and also conducts an up-to-date vulcanizing department.

BERGOUGNAN'S PRESIDENT ABROAD.

H. H. Coleman, president of the Bergougnan Rubber Corporation, Trenton, N. J., has sailed for France to attend the annual Bergougnan convention at Clermont-Ferrand.

L. Arthur Watkins has become identified with the Globe Tire Co., Boston, as traveling representative. Mr. Watkins was formerly a member of John & Arthur.

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G. R. Loggie, President, Syracuse Rubber Co.

COTTON NOW KING IN RUBBER REALM.

According to John W. Maguire, vice president and general manager of the Portage Rubber Co., Barberton, O., in the kingdom of rubber, cotton is now king, as in Akron, the capitol of the rubber industry, interest centers not around rubber, but cotton. "In the tire industry," says Mr. Maguire, the demand for long staple cotton fabric has become a subject for deep concern. It is not generally realized that cotton is as necessary in the manufacture of automobile tires as rubber.

"An idea of the demand for cotton fabrics by tire manufacturers can be gotten when it is estimated that the 1920 tire requirement is 80,000,000 casings. When the shortage and cost of the available supply of long staple cotton fabrics is taken into consideration, there seem ample grounds for the prediction of an increase in tire prices in the near future.

"While rubber is plentiful and comparatively low in price, cotton, the real back bone of the tire industry, is scarce and costly. As cotton has risen, so rubber has fallen. The situation of a few years ago, when rubber was scarce and cotton abundant, is just reversed."

GOODYEAR EMPLOYEES PAY LARGE INCOME TAX.

No greater evidence of industrial prosperity is needed than statistics showing the number of people affected by the income tax. Of the 26,000 employees of the Goodyear Tire & Rubber Co. in Akron, O., it is estimated that 10,000 men and women made out income tax returns and will pay the government a minimum total of at least $100,000. The company's legal department has been of great assistance to these employees in filling out their income tax returns.

Syracuse Rubber Co. Producing New Syra-Cord Tire

WORD is received from Syracuse, N. Y., that the new Syra-Cord tire, manufactured by the Syracuse Rubber Co., Inc., of that city, is now well into production. The first factory unit, now complete, has a capacity of 750 tires and 1000 tubes a day. Work on a second factory unit is about to begin.

In a recent talk to some visiting distributors, G. R. Loggie, president of the concern, stated that the trade will have no difficulty in regard to factory delivery when connection has once been made with the company. "Distribution will be taken on entirely according to our production facilities," he stated. "In other words, we will not add to our distribution any faster than we increase our production."

An advertising campaign, unusually extensive for such a new concern, was announced and it will be built around the company's slogan: "Built by Cord Tire Specialists." Mr. Loggie also pointed out that W. E. Greer, factory manager of the company, is himself a specialist in cord tire building and has included in his staff some of the acknowledged expert tire builders of the largest tire factories in the country.

W. E. Greer, Factory Manager, Syracuse Rubber Co.

"The company chose Syracuse for its manufacturing center because of its close proximity to the most important purchasing points for raw materials and also because of its excellent facilities in the way of express and freight conditions," he said.

"After establishing a location we proceeded to go out and collect the best cord tire building talent we could obtain, as well as the most modern and up-to-date building equipment. Cord tire equipment is used exclusively throughout the factory."

One of the notable features of the Syra-Cord tire is said to be its universal tread, which is reported to give a positive action against skidding, as well as the easy riding and steering qualities of the ribbed tread.

In this connection it is interesting to note that F. G. Mauthe, a veteran in the tire business, has been appointed manager of sales of the Syracuse Rubber Co. In 1905 Mr. Mauthe was with the Diamond Rubber Co., where he graduated from the job of inspector to a prominent position in the western sales force. His record there led to his appointment as New York manager for the Dayton Rubber Co., which concern he left to act as eastern branch manager for Goodyear. Just prior to taking up the Syracuse proposition Mr. Mauthe was special factory representative for the Marathon Tire & Rubber Co.

HALF MILLION DOLLAR CONTRACT.

H. H. Yates, southern salesman for the India Tire & Rubber Co., Akron, O., recently placed a contract with a Texas distributor for $500,000 worth of India tires for the first six months of 1920. Mr. Yates reports that buying in the South for spring deliveries has been earlier and larger this year than ever before. This condition he attributes to the unusual prosperity throughout the great southwest and to the anticipated scarcity of all tires this spring. The opening of the season finds no huge surplus of tires made this winter because more cars have been used and more tires sold during the past few months than any previous winter season in history. There has also been little opportunity to replenish depleted war time stocks.

F. G. Mauthe, Manager of Sales, Syracuse Rubber Co.

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J. N. Gunn, President, United States Tire Co.

ADDITIONS TO AMAZON RUBBER CO.'S EXECUTIVE STAFF.

In line with its announced policy of expansion and increased production in 1920, the annual meeting of the Amazon Rubber Co. of Akron, reveals important additions to the executive staff of the company, the proposed purchase of a larger manufacturing site and more than three-fold increase in the concern's capitalization.

The new officers are: President, Dr. E. E. Quirk, a prominent Akron capitalist and successful business man; vice president, Frank H. Burch; treasurer, Walter Herberich; secretary, George Hupp, who also is general manager.

The directorate includes such well known names as: Louis Schott, who started the company in 1916: Dr. Quirk, Frank H. Burch, George Hupp, Gus Burkhardt, Albert Kroehle, W. A. Boesche, M. D. Kuhlke and J. A. Berke.

The new factory site, an option on the purchase of which has been obtained, is located in East Akron on the Little Cuyahoga river, with excellent railroad facilities. Plans are being drawn up for the factory building which, it is expected, will be erected during the year. Tire production is immediately being increased from 250 to 500 tires daily, and further increases will be made as soon as the necessary equipment is available.

The capital stock is increased from $400,000 to $1,500,000, only $300,000 of which is to be sold at the present time at a par value of $100 a share.

Dr. Quirk, the new president, who several years ago left a large dental practise in order to take care of important financial affairs, is an officer in several of Akron's leading business organizations.

The Goodyear Tire Co. has purchased the plant of the Ford Motor Co. in Long Island City, N. Y. The purchase price is reported to be about $2,000,000, and it has a floor space of over 1,500,000 square feet.

Gunn Elected to Highway Board

At the recent annual meeting of the board of directors of the Lincoln Highway Association, J. N. Gunn, president of the United States Tire Co., was elected a director. Mr. Gunn was a founder of the association and has long been greatly interested in the work of the organization and his election to the board greatly strengthens its influence and broadens the scope of its activities.

Through the recommendations of Mr. Gunn and C. B. Seger of the United States Co., of which the United States Tire Co. is a subsidiary, that concern is planning to make a substantial contribution to the Lincoln Highway Association to carry out some additional plans which will be announced shortly.

FISK RUBBER CO. APPOINTS TEXAS MANAGER

The Fisk Rubber Co., New York City, has appointed, as manager of its Texas district, C. C. Fletcher, who for several years has been manager of the Oklahoma City branch.

For the past several years the Fisk Co. of Texas, now the Southern Equipment Co., handled the Fisk tire distribution for the state of Texas, and in addition, carried a complete line of accessories. On Dec. 5, 1919, the Fisk Rubber Co. of New York assumed charge of the tire division of the Fisk Co. of Texas, the Southern Equipment Co. taking over the accessory end.

The branches formerly controlled by the Fisk Co. of Texas at San Antonio, Houston and Dallas, with practically the same personnel, will be retained by the Fisk Rubber Co. of New York. With the addition of El Paso the section will be known as the Texas district.

RECENT APPOINTMENTS OF McGRAW TIRE & RUBBER CO.

The McGraw Tire & Rubber Co., Cleveland, O., recently made the following appointments:

W. H. Hurley has been appointed district manager for the eastern district, with headquarters at New York City. Mr. Hurley has been district manager in the West for the same company, with headquarters at Kansas City, Mo., and his transfer to the East is not only a promotion, but a high recognition of his managerial ability.

B. P. Davis, formerly a McGraw salesman in southern territory, has been promoted from the ranks to the managership of the company's Memphis branch. Mr. Davis has been closely connected with the tire industry in the South for several years.

E. T. Fischer has been made manager of the Denver branch. For the past decade he has been closely allied with the automotive industry in the central and western states, and previous to assuming charge of McGraw's interests in the Denver territory, represented the company in a sales capacity.

CONSIDERATIONS IN SENDING A MAN TO REPAIR SCHOOL.

In sending a man to the repair school there are some things which his firm should take into consideration before making the investment in his education. There are three attributes which a repair man in the making must possess, or he will not succeed at his calling. The first of these is a general knowledge of good business principles, that is, he should know the fundamentals of how to handle accounts, meet the public, efficiently arrange his work, etc.; second, he should be possessed of a confidence in himself—he ought to know his weak points and his good ones; and third, he should also have confidence in the product he is handling. Unless he has these three the course in the school will not supply them in any great degree, its duty being merely to educate the man in a technical way to handle every case of repairing brought to his shop.

Tire repair men and vulcanizers should not expect immediate riches after taking the course—there is nothing magic about it—hard work and application bring results and most graduates do well.

NEW OLDFIELD PNEUMATIC TRUCK TIRE.

A further demonstration of the growth of the Oldfield Tire Co., Cleveland, O., is seen in the recent announcement by President Barney Oldfield of that company that its distributors are soon to be supplied with a complete line of cord tires for commercial cars.

The Oldfield Giant cord successfully passed all tests several months ago. Except in its increased size and in details of design consequent on this, the Giant cord follows closely the characteristics of the Oldfield passenger car tires, which have become well known during the past year. The cords themselves are of the multiple type, the tread is of the familiar arrow-head type, and the tread material is zinc tempered, a factor in securing toughness which was developed through President Oldfield's racing experience.

The North American Tire Co., Sioux City, Ia., has opened a branch at Sioux Falls, S. D.

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Manager Frank on Foreign Trade

That trade with Europe will soon assume many pre-war characteristics, with the added feature of being many times more brisk, is the opinion of A. C. Frank, export manager of the Firestone Tire & Rubber Co., Akron, O., who recently returned to New York City after a trip of three months in England and continental Europe.

"Although they are still suffering from the industrial difficulties which were the inevitable result of the war, the European nations will soon regain their old-time commercial aggressiveness, I believe," Mr. Frank said. "The resourcefulness they showed in the war will reassert itself in peace and they will again demonstrate their stamina by reclaiming a share of the world's trade.

"The industrial activity of Belgium is particularly noteworthy. This plucky country, undaunted by its tremendous hardships, is now rapidly placing its factories on a quantity production basis, and is doing much toward the rehabilitation of the devastated districts.

"International trade, after the resumption of European industries, should develop, I believe, to a degree heretofore considered impossible, I look for an unparalleled era of trade among all nations."

Mr. Frank believes that over-seas business holds untold possibilities for American industry.

REPRESENTATIVES APPOINTED BY EMPIRE CO.

The Empire Tire & Rubber Co., Trenton, N. J., has recently secured representation in various sections of the country, as follows:

Waverly, N. Y., Stein-Cronk Auto Co.; Buffalo, N. Y., Jaynes Auto Supply Co.; Lockport, N. Y., Jaynes Auto Supply Co.; Medina, N. Y., Jaynes Auto Supply Co.; St. Joseph, Mich., Charles E. Williams Auto Supply House; Benton Harbor, Mich., Charles E. Williams Auto Supply House; Bay City, Mich., Smallwood Tire & Repair Co.; Saginaw, Mich., Schade Tire & Repair Co.; Bluefield, W. Va., Bluefield Machine Works; Cleveland, O.; Empire Tire Sales Co.; Youngstown, O., Stambaugh-Thompson Co.; Newport, R. I., Stark Brothers; Plymouth, Mass., Plymouth Auto Sales; Woods Hole, Mass., Penzance Garage; Provincetown, Mass., Frank A. Days; Oak Bluffs, Mass., Stevensen & Lord; Penacock, N. H., Hoyt's Garage.

BERGOUGNAN TIRES SOLD IN CANADA.

The Bergougnan Tire Co., Clermont-Ferrand, France, with an American factory at Trenton, N. J., has established a branch for the province of Ontario, Canada, at 496 Yonge street, Toronto. The manager, William A. Shaw, formerly of the Columb Tires Import Co., is one of the oldest and best known tire representatives in the Dominion.

INDIA CO. MAKES TEXAS CONNECTION.

Of much interest to the tire trade is the announcement of an important distributing connection recently established in Dallas, Tex., by the India Tire & Rubber Co., Akron, O. The new concern is known as the India Tire Co. of Texas, and its territory embraces practically all of the Lone Star state. It is understood that this new distributing point immediately takes over more than a million dollars worth of the India product.

G. T. Lownsberry, widely known in the tire trade, is vice president and general manager of the India Tire Co. of Texas, with T. E. McLarty, a prominent Texas automobile man, as president of the organization. The directors include Roy Munger of the Munger Automobile Co.; Nathan Adams, a director of the American Exchange National Bank of Dallas; W. T. Herrick, a leading business man of Waco, and J. H. Langley, the Buick distributor in Texas.

The concern is located in splendid quarters at 2036 Commerce street.

NEW OFFICIALS FOR LAMBERT TIRE & RUBBER CO.

With the news of more than doubled production in the factory of the Lambert Tire & Rubber Co., Barberton, O., comes the announcement of several important changes in the organization.

H. H. Lambert, inventor of the Lambert Trouble Proof cord tire, has been re-elected president; Judge Arthur Langwith, who has large ship building interests in the northwest, is vice president and chairman of the board of directors; N. W. Coyle is vice president, a director and chairman of the finance committee; Porter E. Ramsey, for many years a prominent executive in the plant organization of the Western Union Telegraph Co., is a new director and also general superintendent of the factory.

J. H. Hausan has been re-elected secretary and treasurer, and he also temporarily replaces General Manager G. F. Fargo, who has taken over the Southern California distribution of the product. R. S. Teagle, formerly with the Biltwell Tire & Rubber Co., succeeds L. F. Neinaber as factory superintendent. The latter has taken charge of the big Minnesota distribution of Lambert tires.

GOODRICH COMPANY RE-ELECTS DIRECTORS.

At a postponed annual meeting the stockholders of the B. F. Goodrich Rubber Co., Akron, O., approved the proposal of the directors to change the common stock to no par value and to issue $30,000,000 convertible notes.

The six directors, whose term of office had expired, were re-elected to serve for three years. B. G. Work was re-elected president and chairman of the board. E. J. Raymond was elected vice chairman. W. C. Arthur, B. I. Montenyohl and L. I. Smith were elected assistant treasurers.

New Carlisle Factory at Stamford

The Carlisle Cord Tire Co., Inc., Andover, Mass., has made contracts for the erection of a tire factory at Stamford, Conn., on land owned by the company, located on Fairfield avenue, overlooking Long Island sound.

The Carlisle Cord Tire Co. manufactures a pneumatic cord tire under its own patented process which is stated to effect a substantial saving in the cost of raw material. The concern is headed by J. M. Gilbert, formerly vice president of the United States Tire Co., and associated with him on the board of directors are a number of successful business men experienced in the automotive industry. Charles S. Glover, vice president of the American Hardware Corporation of New Britain, Conn., is also a director.

The Carlisle Co., which is now manufacturing at Andover, Mass., will move all of its equipment to Stamford as soon as the plant is erected, which will be about June 1 of this year. The corporation plans to increase its production to 1000 tires a day by the end of this year, and the property which it owns at Stamford will take care of manufacturing units having a total capacity of 4000 tires a day. This production of tires would give employment to approximately 1500 men.

FISK RUBBER CO. BUYS NEW YORK PROPERTY.

The Fisk Rubber Co. of New York City has increased its holdings on West 57th street in the Metropolis by the purchase of the St. Augustine, a seven-story apartment house on the northeast corner of Eighth avenue. This property occupies a plot 50.5 by 90 feet and the value was placed at $600,000.

This purchase completes possession on the part of the Fisk Co. of the block fronting on the southerly side of 57th street from Broadway to Eighth avenue.

The combined properties of the Fisk Co. comprise a frontage of 250.11 feet on 57th street, 100.5 feet on Eighth avenue and 54.9 feet on Broadway, which area was accumulated for development with a 24-story store and office building, the bulk of which will be occupied by the owners.

Its completion will represent an investment of approximately $2,350,000 for the land and probably as much more for the building, plans for which have been completed by Fred T. Ley & Co., who have the contract for the erection of the structure.

REGAL CO. AT SHERBROOKE.

The Regal Tire & Rubber Co., Ltd., has been incorporated at Sherbrooke, P. Q., Canada, to manufacture and deal in tires and rubber goods. Its capital is $750,000.

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Personal News of Industry and Trade

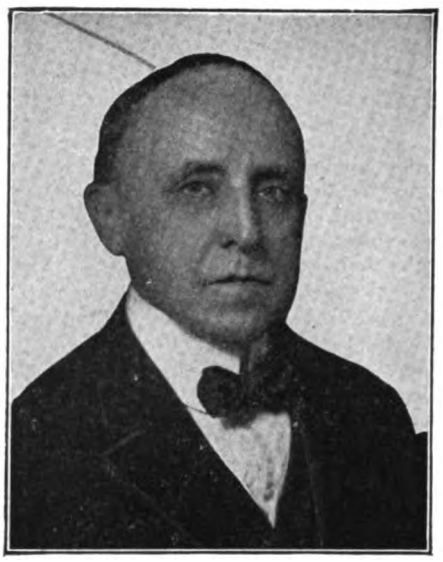
Harold McGill Davis Dead

Harold McGill Davis, who for about 20 years had held the position as manager of the advertising department of the Sprague Electric Works of the General Electric Co., died Feb. 9 at his home in Brooklyn, N. Y., after a short illness, aged 59 years. He was a native of Jerseyville, Ill., and was educated in the public school of that section. He was appointed chief clerk in the St. Louis United States assay office by President Arthur, but after several years service resigned and went to New York City to study architecture. In 1893 he entered the advertising profession, and for four years was advertising manager of a trade paper in the Metropolis, afterwards becoming connected with an advertising agency, thus broadening his experience and fitting him for his final position with the Sprague works, which he obtained in December, 1899. He had marked ability as a designer and writer, which was manifest not only in his professional field, but in more general literary work. He leaves a wife and daughter.

R. H. Townsend, Made Chief Engineer of the Hooven Radiator Co.

R. H. Townsend, for the past six years general construction superintendent for the L. H. Nunn interests, is now with the Hooven Radiator Co., Chicago. Ill., in the capacity of chief engineer, for which position he is well qualified through his thorough technical training and wide industrial experience.

Charles Ethan Allen was recently appointed general manager of the Eisemann Magneto Corporation, succeeding W. E. Steinback, resigned. Mr. Davis is a graduate of Worcester Polytechnic Institute and after spending several years as a construction engineer in Hartford, Conn., and Chicago, he became sales manager of the Pratt & Whitney Co., Hartford, and later factory manager of the Illinois Sewing Machine Co. Other activities of Mr. Davis in this field have included the positions of works manager and later general manager of the American Locomotive Co., general manager of the Warner Gear Co., manager of the Walco Co.. general manager of the Simplex Automobile Co. and member of the technical section of the Army War Claims board at Washington, D. C.



Charles Ethan Davis, New General Manager of the Eisemann Magneto Co.

George W. Pontius, Jr., who recently became service manager for the Cleveland Tractor Co., Cleveland, O., is making a tour in Europe to arrange for the extension of the service organization of the Cleveland company in the various continental countries. Mr. Pontius was in charge of the service department of the Studebaker Corporation when during the war he entered the transport corps of the United States army and upon his discharge joined the Tractor company.

George W. Pontius, Jr., Service Manager of the Cleveland Tractor Co.

Rugg and Robbins with Westinghouse

W. S. Rugg and Charles Robbins have been appointed by the Westinghouse Electric & Manufacturing Co., East Pittsburgh, Pa., as assistants to the vice president of that concern. Mr. Rugg was born at Broadhead, Mich., and is a graduate of Cornell university. His connection with Westinghouse goes back to the earlier days of its development. Soon after he joined the company he was transferred from Pittsburgh to Chicago, and in 1901 went to New York as a special engineer, where eight years later he was made the manager of that office. In 1917 he was recalled to East Pittsburgh to take charge of the railway department, where in 1918 he was also made manager of the newly created marine department. Mr. Robbins began his connection with the Westinghouse company in 1899 at the New York office. In 1906 he was transferred to the main offices at East Pittsburgh as assistant to the manager of the industrial and power departments. He was appointed manager of the industrial sales department in 1910. In August, 1915, he was made assistant sales manager of the company.

Jay Dewey, Director of Sales, Lexington Motor Co.

F. R. Humpage, who for years has been prominent in the automobile industry, including important connections with the Packard Motor Car Co. and the Dyneto Electric Co., has resigned his position as vice president and general manager of the Wilt Twist Drill Co. of Canada, Ltd., located at Walkerville, Ont., on account of continued ill health.

Jay Dewey is now director of sales for the Lexington Motor Co.. Connersville, Ind., being promoted from manager of the Lexington branch at Kansas City, Mo.

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Brown Becomes Hyatt Bearings Manager

Horace A. Brown, Jr., who has been identified with the Hyatt Roller Bearing Co., Detroit, Mich., for the past 19 years, has been promoted to be manager of the Motor Bearings division, with headquarters at Detroit. Mr. Brown received his technical education at Stevens institute, and began his professional career as draftsman and assistant engineer with the Atlas Portland Cement Co., later becoming assistant engineer of an Edison power station. He joined the Hyatt Roller Bearing Co. at Harrison, N. J., in 1901, as assistant to the secretary and sales manager, and with the exception of about a year and a half spent with a prominent high-speed tool company, he has been with the Hyatt organization ever since. He first went to Detroit in 1909 and became chief assistant to B. G. Koether in 1911 and has held successively the positions of senior sales engineer, manager of the sales department and sales manager, from which position he has just been promoted. He is a member of the Detroit Athletic club, Detroit Board of Commerce, Detroit Automobile club, Society of Automotive Engineers, and is also a member of the Masonic bodies of New Jersey and a permanent visiting member of Palestine lodge, Detroit.

Horace A. Brown, Jr., Manager Motor Bearings Division, Hyatt Bearing Co.

George Harrison Phelps, director of advertising for Dodge Brothers, Detroit, has collected 50 of his best stories, which were originally published in a house organ of Dodge Brothers, and they have been published in attractive book form under the suggestive title of "Go," by Reilly & Lee Co., Chicago.

Marshall E. Lebon and Alfred V. Kidd, members of the Kidd-Lebon Co., distributor of the Republic truck in Boston, have moved into the new building leased by them at 983 Commonwealth avenue, that city.

C. P. Hand, President, Burd High Compression Ring Co.

B. G. Koether, after 18 years of service with the Hyatt Roller Bearing Co., Detroit, Mich., has been made vice president and will make his headquarters at Harrison, N. J., as head of the entire sales and advertising departments of the company. He entered the employ of the Hyatt Co. as an accountant, and successively held the positions of purchasing agent, assistant sales manager, sales manager and head of the motor bearings division. He is a member of the Detroit Automobile club, the Detroit board of commerce and the Detroit section of the Society of Automotive Engineers. He has also been editor of the Quieterion, the house organ of the Hyatt Roller Bearing Co.

John D. Howley, branch manager of the White Co., Philadelphia, is looking after the removal of his company from 216 North Broad street to the fourth floor of the Fidelity Mutual building, 112 North Broad street.

B. G. Koether, Vice President, Hyatt Roller Bearing Co.

Wood Vice President Van Cortlandt

W. A. Woods, vice president of the Van Cortlandt Vehicle Corporation, metropolitan distributor for Peerless eight-cylinder motor cars, has been elected by the National Automobile Dealers' association as director of the eastern district. Mr. Woods was also elected a member of the executive committee of the association, consisting of three members, to represent the grand eastern division, which includes New York, Pennsylvania, New Jersey, Maryland, Delaware and the New England states. A still further honor accorded Mr. Woods was his recent election as vice president of the Automobile Dealers' association of New York City.

A. H. Sowers has dissolved the Jackson Motor Car Co. of New England, which has been engaged in the automobile field in Boston for several years, and has formed a new company known as the Jackson Motor Service Co., which will specialize in repair work and replacement of parts on the Jackson and Lexington cars, doing business on Washington street in the Brighton district.

W. A. Woods, Vice President, Van Cortlandt Vehicle Corporation.

Merton H. Schwartz and Benjamin H. Wells, who were for some time associated with the firm of Mason B. Hatch, Inc., Buffalo, N. Y., have organized the Schwartz Motor Corporation in Niagara Falls and will handle Cleveland and Chandler cars in Niagara county.

George W. Hunsicker of Allentown, Pa., who retired a month ago as president of the Lehigh Auto Trade association, in which capacity he managed a number of successful automobile shows, is dead, aged 46 years. Mr. Hunsicker was president of the Dietrich Motor Car Co., one of the pioneer automobile dealers of the Lehigh valley, and was an ardent good roads advocate.

Edward Stern has leased the first floor of the building at 1430 Vine street, Philadelphia, for an automobile sales room.

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Lincoln Highway Loses Seiberling

F. A. Seiberling, head of the Goodyear Tire & Rubber Co., has been obliged, on account of the increased activities of that concern, to resign his office as president of the Lincoln Highway association, and will be succeeded by H. B. Joy. Mr. Seiberling reported that during 1919 the amount expended on the highway exceeded $9,000,000, and that 1920 will see an equal or greater sum spent to put this great transcontinental road into permanent shape.

William Krafve is the designer and production manager of the Capitol motor truck, made by the Capitol Motors Corporation, Fall River, Mass., and exhibited for the first time at the Boston show. Mr. Krafve is a native of Sweden, but came to this country when he was four years of age. He has been associated with the automotive industry for the past 21 years, being at different times

William Krafve, Designer and Production Manager, Capitol Motor Truck Co.

and in various capacities connected with the Cadillac, Buick, Regal, Koehler, Republic and Ohio Motor car concerns.

Frank L. Johnson. sales promotion manager for the Service Motor Truck Co., Wabash, Ind., died recently in that city after a brief illness. He joined the Service company in June, 1919, shortly after his discharge from service in the Marine Corps of the United States navy, and his brief career with the company was such as to promise a brilliant future.

F. B. Hutchinson, Jr., manager of the Iron City Motors Co., 2337 Michigan avenue, Chicago, has consummated a deal whereby his company becomes the Chicago representative of the Elcar, which line will be handled in conjunction with the King Eight.

James Joyce, Jr., has resigned his position as vice president and general manager of the Dreadnaught Tire & Rubber Co.

Harry O. Foskett, Sales Manager Merchants' Motors, Inc., New England Distributor of Acason Trucks.

Harry S. Foskett is sales manager of Merchants Motors, Inc., 584 Commonwealth avenue, Boston, distributor for eastern Massachusetts of the Acason truck built by the Acason Motor Truck Co., Detroit, Mich. He is a native of Jackson, Mich., and has a fine record for salesmanship in the commercial motor vehicle field. He is proving an efficient assistant in the sales department to President Charles S. Davis of Merchants Motors, Inc.

Jack R. Kearns is service manager of the Penn-American Motor Car Co., distributor of the American Balanced Six car in Philadelphia, which has moved into new quarters on Auto row, 252-254 North Broad street, where sales rooms and service department will be combined.

William L. Edmond has resigned his position as cashier of the First State Bank & Trust Co., Waco, Tex., and has associated himself with G. H. and H. L. Penland.

Frank L. Johnson, Sales Promotion Manager, Service Motor Truck Co.

Barrere Represents Haynes Co.

Leonide Barrere, an automobile exporter and engineer of international repute, has been engaged by the Haynes Automobile Co., Kokomo, Ind., as special traveling export representative. Mr. Barrere, after a month's stay at the Haynes factory, will start on a three years' journey, during the course of which he will visit all of the important cities of the world, including points on the European continent, Asia, Africa, India and South America. Mr. Barrere is a graduate of the Institute Technologique et de Mechanique Applique, Nancy, France, and has received degrees as an electrical, civil and mechanical engineer in both German and Russian universities. In addition to this he is a graduate of the Academy of Commerce at Odessa, Russia. He has been engaged in export work in Europe since 1910 and was associated with European automobile firms

Charles E. Stuart, Assistant Sales Manager, Selden Truck Corp.

for five years. Coming to this country four years ago, he has trained himself to a high degree in American methods in regard to the automotive industry. His mission with the Haynes company will be to establish foreign dealers, to educate the motor car public of foreign countries in the matter of the left-hand drive and to stimulate general interest in all quarters of the globe in the high character of the Haynes cars.

Charles E. Stuart, who has recently been appointed by Vice President Hal T. Boulden as assistant sales manager of the Selden Truck Corporation, Rochester, N. Y., has had a ripe experience in the motor vehicle trade as salesman, dealer and field sales manager.

Howard W. French who, during the war was with the United States aerial service recently resigned his commission to become sales manager of the Apperson Baltimore Co.

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Torbensen Axle Co's Executives

The association of three new executives in the production division of the Torbensen Axle Co., Cleveland, O., is announced by Vice President Robert Enos, which is expected to considerably strengthen the manufacturing organization of the company.

J. D. Smith, Manufacturing Manager, Torbensen Axle Co.

These are J. D. Smith, as manufacturing manager, who was formerly with the Timken Detroit Axle Co., as works manager; G. W. Veale, formerly production supervisor for the Timken-Detroit company, to be production superintendent, and G. W. Carlson, engineer, formerly with the Timken company, who will serve in the same capacity.

All have served in the axle industry for years and have become known for their capacity in their several specialties, and their united endeavors will no doubt materially promote the activities of the Torbensen plant.

WILLYS-OVERLAND STRIKE OFFICIALLY ENDED.

At a special meeting of the Toledo, O., chapter of the International Association of Machinists, recently held, a vote was taken to voluntarily and officially end the strike which was started at the Toledo plant of the Willys-Overland Co. last May, and it is understood that the company has been placed on the union fair list by the Toledo labor organizations.

At the time of this action more than 14,000 men were at work in the Toledo plant and about 4000 more at the Elmira, N. Y., and Elyria, O., plants of the Willys-Overland Co. A large majority of the members of the machinists', metal polishers and pattern workers' unions had returned to work several months ago.

The early return of the large majority of employees confirmed the company's contention that its wages, hours, working conditions and other elements involved were on a par with, if they were not actually better, than similar conditions in other automobile plants throughout the country. It is generally conceded that the strike was called at the instigation of a radical element, which had secured control of the Toledo trades.

MAIBOHM MOTORS INCREASES DIVIDENDS.

The Maibohm Motors Co., Sandusky, O., at its annual meeting, Feb. 16, increased its annual dividend rate from six to eight per cent. A regular quarterly cash dividend of two per cent. was declared, payable April 1 to stockholders of record March 15. The stockholders also authorized an increase of capital from 150.000 to 250,000 shares.

It is planned to use the proceeds of this subscription for the immediate construction of additional manufacturing facilities which will more than double the present production capacity. The company reports an insistently increasing demand for its product in all domestic as well as foreign markets.

G. W. Veale, Production Superintendent, Torbensen Axle Co.

The present production schedule is at the rate of 25 cars a day, approximately 15 per cent. of which are exported.

INCREASE IN PRICE OF FORD CARS.

The Ford Motor Co., Detroit, Mich., put into effect on March 3, advances in prices on the various Ford models. The new schedule is as follows:

Runabout, $550; runabout with starter, $625; touring car, $575; touring car with starter, $625; truck chassis, $640; coupelet with starter and demountable rims, $850; sedan with starter and demountables, $975; Fordson tractor, $800.

All prices are f. o. b. Detroit.

Motorists Contribute to Roads

The sum of $65,522,259 was contributed in 1919 by passenger car and truck owners of America towards good roads. This represents money received from license fees from the various states. Highway authorities say that over 90 per cent. of this amount goes back into good roads work.

The 1919 total transcends that of 1918 by $15,000,000—enough money to construct a 500-mile commercial highway. Approximately one-fourth of the national total was paid by car owners of three states: New York, Pennsylvania and California. It is significant that these states have excellent highway systems and are now in the midst of comprehensive plans for the future.

In this connection it is interesting to note the lack of uniformity in the various state license fees laws. For instance, although West Virginia possesses fewer cars than Alabama by 12,000, the former state realizes $424,000 more in license fees. Again, North Carolina and South Dakota people own approximately the same number of cars and trucks—in the neighborhood of 100,000—but the southern state's laws return four times the amount of money for good roads work as does her sister state in the northwest. North Carolina license fees amounted to $1,280,000. South Dakota paid $300,000.

CASTEEL & VAN DORAN GARAGE.

Casteel & Van Doran, White Cloud, Kan., has an up-to-date and well equipped garage, at which is carried a full line of Ford parts. It is also agent for the Dort car and sells the Gates Double-Mileage tires and tested tubes. The plant is to be enlarged this spring by an addition 46 by 50 feet. William Van Doran is the general manager and G. D. Casteel the master mechanic.

G. W. Carlson, Engineer, Torbensen Axle Co.

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J. F. Hernberg, Manager Truck Department, Paige-Detroit Co. of New England.

J. F. Hernberg is in charge of the truck department of the Paige-Detroit Co. of New England, with headquarters in Boston. Mr. Hernberg is a native of the great west and brought a large amount of characteristic optimism with him in assuming his activities in the eastern field. The Paige truck is built in 1½, 2½ and 3½-ton capacities, but Mr. Hernberg states that it is the 1½-ton size that is making the greatest appeal to the New England trade, as this is especially designed with several styles of bodies for the farmer and truck gardener, as well as for light delivery.

Arthur H. Story, for the last 15 years well known in Philadelphia newspaper advertising circles, has resigned from the Philadelphia Record to become general manager and sales manager of the Keystone Automobile Sales Corporation, 668-670 North Broad street, distributor of the King and Maibohm lines. Frank K. Stehle is president and treasurer and Remy Stehle manager of service of the Keystone Co.

K. P. Drysdale has become associated with the advertising firm of Theodore F. MacManus, Inc., Detroit. He was for 12 years with the Cadillac Motor Car Co., the first two as assistant sales manager and the last 10 as advertising manager. He was later with the Cleveland Tractor Co. as director of sales promotion. He is widely known for his extensive research work in his chosen field, covering some 20 odd years in various lines of merchandising.

Frank E. Wing, New England distributor of Marmon cars, with headquarters at Boston, increased the number of his branches recently by the establishment of a store at Springfield, Mass., in charge of T. A. Earl, formerly of the Franklin Co, Boston. Mr. Wing now has branches in Worcester, Providence and Springfield, in addition to the main offices at Boston.

S. W. Creekmore has been elected president of the Creekmore Motor Co., Fort Smith, Ark.

Ellis Manager Boston Splitdorf Co.

Robert M. Ellis, well known in automobile trade circles of the East, has assumed the management of the Splitdorf Electrical Co. of Boston, succeeding Harry R. Curtiss, who has been appointed manager and treasurer of the Excelsior General Supplies Co. of Chicago. For the past two years Mr. Ellis has been export manager of the Splitdorf Electrical Co. of New York, and before that was with the Bi-Motor Equipment Co. of Boston, eventually being placed in the position of manager of that company. In returning to Boston he assumes also the duties of treasurer and a director, as well as manager of the Splitdorf Electrical Co.

George W. Twitmeyer, sales and advertising manager of the Stevens-Duryea Co., died Feb. 10 at a hospital in Los Angeles, Cal., from pneumonia, complicated with spinal meningitis. He attended the national automobile show at Chicago and was taken ill en route for California. Mr. Twitmeyer was for many years advertising manager of the Peerless Motor Car Co., Cleveland, O.

Robert M. Ellis, Manager, Treasurer and Director, Splitdorf Electrical Co. of Boston.

William H. Knoche, one of five brothers engaged in the automobile and oil business at Lombard and Ninth streets, Baltimore, Md., has died as the result of burns received eight weeks ago caused by a gasoline explosion at his place of business.

George W. Canterbury, who has just taken possession of new sales and service quarters at 967-969 Commonwealth avenue, Boston, has become distributor in eastern New England of the new Stevens-Duryea car, which is being manufactured by the Stevens-Duryea Co., Chicopee Falls, Mass.

L. R. Garrity is in charge of the retail branch of the Overland-Harper Co., recently opened at the northeast corner of 52nd and Walnut streets, West Philadelphia.

J. E. Wright, veteran automobile and carriage manufacturer, died at his home in York, Pa., aged 60. He was one of the founders and for years vice president and sales manager of the Allen Motor Co., Columbus, O. He was also one of the organizers of the old Columbia Buggy Co., Hamilton, O. For nearly 30 years he was a leader in the carriage industry, and with the advent of the motor, recognizing its unlimited possibilities, in 1912 he joined forces with E. W. and W. O. Allen of Fostoria, O., in forming the Allen Motor Co. He retired from active business in 1917 on account of ill health.

Ben Lewis, formerly in the men's furnishing business in New York City in the automobile district, has become eastern representative of the Ford Mica Co. of Christopher street, maker of the F. M. C. spark plug. His extensive acquaintance and popularity along the Metropolitan automobile row will undoubtedly secure, through him, a profitable clientele for the F. M. C. plug.

Charles W. Mitchell and Harry Oliphant, proprietors of the Auto Sales & Service Co., Laurel, Del., have dissolved partnership, Mr. Mitchell selling out his interests to Mr. Oliphant. Mr. Mitchell will, however, continue in the automobile business, having taken over the Callaway garage on Market street.

J. H. Hadley is president and V. L. Brown vice president and general manager of a new concern to be known as the Hadley-Brown Motor Co., which will occupy the building formerly the headquarters of the Waterloo Overland Co. at Waterloo, Ia.

K. R. Roberts is president of the Emergency Service Co., which has taken over the emergency station and automobile accessories store at Leonard and Washington avenues, St. Louis, Mo., formerly conducted by the St. Louis Motor Service Co.

R. P. Rice, Ford dealer, is erecting a motor sales and service building at the west end of the Inter-City viaduct, Kansas City, Mo.

Ben Lewis, Eastern Representative Ford Mica Co.

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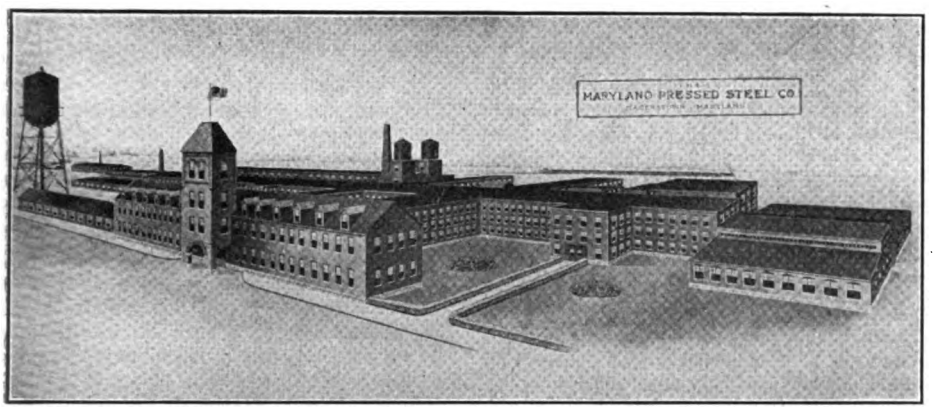


Factory of Maryland Pressed Steel Co., Hagerstown, Md., Where Pasco and National Wire Wheels Are to Be Made.

Maryland Co. to Make Wire Wheels

The Maryland Pressed Steel Co., Baltimore and Hagerstown, Md., has taken over the manufacture and sale of National and Pasco wire wheels, the product of the National Wire Wheel Works, Inc., through an exclusive license agreement covering a long term of years. Heretofore National and Pasco wheels have been made by the Maryland Pressed Steel Co. and the National Co. has conducted the selling.

The Maryland Pressed Steel Co. is a subsidiary of the Poole Engineering & Machine Co., Baltimore, manufacturer of steel and semi-steel products for the last three generations. The Hagerstown plant affords 355,000 square feet of floor space with a minimum capacity of 1,000,000 wire wheels a year, making it one of the largest in the world. The general sales offices are to be removed from Detroit to Baltimore, and J. L. Justice will continue in charge of sales and advertising in the capacity of general sales manager.

With approximately 115 jobbers the selling organization of the Maryland Pressed Steel Co. ranks as among the strongest in the accessories industry. In Canada the wheels are distributed by the Northern Electric Co. with nine branches.

Among the exclusive features which it is claimed have contributed largely to the vogue of National and Pasco wire wheels are the device by which National wheels are locked to the hub by positive mechanical means, the standard tread of 56 inches, the same as wood wheels, and additional strength obtained through a distinctive method of spoke lacing, greater curb clearance than any other wire wheel eliminating danger of scraping or bending of spokes on the curb, equal tension of all spokes through a method of truing the rim by a special machine which practically prevents breaking or loosening spokes, a hub shell of pressed steel giving maximum strength with minimum weight, and a greater number of spokes.

There were fewer failures in the United States last year than in any year since 1881.

PRODUCTION OF PRINCIPAL CAR MANUFACTURERS.

Following is a compilation of the output of cars manufactured by 28 of the leading automobile makers of the United States for the month of January, together with the daily averages:

Car	January	Daily Average
Briscoe	1,000	34
Buick	15,000	500
Cadillac	400	14
Chalmers	1,200	40
Chevrolet	4,000	135
Columbia	600	20
Dodge	16,500	550
Dort	2,500	84
Essex	3,750	125
Ford	96,000	3,200
Hudson	3,000	100
Hupmobile	1,600	55
Jackson	100	4
King	200	7
Liberty	350	12
Lorraine	30	1
Nelson	120	4
Maxwell	6,700	225
Oakland	3,800	127
Oldsmobile	3,700	124
Overland	13,060	435
Packard	1,920	64
Paige	1,300	43
Paterson	220	7
Reo	1,200	40
Roamer	110	4
Scripps-Booth	750	25
*Studebaker	4,200	140
Total	185,310	6,119

*Report from Detroit plant. Production at South Bend plant just starting on new six.

Big Contract for Commerce Trucks

The big feature of the recent banquet at Hotel Congress, Chicago, of the midwest distributors of Commerce trucks, made by the Commerce Motor Car Co., Detroit, Mich., was the announcement by George D. Wilcox, director of sales and advertising, who presided, that contract has been made with H. J. Dougherty, former Republic truck dealer at Kansas City, Mo., which totaled more than $6,000,000.

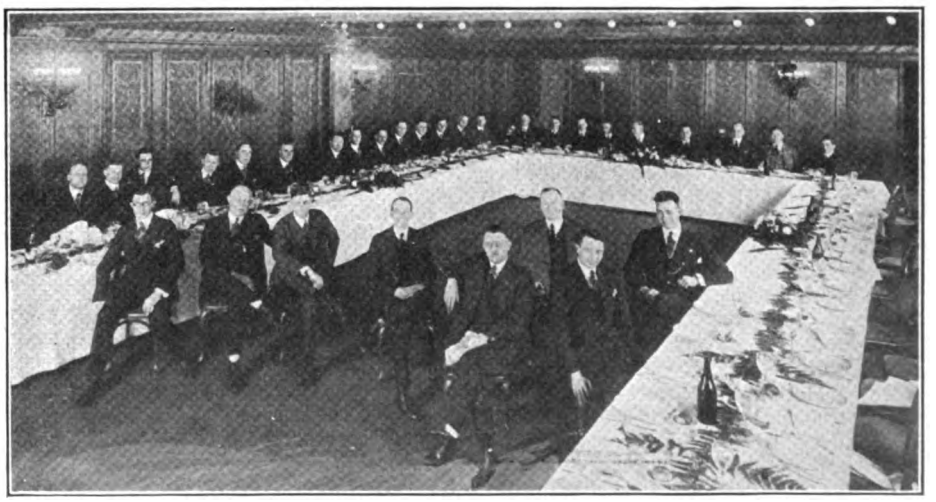
Mr. Dougherty, who is reputed to be one of the largest distributors of trucks in the country, has the Commerce sale right in Kansas and Oklahoma and contributory territory from Kansas City in Missouri and Arkansas, and he will absorb the Gateway Motor Truck Co., the present Kansas City Commerce distributor.

"A-B-C OF FORD MOTOR REPAIRNG."

Albertson & Co., Sioux City, Ia., recently issued a book entitled "The A-B-C of Ford Motor Repairing," which is somewhat unique in its idea of instructing Ford owners in the proper methods of grinding, refacing and reseating valves and valve seats. It contains a description of the "Little Sioux" Ford tool set, with complete illustrated directions for use. These tools are exact duplicates of the larger "Sioux" tools made by Albertson & Co. for all lines of cars, trucks and tractors, but is designed exclusively for use on the Ford car or truck. The retail selling price of the "Little Sioux" tool outfit is $7.75.

EXTENSIONS TO LIBERTY PLANT.

Since the completion of the new plant of the Liberty Motor Car Co., Detroit, the increased demand for Liberty cars has caused the making of plans for the extension of the service building an additional 300 feet, and Percy Owen, president of the company, announces that 12 acres adjoining the present site have been secured, doubling the ground available for the needs of the company.



Midwest Distributors of Commerce Trucks at Their Banquet at Hotel Congress, Chicago, Ill.

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Recapitalization of Rainier Corp.

At a recent special meeting of the stockholders of the Rainier Motor Corporation, New York City, the proposed recapitalization plan was adopted by 100 per cent. of the capital outstanding. This provides for the issuance of 7500 shares of eight per cent. cumulative preferred stock, par value $100, of which 7000 shares are to be issued immediately, and 30,000 shares of common stock of no par value to be issued immediately.

The new preferred stock has been purchased by a syndicate headed by John Nickerson, Jr., investment banker of New York City, who at the meeting was elected a member of the board of directors, succeeding Godfrey Piel, resigned.

As a result of this recapitalization the Rainier company will erect extensive additions to its plant at Flushing, Long Island, N. Y., for the manufacture of worm-drive delivery trucks, the contemplated production for 1920 being three times that of 1919.

STONE TO JOIN HALLADAY MOTORS CORPORATION.

A. P. Stone, now district manager and director of the Great Western Oil Co., is, on April 1, to join the Halladay Motors Corporation, Attica, O., as general sales manager in charge of the distribution of the Halladay Six car. Mr. Stone is well known by a majority of successful garage men in several of the central states, particularly in Ohio.

The Halladay Motors Corporation states that its new plant No. 2 at Newark, O., 400 by 180 feet in size, will be completed on or before May 1, and an extensive increase in the production programme will be put into effect at that time.

HILL OPENS OFFICE AS AUTOMOTIVE CONSULTING ENGINEER.

L. Clayton Hill, well known in automotive circles through his eight-year connection with the Packard Motor Car Co., has opened offices in the Holden building, Detroit, Mich., as the head of an organization to engage in the general practise of consulting engineer, specializing in automotive activities.

During his association with the Packard company Mr. Hill was at first engaged in chassis design and later held the positions of body and aeroplane engineers. During the war he became associated with the French aviation mission under Capt. Lepere, designer of the Lepere aeroplane, being also associated with him in the Franco-American Engineering Co., and assisting him in the development of a highly efficient six-cylinder motor with four overhead valves. Mr. Hill designed a body and chassis around this type of motor, and the completed car is now undergoing tests.

One of Mr. Hill's clients in his new enterprise at Detroit is the Gartley-Weston company of that city, manufacturer of high-grade automotive accessories.

FAIRBANKS CO. ADDS TO SERVICE STATION EQUIPMENT.

Among the latest acquisitions to the line of automobile service station equipment handled by automotive supply department of the well known concern, the Fairbanks Co., New York City, are the products of the Duplex Rim Device Co., the T & T Dresser Co. and the F-B Electric & Manufacturing Co.

The Fairbanks company has taken over the entire output of these concerns.

INTERESTING BOOKLETS ISSUED BY ALUMINUM MANUFACTURERS, INC.

Aluminum Manufacturers, Inc., Cleveland, O., has recently issued a number of booklets which are of interest to the automotive trade. One, entitled "Lynite Pistons," gives a rather complete discussion of the advantages of aluminum pistons and also details in particular the construction of Lynite pistons. "What About Pistons," a smaller brochure, devoted to the same subject, is intended more especially for distribution among car owners and is written so as to present the subject from the motorist's point of view.

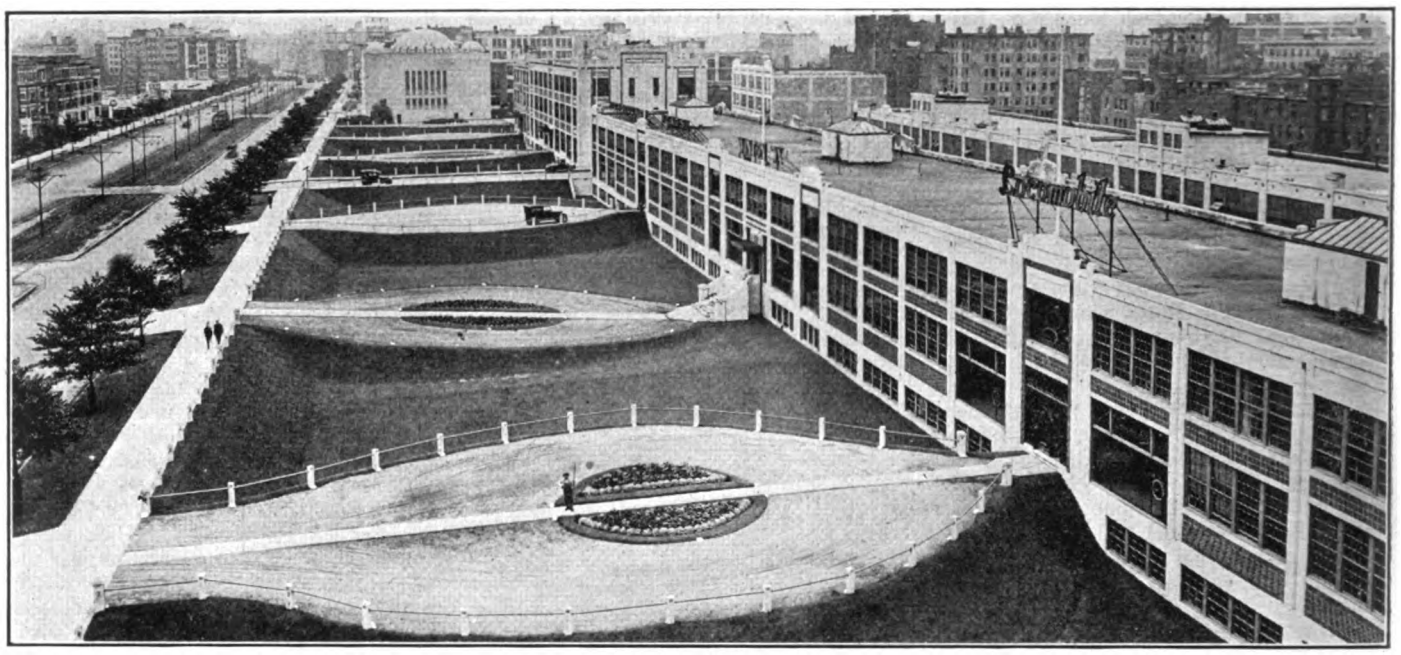
A booklet on wheels entitled "When Is a Pound Not a Pound," discusses in a general way the importance of reducing unsprung weight in passenger cars and trucks. A folder on "Lynite Forgings" points out the saving claimed to be made possible in such parts as connecting rods, etc., where strength and ductility are necessary, by the use of the Lynite products.

The Aluminum Manufacturers, Inc., will be glad to supply copies of any or all of these booklets to anyone interested.

PENCE CO. BUILDS OWN FREIGHT CARS.

The Pence Automobile Co., a motor car distributing concern at Minneapolis, Minn., has had built at Toledo, O., a special train of automobile freight cars to ply regularly between the GMC truck factory at Pontiac, Mich., the Buick factory at Flint, Mich., and the distributing point. The plans for this project were worked out by W. R. Stephens, sales manager of the Pence Co.

TWO CONTRASTING SEASONAL VIEWS OF



The South Side of Commonwealth Avenue, Looking East Toward Kenmore Square, Lined with Splendid Structures Given Over to Salesrooms and Service Stations, Where Most of the Automotive Dealers of Boston Are Established.

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JONES CAR COMPANY TO REBUILD AT WICHITA.

Two buildings, 81 by 252 feet, and their contents, were recently destroyed by fire at the plant of the Jones Motor Car Co., Wichita, Kan. These housed the painting department, where over 100 bodies were being finished, and the wood working section, where another 200 bodies were under construction.

The direct loss is placed at $200,000, covered by insurance to the extent of about 70 per cent. The assembly, trim shop and metal working buildings were not injured. This part of the plant is being run by tractor power, some 12 tractors being in use, until a new power plant can be installed.

The fire curtailed the March production to 75 or 100 cars. In April the production is expected to be five cars a day. New buildings are being erected and new machinery is being installed.

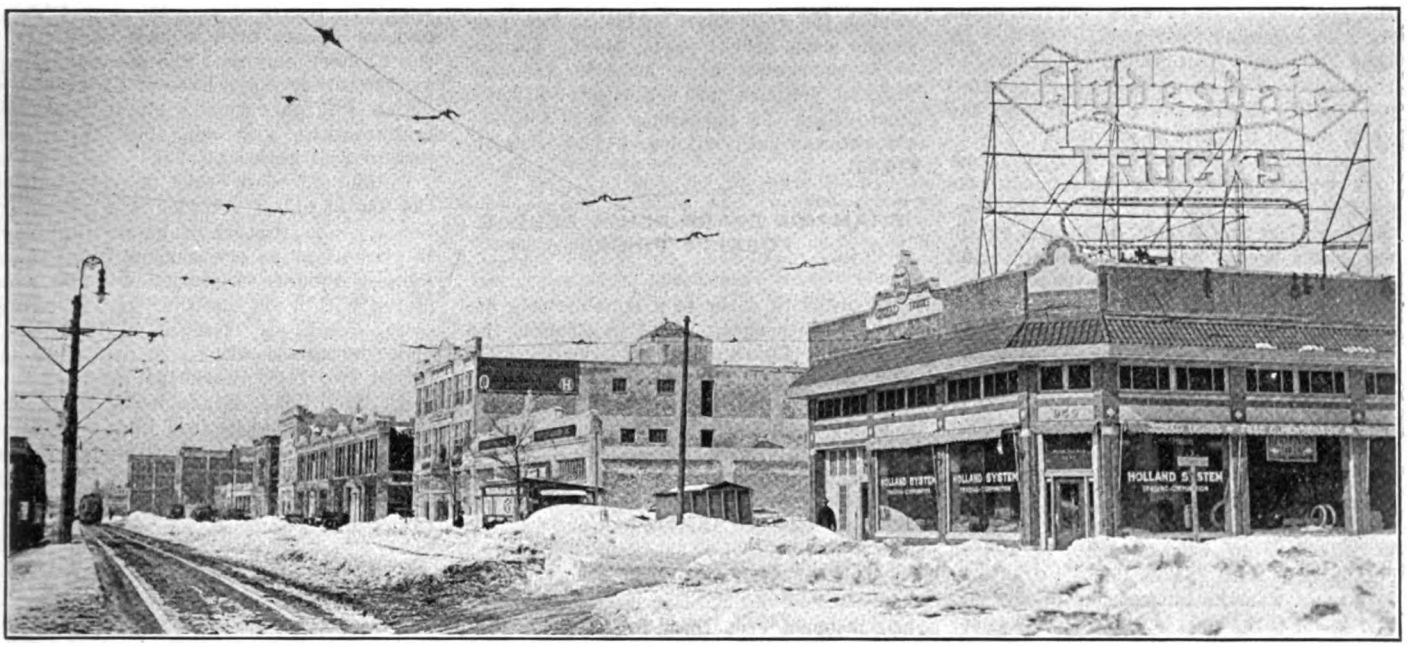
PRESENT STATUS OF SAXON MOTORS.

A conservative statement recently made by C. A. Pfeffer, president of Saxon Motors, the reorganized concern which succeeded the Saxon Motor Car Corporation last November, estimates the earnings for 1920 at $1,000,000, which is 10 times the amount of the dividend on preferred stock, with a balance of about $4.50 a share on the common stock.

The new company started business Nov. 1, 1919, with cash of $1,229,038, accounts receivable $265,937, and inventories of $735,948; against this was $92,405 for accounts payable, leaving a net working capital of $2,230,923. The present corporate structure of the company consists of $1,250,000 eight per cent. cumulative preferred stock and 180,000 shares of common of no par value, with 20,000 shares in the company's treasury. Dividends on common stock may be declared after the full preferred dividends are provided for if the net tangible assets, after deducting common payments, exceed and will be maintained at 2½ times the preferred stock then outstanding.

The board of directors of Saxon Motors consists of Barney F. Everitt, president of Everitt Brothers; George Edmunds, president of Edmunds & Jones Manufacturing Co.; B. S. Armstrong, president of Mabley & Carew Co., and Walter G. Souders, president of the W. G. Souders Co.

BOSTON'S WELL-KNOWN AUTOMOBILE DISTRICT.



The North Side of Commonwealth Avenue, the Most Beautiful "Automobile Row" of America, Looking from Braves' Field to Fuller Square, Piled High with Snow That Practically Blocked All Power Vehicle Traffic.

MUTUAL MOTORS MOVES TO NORTH TONAWANDA.

The Mutual Motors Co. announces its removal from Jackson, Mich., to North Tonowanda, N. Y., where it is able to supply repair parts for the following models of Marion-Handley automobiles made by it: Marion-Handley A and B; Marion H and K; Imperial 64 and 66.

GRAY-DORT CO. EXPANDS.

The Gray-Dort Co., Chatham, Ont., has taken over the entire plant of William Gray's Sons-Campbell, Ltd., one of the oldest carriage manufacturing concerns in Canada. Several buildings have been added to the Chatham plant and the Gray-Dort Co. has also erected large warehouses at Montreal and Ottawa.

The Hemloch 6400 Tire Co. is to commence business at 990-918 Union avenue, Memphis, Tenn., with the following officers: President, F. M. Gemmill; vice president, Ralph Moncrief; secretary, R. W. McCaughan.

Cameron Licenses Liberty Co.

The Cameron Motors Corporation, 2 Columbus Circle, New York City, has established a plant at Bridgeport, Conn., where it has licensed the Liberty Manufacturing Co. for the quantity production of Cameron four-cylinder air cooled motors.

Owing to the tremendous demand for small four-cylinder motors, both in this country and abroad, due primarily to the rising cost of fuel, the first size of motor put into production in this new plant is 2⅝ by four inches, four-cylinder, suitable for light passenger cars, delivery wagons and cultivators. The motor is being produced complete with three-speed sliding gear transmission and plate clutch.

The production of the Cameron three by 4½-inch, six-cylinder motor, is already well under way at the Shelton plant, this motor appearing first on the market in the new Paranti light car, now being built in Buffalo.

EASTERN STATES EXPOSITION.

The Eastern States Exposition will be held at Springfield, Mass., Sept. 19-25, and among the features planned are automobile, horse and live stock shows, exhibitions and demonstrations of tractors and farm machinery, exhibits of varied industries, boys' and girls' industrial and agricultural exhibits, state exhibits, horticultural, floricultural and dairy displays, live stock sales, horse and auto racing, college judging contests and auto polo.

J. L. Brooks is president of the association, H. G. Fisk treasurer and H. A. Moses chairman of the executive committee, and John C. Simpson, 292 Worthington street, Springfield, is general manager.

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Car Exports for 1919 Jump 88½ Per Cent.

Net gain of 88½% in passenger car exports and 50% in truck shipments over the year 1918 are revealed in the totals for the calendar year 1919, compiled by the National Automobile Chamber of Commerce. The curve of increase fell off slightly during the latter part of the year, due to the rate of exchange.

The heaviest gains for American products were registered in the non-car producing sections, such as South America, the Far East and Africa, while the smallest gains were noted in Europe and Great Britain, where there is competition with home products.

The grand totals for the two years are as follows: 1918—Passenger cars, 39,936, valued at $36,278,292; trucks, 10,308, valued at $26,814,952. 1919—Passenger cars, 67,106, valued at $73,642,035; trucks, 15,467, valued at $35,099,079.

The gain in passenger cars in South America totaled 9016 in comparison with 6782 the previous year; the gain trucks in this section was over 100%, 796 in comparison with 384 in 1918.

Canada was the largest purchaser, taking 8822 cars, only a slight gain over the 1918 figure of 8543. The truck imports from the United States jumped to 2164 as against 1596.

England leads the field in passenger car gains, buying 5150 automobiles from the United States, compared with 398 of the year before. England's truck purchases, however, decreased from 2080 in 1918 to 890 in 1919. The sale of army equipment accounts for the slump.

France and Italy are both restricting the American product, so that exports to those countries are falling off; but Belgium, Norway, Sweden and Denmark, whose total purchases from the United States in 1918 were 108 trucks and 296 automobiles, increased to 1807 trucks and 7528 passenger cars during the past year.

Exports to Mexico went up over 100 per cent. The Philippines more than tripled their demand for trucks, and the shipments to the non-contiguous territories of the United States were six times as great as the preceding year in the truck field and 7½ times in the passenger car line.

During the month of September, 1919, the number of passenger cars shipped from the United States to foreign countries totaled 6383, valued at $6,838,439; commercial cars numbered 1359, valued at $3,369,581; total value of automotive parts exported, $4,560,273.

Shipments to non-contiguous territory of the United States during September included the following: Alaska, two passenger cars, $1653; parts, $4462. Hawaii —108 passenger cars, $92,975; 11 commercial vehicles, $23,653; parts, $12,964. Porto Rico—26 passenger cars, $36,093; six commercial vehicles, $18,545: parts, $16,531.

CHAMPION SPARK PLUGS REDUCE FOREIGN PRICE.

In order to cater to a considerable demand for its spark plugs in France, the Champion Spark Plug Co., Toledo, O., has devised a plan that will enable French dealers to handle this product at a profit despite the 70 per cent. import duty on automobile accessories, by reducing the price to French consumers sufficiently to take off 35 per cent. of the tax. Before this reduction was allowed the cost of a spark plug listed at $1 in France was approximately $3 in French money.

It is considered that the need for this price reduction will be removed when the French government puts into effect the reported decrease in tariff on this class of goods. Since the British embargo was lifted it is reported that the Champion Spark Plug Co. has shipped its products in large quantities to the United Kingdom, South Africa, Australia, New Zealand, India, Japan, Chile and other countries.

INDUSTRIAL PLANT FOR BRANTFORD, ONT.

A plant is to be established in Brantford, Ontario, Canada, for the manufacture of Bluebird electrical appliances, which will eventually employ 1500 persons. The directorate of Brantford Motor Trucks took the initiative in establishing this industry, and the plant built by the United States government for the manufacture of munitions during the war will be utilized. J. B. Detweiler, general manager of the Brantford branch of the Steel Co. of Canada, will resign his connection with that concern to become president of the new company.

Motoring Increasing in China

It is reported that motoring is rapidly increasing in popularity in Pekin, China, where there are said to be more Chinese owners of cars than in any other city in the Chinese empire. The number of passenger automobiles here is about 650, of which a large majority are of American manufacture, and over 500 have been bought by Chinese.

Coincident with this development in the use of motor vehicles is a movement for the construction of better highways. If present plans are carried out China's longest modern highway will be completed within six months. It will extend from Pekin to Tienstin, a distance of about 80 miles; will be 20 feet wide and raised two feet above the existing road bed. Four bridges are to be built, and stations will be located about 10 miles apart, with repair facilities and supplies of accessories and fuel. The cost of maintaining this road will be raised from toll fees.

INTEREST IN LINCOLN HIGHWAY.

During the past six months, A. F. Bement, vice president and secretary of the Lincoln Highway Association, has received inquiries for details concerning the inception of the movement and the methods of construction and maintenance followed by the association, from Australia, Canada, Cuba, Brazil and Poland, and Spain is the latest country to apply for information. The editor of Espana Automovil y Aeronautica, the official organ of the Royal Automobile club of Spain, with headquarters in Madrid, wishes to secure data for an illustrated article so that Spanish automobilists may know something about this longest and best known road in the world.

CARS FOR ENGLISH DOCTORS.

The British Medical association has taken up the matter of preferential treatment in that country in regard to the early delivery of motor cars with the result that a large majority of manufacturers have intimated their desire to arrange, so far as possible, that cars ordered by doctors for professional use shall have priority in delivery.

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Trade Opportunities in the Foreign Field

Reserved addresses may be obtained from the Bureau of Foreign and Domestic Commerce and its district and co-operative offices upon written request by opportunity number.

31,774—A firm in New Zealand desires to purchase and secure an agency for engineers' machine tools, wood working machinery, steam brass work, plumbing supplies and tools, machinery for making galvanized iron spouting and roofing materials, cornice brake machines, automobile accessories, high-grade motor tires, lubricating oils and greases, fancy leathers, builders' hardware, hollow wire petrol lighting systems, table lamps, brass and copper sheets, tubes, rods, etc., and electric motors, direct current and alternating current. References.

31,776—The American purchasing agent for firms in Europe desires to purchase immediately mechanical toys, household labor saving devices, washing machines, vacuum cleaners, small tool kits, motor accessories, oil stoves, leather belting, electrical supplies, motors and exhaust and ceiling fans. Quotations should be given f. a. s. New York. Payment, cash. Reference.

31,778—A firm in Spain manufacturing small direct connected, motor driven pumps, and having large facilities for installation and repair work, desires representations of the following lines: Electric generators, electric motors, principally of small sizes, wiring devices and an electric automobile. Reference.

31,781—A firm of commission agents in India desires to secure agencies for the sale of piece goods, hosiery, toilet goods, toys, paints, colors, provisions, grain, motor cars, etc.; also for fire and marine insurance. Quotations should be given c. i. f. India port. References.

31,796—An agency is desired by a firm in Spain for the sale of telephonic and telegraphic apparatus, field glasses for army use, goniometers, automobile trucks, motors, dynamos, cables, electrical instruments and high power searchlights suitable for army field operations. Quotations should be given c. i. f. Spanish port. Correspondence may be in English. References.

31,803—An importer in Belgium desires to purchase and sell on commission bicycles, motorcycles and accessories, and sewing machines. Quotations should be given c. i. f. or f. o. b. Antwerp. Payment, cash. Correspondence may be in English, catalogues should be in French. References.

31,814—An American firm having branches in Egypt and Greece desires to secure agencies for the sale in the Levant of automobile tires, hardware, shoes, shoe leather, electrical supplies, textiles, knit goods and general merchandise. Quotations should be given f. a. s. New York. Payment to be made in New York. References.

31,817—A firm in Spain desires to secure agencies on commission for the sale of sulphate of ammonia, cocoanut oil, coal, tin plate, motor trucks, electrical materials, etc. Quotations should be given c. i. f. Spanish port. Correspondence may be in English. Samples are requested. References.

31,819—A manufacturing company in Scotland desires to purchase light engines and frames and back axles for the construction of light motor cars.

31,825—A commercial representative of firms in Brazil is in the United States and desires to secure an agency for the sale of iron and steel products, agricultural machinery, automobiles, wearing apparel, metals, oils, paper, fish, canned goods, knit goods, leather and wire. Reference.

31,826—A manufacturer's agent in Australia desires to secure an agency for the sale of canned foods, beverages, toilet articles, hardware, automobile accessories, confectionery and advertising specialties. Reference.

31,834—A firm of commercial agents in Spain desires to secure the agency for the sale of a good type of American automobile. Correspondence should be in Spanish. Reference.

31,843—A firm in Sweden doing an import business desires to secure an agency for the sale of cutlery, hardware, table ware and inner tubes for bicycles. Reference.

31,863—A commercial agent from Italy is in the United States for a short time and desires to secure an agency for the sale of electrical goods and supplies, automobiles and motor accessories from manufacturers only. References.

31,868—An industrial and commercial agency in France desires to purchase and secure an agency for the sale of goods of all kinds, food stuffs, fruit, machinery, automobiles, bicycles, etc. Quotations should be given c. i. f. Lagos. Correspondence may be in English. Reference.

31,890—A firm in England desires to purchase motorcycle and bicycle parts and accessories. Quotations should be given c. i. f. Liverpool or London. Reference.

31,891—A company in India desires to purchase and secure an agency for automobiles, hardware and electrical novelties, in fairly large quantities, and of good quality. Quotations should be given c. i. f. port in India. Payment, cash against documents, or bills at 30 days sight. References.

31,905—An importer in India desires to secure an agency and purchase piece goods (cotton, woolen and silken), fents, hosiery, drapery, embroidery, boxes, stationery, chemicals, watches, colors (for ink), paints, aluminum ware, enamel ware, hats, shoes and other leather goods, umbrellas, typewriters, safety razors, fountain pens, machinery (for paper boxes), sewing threads, perfumery essential oils, hardware, cycles and automobiles and all accessories and specialties, oils, cutlery, etc. Quotations should be given c. i. f. port in India. Payment 60 days against documents, in dollars. Reference.

31,908—A builder of automobiles in Belgium desires to purchase all materials, parts, etc., which are used in the construction of chassis and bodies for automobiles. Quotations should be given c. i. f. Antwerp. Payment, cash. Correspondence and catalogues should be in French. References.

31,910—A man in France established in the automobile and garage business wishes to secure an agency for an American low priced car, a truck, trailer and motorcycle. Reference.

31,914—A firm in Norway desires to purchase and secure an agency for the sale of automobiles, motors and accessories. Quotations should be given c. i. f. Norwegian port. Payment through banks in Norway. References.

31,916—A merchant firm in Mexico desires to purchase for retail trade a line of staple and fancy groceries, including flour and sugar; a line of novelties, including cheap jewelry, toys, bicycle accessories, tires and a line of cheap to fair grade of plated table ware. Quotations should be given f. o. b. shipping point. References.

31,943—A firm in Norway desires to purchase automobiles and bicycles and their accessories, electrical apparatus and supplies, rubber, rubber goods, agricultural implements and supplies, trucks, tractors, motorcycles and accessories and motors. Quotations should be given c. i. f. Norwegian port. Payment through banks in Norway and in New York. References.

31,948—A firm in India desires to purchase or secure exclusive agency for the sale of medium priced motor cars, 1½ to three-ton motor trucks and automobile accessories. Quotations should be given f. o. b. American port. Payment, bank credit in New York, against documents. Reference.

31,969—A merchant in Madeira desires to purchase and later secure an agency for the best and medium grades of cord tires for automobiles, sizes 815 by 105 millimeters and 880 by 120 millimeters, 10 of each for the first shipment. Quotations should be given c. i. f. Liverpool, Lisbon, port of Madeira, or f. o. b. New York. Terms, generally three months' credit. Correspondence may be in English. References.

31,987—An agency on commission is desired by a man in Belgium for the sale of automobiles and accessories, motorcycles, oils and greases. Reference.

31,995—A firm in Brazil, through its agent in the United States, requests the representation of manufacturers of agricultural and industrial machinery, bridge material, steam and hydraulic pumps, printing machinery, railroad materials, automobiles, barbed wire, iron and steel products, tools, belting, cement, news print paper, rubber tubes and tires, cloth, cod fish, fruits, fibers, electrical lamps, hardware, gasoline, kerosene, lubricating oils, kitchen utensils, leather trunks and bags, tooth paste, wheat flour and also the representation of a steamship company. References.

32,003—A trading company in the United States, having agencies throughout Europe, Latin America, Africa and Australia, desires to purchase and secure an agency for chemicals, dyes, drugs, food stuffs, cotton piece goods, hosiery, underwear, shoes, leather, automobiles and accessories and general merchandise. References.

32,009—A firm of importing merchants in New Zealand desires to secure an agency for the sale of automobiles and accessories, hardware, farm machinery, etc. Reference.

32,011—A brokerage firm in Switzerland desires to purchase and secure general agencies for the sale of motor cars, trucks, motor boats, coal, machinery, linseed oil, condensed milk, food stuffs, locomotives, rails and all kinds of railway supplies. Quotations should be given c. i. f. Rotterdam or c. i. f. Hamburg. Payment, cash with order. Correspondence may be in English.

32,012—The American purchasing agents of a firm in southwest Africa desires to receive catalogues, samples and price lists for merchandise to be shipped to that country, such as soap, biscuits, sweets, tinned fruits, jams, cheese, chocolate, cocoa, coffee, rice, tea, hops, hardware, tools, enamel ware, crockery, agricultural machines, automobiles, cement in iron casks, building materials, iron and steel products and textiles. References.

32,016—An importer in Belgium desires to secure an agency and consignment, and eventually purchase sewing machines, bicycles and tires, accessories, washing machines and baby carriages. Payment, two-thirds cash with order, balance upon receipt of goods. Correspondence and catalogue should be in French.

32,025—A firm in Switzerland desires to purchase and secure an agency for machinery, tools, iron, steel, motor cars, trucks, tractors, etc.; chemicals, leather, shoes, hides and articles for the boot and shoe industry. Quotations should be given f. o. b. American port or c. i. f. European port. Correspondence may be in English. References.

32,058—An agency is desired by a merchant in France for the sale of automobiles and trucks. Quotations should be given c. i. f. St. Nazaire or Nantes. Correspondence should be in French. Reference.

32,062—An electrician in Australia desires to secure agencies for the sale of automobile batteries for self-starters and also petrol-electric rural house lighting sets up to 2500 candlepower. Payment, cash against documents. Reference.

32,138—A mechanical engineer from Switzerland has been in the United States for some time, is now about to return to Switzerland and desires to secure an agency for the sale of machinery, hardware, tools, oils, belting, automobiles and accessories and tires. References.

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Linscott Well Known in Supply Trade

One of the best known automotive supply houses in the New England field is the Linscott Supply Co., of which F. C. Linscott is president and manager. This concern is located at 568 Commonwealth avenue, Boston, and has, during the past year, installed a separate department for the better accommodation of its rapidly increasing business.

F. C. Linscott, President and Manager, Linscott Supply Co., Boston, Mass.

Mr. Linscott has been associated with the automotive industry at the Hub for many years, and under his efficient management the Linscott Supply Co. has greatly augmented a merited patronage founded on integrity, fair dealing and good will.

Among the well known equipment recently taken on by this concern, and with the distributors of which it is meeting with unqualified success, is the Universal cylinder reboring tool for any motor, as well as special equipment for babbitting and boring the cylinders of the Ford model T car and Fordson tractor, manufactured by the Universal Tool Co., Inc., 435 Woodward avenue, Detroit, Mich., maker of other well known Utco products.

The display of automotive equipment made by the Linscott Supply Co. at the Boston show, booth 521, attracted unusual interest.

SUPERIOR AUTO SALES CO.

The Superior Auto Sales Co., Inc., is now doing business at 710 West Third street, Dayton, O., as distributor of King motor cars for southern Ohio, Kentucky, Tennessee and the southeast portion of Indiana. It operates branches at Lexington, Ky.; Columbus and Cincinnati, O. It also has the sales agency for Diamond T motor trucks. The officers are as follows:

President, W. I. Lynam; vice president, L. L. Allan; secretary-treasurer, A. H. Walker; sales manager, H. F. Greene.

HOW AUTOMOBILE TYPES WERE NAMED.

According to the Locomobile Co. of America, Bridgeport, Conn., the word "coupe" comes from the French word "couper," to cut, and the style was developed from the cutting down of the coach.

The limousine, one of the oldest and most generally liked of all the bodies adapted for the motor car, is named after the old province of Limousin, in central France, where the weather was proverbially bad.

The word sedan is, of course, derived directly from the sedan chair, which was used everywhere in the 17th and 18th centuries.

A limousine becomes berline when the driver's compartment is fully built in. The berline coach originated in 1660 in the town from which the name was taken.

The victoria is the open type fitted with a folding top covering the rear seat only, and originated in 1851 in the form of an elegant little pony phaeton built for Queen Victoria.

SLOCUM, AVRAM & SLOCUM LABORATORIES REORGANIZED.

The Slocum, Avram & Slocum Laboratories, Inc., Newark, N. J., has been reorganized and a complete change in management has been effected. It will be remembered that, during the war, this company gained a high reputation as a successful manufacturer of the Schneider eight and 4.7-inch quadrant for the United States government. This company has recently secured a large amount of additional capital and will conduct an extensive commercial business. The manufacture and sale of all Flexite products, heretofore produced by F. R. Blair & Co., Inc., has been taken over by the Slocum Laboratories, including universal joints, propellor shafts and flexible magneto couplings.

The manufacturing plant of Slocum, Avram & Slocum Laboratories, Inc., is located at Newark, N. J., and the executive offices are in the Woolworth building, New York City.

LINSCOTT MOTOR CO. DISTRIBUTES REO CARS AND TRUCKS.

The Linscott Motor Co., 566 Commonwealth avenue, is the Boston distributor of Reo cars and trucks, made by the Reo Motor Car Co., Lansing, Mich. The manager of the Linscott Motor Co. is Charles G. Andrews, who is in charge of the sales of both passenger cars and the "Speedwagon," the well known commercial motor wagon produced by the Reo Co. The Linscott Motor Co. has been in the automobile business in the Boston and New England field ever since the motor car was first put on a trade basis, and is consequently one of the best known dealers in the eastern section of the country.

DORT DISTRIBUTORS IN CHICAGO SECTION.

Louis Geyler, distributor in the Chicago section of Dort cars, made by the Dort Motor Car Co., Flint, Mich., announces the appointment of the following new dealers in his territory:

Central Auto Co., DeKalb; T. S. Bunn, Inc., Bloomington; C. P. Wing, Elgin; Coats' Garage, Aurora; W. R. Beck, Frivoli; Bettendorf Garage, Bettendorf, Ia.; Pet-Gun Motor Car Exchange, Brennen & Doty and Stewart Auto Sales Co., Chicago.

DISTRIBUTION OF ARTCRAFT AUTO TOPS.

H. S. Norton, sales manager of the General Top Co., Cleveland, O., announces that the Starkweather Co., Detroit, Mich., of which C. C. Starkweather is president, has been appointed distributor of Artcraft tops in the lower peninsular of Michigan, northwestern Ohio and northeastern Indiana. The first shipment of Artcraft tops was a special express train load of 104 tops from the factory in Cleveland.

Beacon Street Front of Headquarters of Linscott Supply Co. and Linscott Motor Co. in Boston. The Sales Rooms and Offices Face on Commonwealth Avenue.

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Columbia Pyramid Starting and Lighting Brushes

THE majority of manufacturers of starting motors and lighting generators for automobiles send them out equipped with Columbia Pyramid Brushes.

Renewal Sales are Enormous

Supplying Columbia Pyramid Brushes for renewals is a profitable business to a live dealer. . . . . .

Make This Profit Yours
Write Your Distributor Today

NATIONAL CARBON COMPANY
Incorporated
Cleveland, Ohio San Francisco, Calif.
Canadian National Carbon Co., Limited, Toronto, Canada

7220

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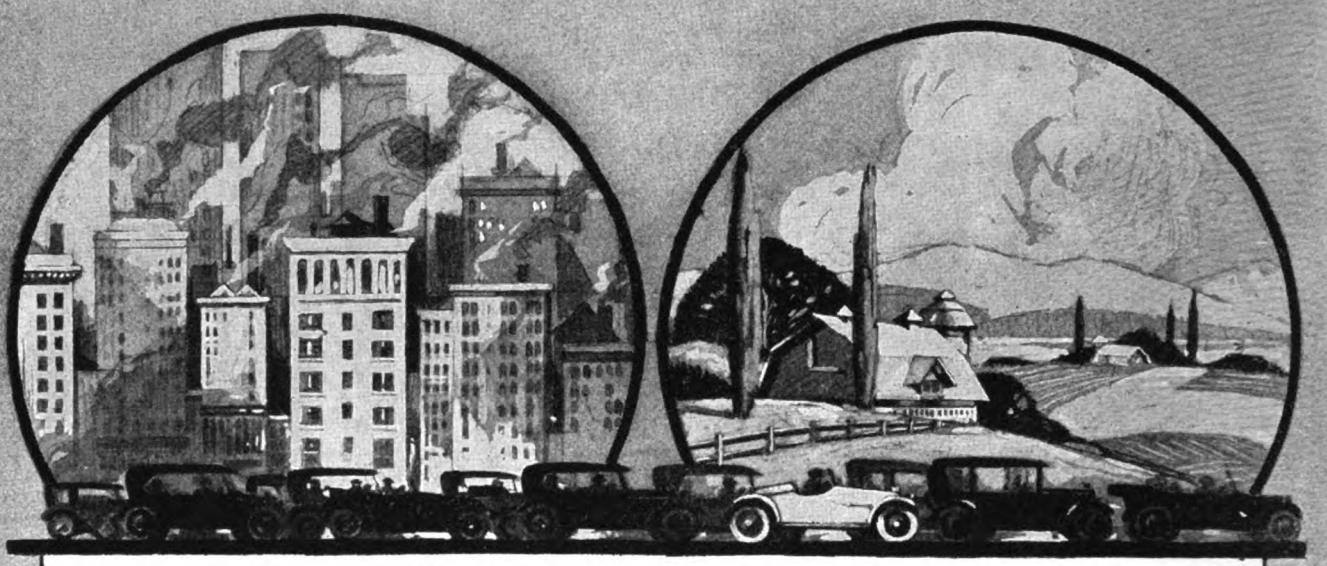
Profitable Battery BUSINESS



—As Broad As Your Selling Territory

Universal Batteries are perfectly suited to every starting, lighting and ignition need—on any make machine. Years and years of service have established Universal supremacy of longest life—greatest strength and soundest economy.

Every motorist who *owns a Battery*—no matter what make it is—who needs new parts, repairs or service, is a Universal "prospect."

Universal parts are most successfully employed on all standard makes of batteries.

Universal Batteries plus Universal Service enable any dealer, anywhere to secure a lion's share of Battery Business. It is like a "loaf" of trade as compared with a scant few crumbs of business. The broadest business a dealer can conduct or create because it embraces the outer-most limitations.

We are pioneers in the manufacture of Batteries. Years of experience stand back of every Universal Battery—every Universal part. Years of profitable trade stretch before dealers who stock the Universal line.

We also manufacture Universal Sealed Glass Cell Batteries for house lighting systems and parts for any make of sealed glass cell Batteries.

Write *now* for our agency proposition. Do more business. *Make* more money. *Give* your trade Battery value and service value that keep customers contended.

Universal Battery Co.
3420 So. LaSalle St., Chicago, Ill.

UNIVERSAL Batteries

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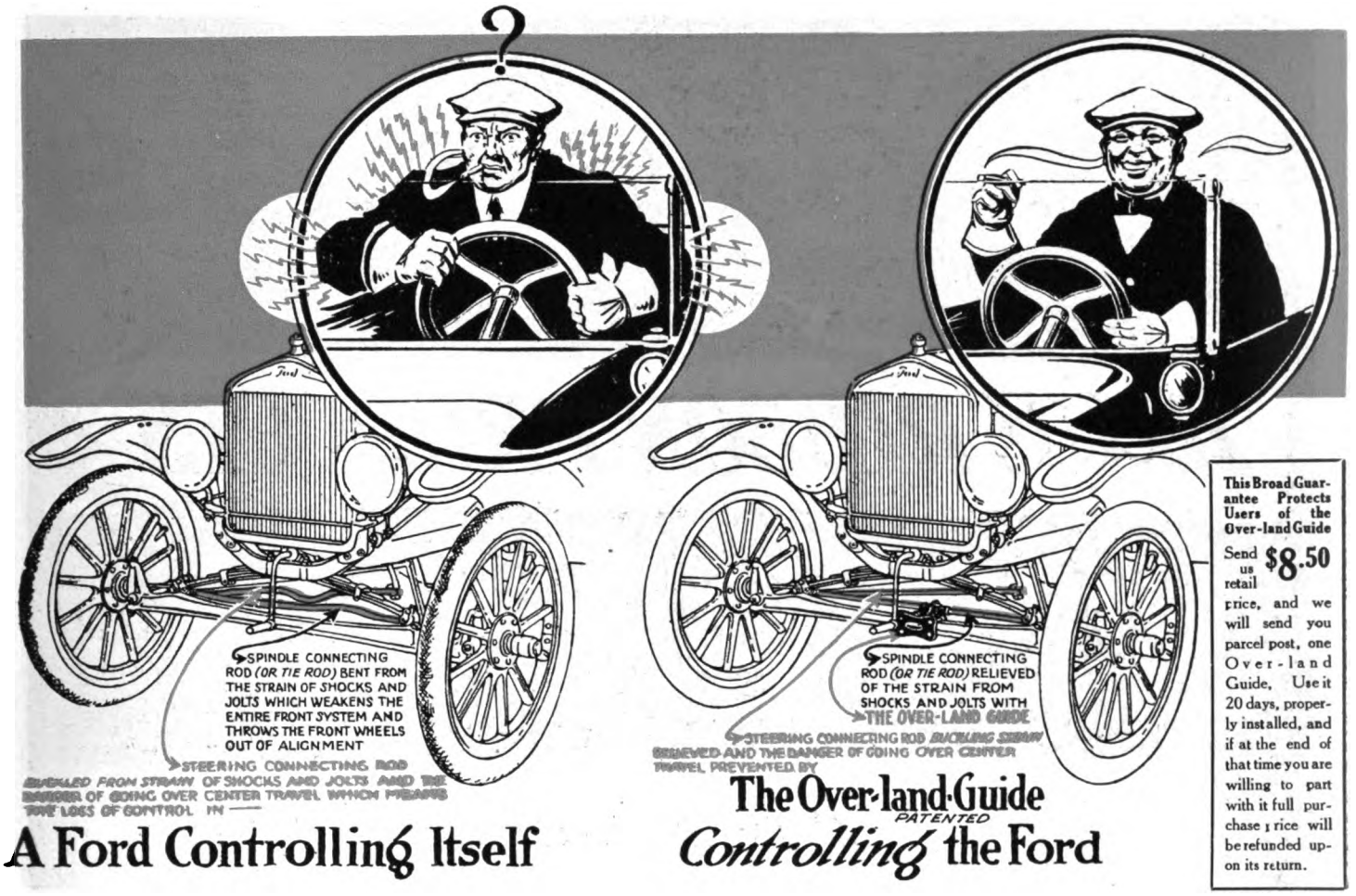

This Broad Guarantee Protects Users of the Over-land Guide

Send us retail price, $8.50, and we will send you parcel post, one Over-land Guide. Use it 20 days, properly installed, and if at the end of that time you are willing to part with it full purchase price will be refunded upon its return.

The Over-Land Guide is proving to be the big selling Ford car and truck equipment of the year.

Every owner wants and needs one. It sells at sight and creates a demand wherever Ford cars or trucks are used. Sales are limited only by the number of these cars and trucks in service.

The Over-Land Guide is a highly developed and wonderfully efficient device that absolutely controls the steering of the Ford car or truck. It is sold with an iron-clad guarantee of service, economy and satisfaction.

The kind of equipment that every jobber and dealer can place and which adds greatly to his prestige and profits.

A Wonder Worker

The driver can steer the machine with the tips of his fingers.

The wheels will always keep in alignment over rocky, rutty or hilly roads, through sand, gravel, mud holes or washouts.

Even though the steering gear be broken or fails to work, the Over-Land Guide will continue to keep the Ford car or truck on a straight course.

It protects the entire front system and steering mechanism from undue wear and breakage. The Over-Land Guide absorbs all shocks and stresses.

It Stops All Wabbling, Scooting and Creeping

It eliminates all danger from a blow out of a front tire at any speed, as the Over-Land Guide will hold the Ford car or truck to its course.

It eliminates all strain in driving. It will save in time, repair bills and car service.

It is car insurance of the highest order. It insures against ditching of the car, which oftentimes proves fatal to the occupants.

The Over-Land Guide cannot fail to work or get out of order. It is finely made, sightly and will last for years. Estimate the worth of an Over-Land Guide from any viewpoint—safety, service and dependability

The OVER-LAND GUIDE bolts to the center of the front axle and the center of the spindle connecting rod (or tie rod), securely relieving the vibration and strain in the spindle connecting rod (or tie rod) and the entire front system, and the steering mechanism up to the steering wheel. Can be attached in a few minutes by anyone.

It will add generally to car efficiency, convenience, pleasure and comfort, and assures the longest possible service life to a Ford car or truck.

The Over-land Guide Protects These Parts

Spindle connecting rod (or tie rod). Spindle body arms and bushings. Spindle body and bushings. Ball and roller bearings and hub. Steering connecting rod and ball joints. Steering gear ball arms. Steering post bracket, bushing and bolts. Steering post. Steering gear pinion. Steering gear drive pinions. Steering gear internal gear case and bushings.

Also helps to keep axle from breaking or bending—and may save the entire car from destruction.

Jobbers and Dealers—We offer a 100% utility attachment. All Ford car and truck owners will buy at sight. Sales are limited only to the number of Fords in use. The market is everywhere. Our proposition is liberal and the discounts will satisfy you.

Write or wire for full particulars

THE MEIXELL COMPANY
216 Board of Trade Building
INDIANAPOLIS, IND.

(Automobile Sundries Co., 18 Broadway, New York, N. Y. Sole Foreign Agents)

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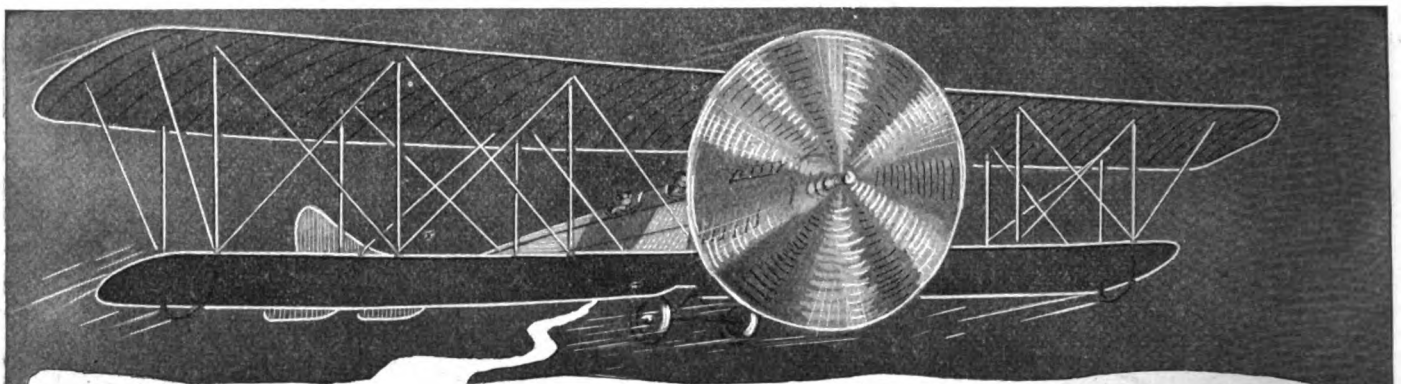

BLUE RIBBON PRODUCTS

Are a Standard Line

Jobbers and Dealers stock the full Blue Ribbon line as they do all other tried, proven and constantly selling goods.

Blue Ribbon products are made by specialists who depend wholly on the quality and service giving satisfaction afforded by lines bearing their trade mark.

There can be no experimentation at the expense of the consumer, dealer or jobber. All Blue Ribbon Specialties must be as good as they are practical in every day use as it is possible to make them.

A nation wide trade, enormous expenditures devoted to development and promotion work as well as the maintenance and operation of the largest plant of the kind in America is too great a stake to gamble against quality.

Blue Ribbon Products today stand supreme. They are passed over the counters backed by an unqualified guarantee on the part of the trade that can leave no doubt as to their merits.

That is why Blue Ribbon Products are a standard line and will always continue to be so.

That is why all jobbers and dealers sell and list them in their catalogues.

Above all else that is why the consumer buys Blue Ribbon trade marked products. Blue Ribbon Products cost no more than others, yet represent the most profitable line that can be placed by the jobber or dealer.

If the **BLUE RIBBON** trade mark is to be seen on your shelves or counter you have a silent salesman in your store that is always working, always earning.

All Blue Ribbon Specialties are sold in quantities to meet any requirement.

The full line affords a complete line and it pays to specialize in known quality goods.

Blue Ribbon Specialties Include:

Blue Ribbon Cold Cream Hand Soap
Contains no pumice or sand.

Blue Ribbon Leak Proof Cement
A permanent radiator cement.

Blue Ribbon Nickel Polish
For nickel parts and trimmings.

Blue Ribbon Auto Body Gloss
For automobile or furniture.

Blue Ribbon Lightning Carbon Remover
Quick and positive in action.

Blue Ribbon Black Enamel
For lamps, hoods, radiators and metal parts

Blue Ribbon Auto Top and Seat Dressing
A waterproof dressing that restores tops and seats.

Blue Ribbon Hand-On Patch
A self-vulcanizing patch for shoes and tubes that never fails.

Blue Ribbon Cream Metal Polish
For any metal. An easy, quick working, satisfactory polish.

Blue Ribbon Oil Soap
A pure vegetable oil soap for any purpose. All quality and efficient.

This is the time to consider your winter and spring requirements

Jobbers and Dealers: Prices and discounts at request.

International Metal Polish Co.

INDIANAPOLIS, INDIANA.

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Chief Keokuk

Get This Message From Texas!

STRAIGHT from the shoulder—Mr. Distributor—from rough and ready Texas! Without any bones about it, The Anderson Rubber Co. of Dallas—will tell you.

> "After eighteen months handling this tire—we have one hundred and seventy-five dealers in the State and not one of them has registered a kick against Standard Four Tires."

"Service that pleases the customer," as one dealer puts it, "also pleases the dealers." Standard Four distributors can make their dealers an unusually profitable Quality Tire Proposition.

Our increased production now offers splendid opportunities to a few more distributors. Write at once for territory, terms and details on advertising and sales help furnished to Standard Four distributors.

Standard Four Tire Company

DEPT. B — KEOKUK, IOWA

BRANCHES AT

245 N. PENNSYLVANIA ST. *Indianapolis*

342 WEST PICO STREET *Los Angeles*

"Chief of the Tire Tribe"

Standard Four Tires

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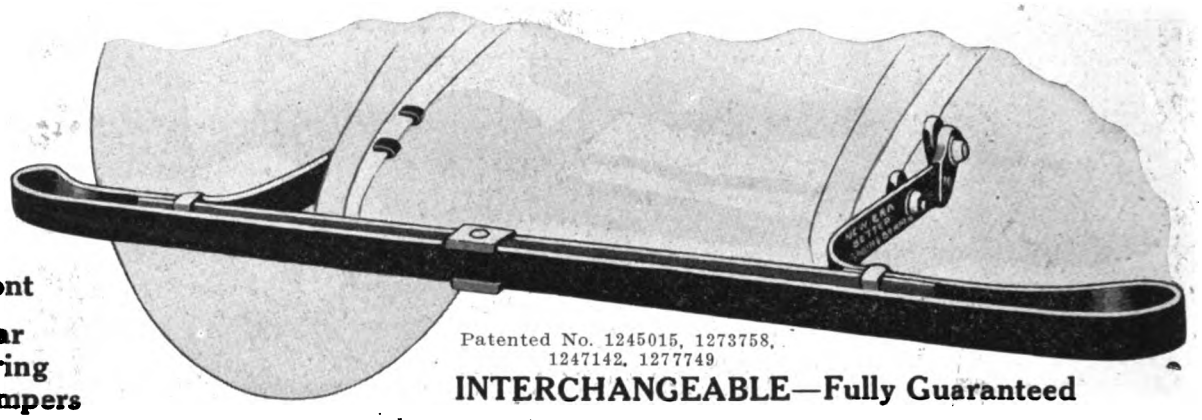
NEW ERA
"Better" Spring Bumpers
FOR ALL MAKES OF CARS



Front and Rear Spring Bumpers

Patented No. 1245015, 1273758, 1247142, 1277749

INTERCHANGEABLE—Fully Guaranteed

STRONGER — LIGHTER — NEATER

Unusual Resiliency

The New Era "Better" Spring Bumper is constructed of tempered spring steel bars, one inch apart, which are tied in center with three-inch plate, assuring an unusual strength and resiliency. A bumper is as strong as its weakest point, and there are no weak points in the New Era Bumper.

Absorbs Shocks

No matter from which angle the New Era "Better" Spring Bumper strikes, it absorbs and distributes the shock throughout its entire length and arms. It fully protects both occupants and car, and is the best automobile insurance obtainable.

No Dealers' Dead Stock

One big important feature is the free exchange of attaching arms for any more salable cars; so not a dollar's worth of dead bumper stock need be carried. A positive evolution and solution.

1920 Prices—Tax Absorbed

Standard Black	$11.55
Special Black	13.65
Ford—Front and Rear in Black	10.50
Rustproof Zinc Nickel, extra	2.10

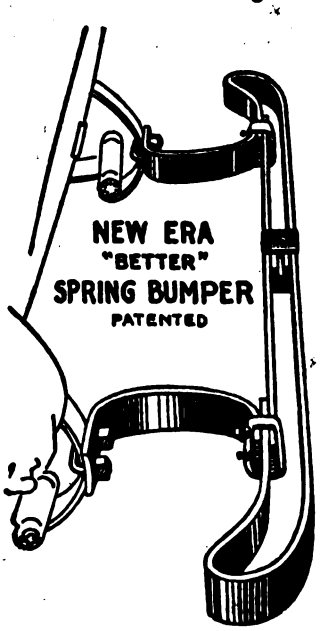
Ready and Profitable Dealer Sales

The public are sold on their knowledge of a spring bumper, it being the only practical and real shock absorber. There is an unusual opportunity for dealers to make liberal discount and quick stock turnover. No dead stock. Excellent factory co-operation. Get full details at once.

No Cutting or Drilling of Frames

Our Patented Universal Adjustable Hook on attachments are quickly attached to 95% of all makes of cars; on the fronts as well as on some rears. Hooks are attached to either top or bottom edge of frame, without interfering with splash pan.

Remarkable Resiliency



New Era Spring & Specialty Co.

1177 Hamilton Ave. **Grand Rapids, Mich.**

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At 100 Miles an Hour

A Motor Would Operate Efficiently Without Piston Rings

Gas leakage past the pistons at this high speed of piston travel would be negligible. The fraction of a second required for the power stroke would not give the gas time to flow past the lubricated bearing face (5" long or more) of the pistons. **But the valves could leak**—at best they have not more than 3/16 inch bearing surface and are neither lubricated nor kept free from the carbon deposit.

The same principle applies to a motor at normal speeds equipped with closely fitting pistons and rings. Seldom is compression lost around the piston as compared to leaking valves—the length of the self cleansing and lubricated bearing surface prevents leakage. But valves and valve faces—subjected to a flow of free carbon—are nearly always carbonized and leaky except when freshly ground. Until the advent of Flexedge Valves—which continually remove carbon—there was no method of maintaining clean valve faces.

Flexedge Valves Are Self Seating and Self Grinding They Prevent the Accumulation of Carbon

Flexedge Valves keep this narrow valve bearing surface clean, bright and tight. Built up of paper-thin steel laminae, they flex slightly along their elastic edges like the leaves of a spring, removing carbon as fast as it is deposited. Once installed they never need re-grinding—compression is always held and motor performance is greatly improved.

TESTED AND PROVED BY OVER 5,000 DEALERS

Make an accurate compression test with a gauge on your own car—then install a set of Flexedge Valves. Run the car three months or more, then test again, and note how compression is held by Flexedge. Dealers who have made this test turn Flexedge Valves into quick profits because they know the results they give. If you haven't tried Flexedge Valves, send for a test set today. Free particulars on request.

Regular and oversize stem sizes of Flexedge Valves for all of the popular makes of cars. Stock from your jobber.

FLEXEDGE JOBBERS

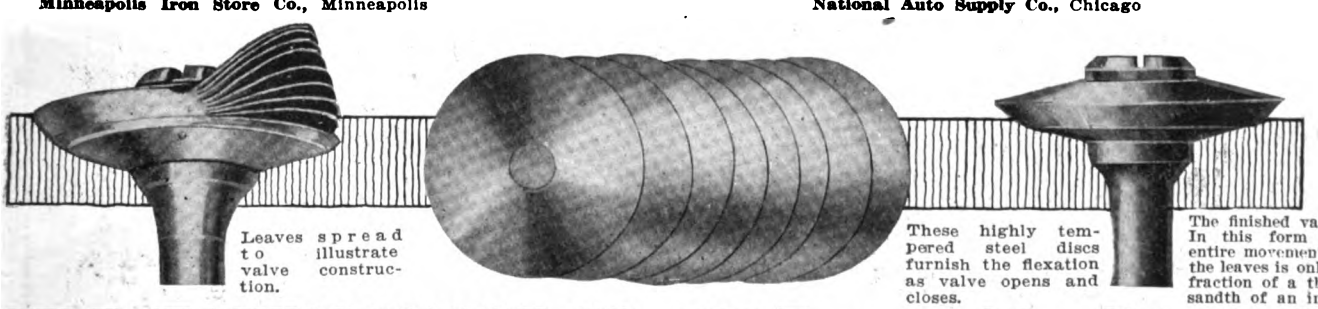
Herring Motor Co., Des Moines, Iowa
The Gibson Co., Indianapolis, Ind.
Motor & Machinists Supply Co., Kansas City, Mo
Reinhard Bros., Inc., Minneapolis, Minn.
Repass Automobile Co., Waterloo, Iowa.
Chicago Automobile Supply House, Chicago, Ill.
Motor Car Supply Co., Chicago, Ill.
Western Motor Supply Co., Milwaukee, Wis.
The Automobile Supply Co., Detroit
Electric Appliance Co., Chicago
The Auto Equipment Co., Denver
Nicols, Dean & Gregg
Minneapolis Iron Store Co., Minneapolis

Chandler & Lyon Company
San Francisco
Seattle
Los Angeles
Tacoma
Spokane
San Diego
Portland

The Beckley Ralston Co.
New York
Detroit
Chicago
Kansas City
Pittsburgh
San Francisco

Kopac Brothers
Omaha, Nebr.
Norfolk, Nebr.
David City, Nebr.
Columbus, Nebr.
Schuyler, Nebr.

Continental Auto Supply Co., Chicago
National Auto Supply Co., Chicago



Leaves spread to illustrate valve construction.

These highly tempered steel discs furnish the flexation as valve opens and closes.

The finished valve. In this form the entire movement of the leaves is only a fraction of a thousandth of an inch.

SELF SEATING VALVE CO., 708 Townsend St. Chicago, Ill.

(When Writing to Advertisers, Please Mention the Accessory and Garage Journal.)

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DUFF

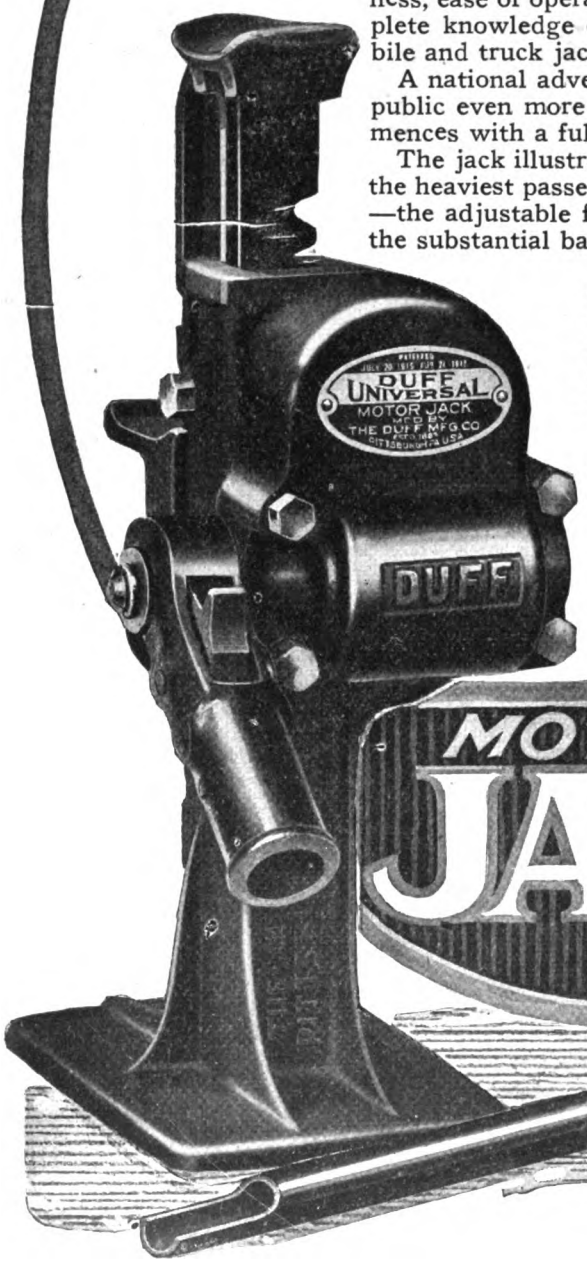
DUFF JACKS Are Profitable to Sell

Duff Jacks for automobiles and trucks are members of a nationally-known family, which embraces high-quality jacks for every form of lifting service. The Duff makers are jack specialists; have been for many years. Wherever there is a lift, there is a Duff that is best for it.

The special standards of quality—of strength, simplicity, sureness, ease of operation and long life—made possible by this complete knowledge of jack manufacture distinguish Duff automobile and truck jacks from all others.

A national advertising campaign, which will make the general public even more familiar with the merits of Duff Jacks, commences with a full page in the Literary Digest for March 27.

The jack illustrated is the Duff Universal No. 411. Easily lifts the heaviest passenger cars. Note its many quick-selling features —the adjustable footlift to fit any car, the long coupled handle, the substantial base.



The high grade materials and workmanship in this jack are duplicated in the various models for truck service. Duff Jacks have been adopted as standard equipment by many of the leading truck makers because of their strength and durability.

The discounts to dealers selling Duft Jacks are unusually liberal. Ask your Jobber, or write us for detailed information.

THE DUFF MANUFACTURING CO.
Pittsburgh, Pa.

New York Chicago Atlanta San Francisco

Exclusive Makers of Genuine Barrett Jacks

MOTOR CAR JACKS

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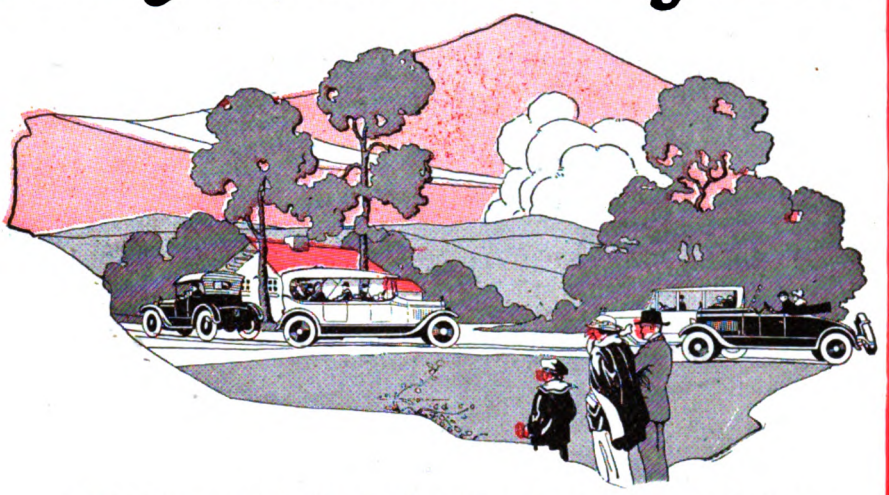
Distributors and Dealers!

This is the day of the Sterling Tire!



WE want wholesale distributors and retail dealers to write at once for special information. We still have some unoccupied territory.

The endurance that all tire makers have been striving to build into their tires for many years, we now give you — in STERLING TIRES!

Our earnest desire to make a thoroughly reliable tire, coupled with the fact that we have every manufacturing resource, has produced an endurance in STERLING Tires that has seldom been equalled—and never excelled by any other tire.

Double Profit for Dealers!

The dealer makes two profits on every STERLING Tire: First, he makes his customary cash profit—and second, he makes the additional profit which always comes from a satisfied user.

Better write us today!

Sterling Tires

STERLING TIRE CORPORATION

Rutherford, New Jersey, U. S. A.

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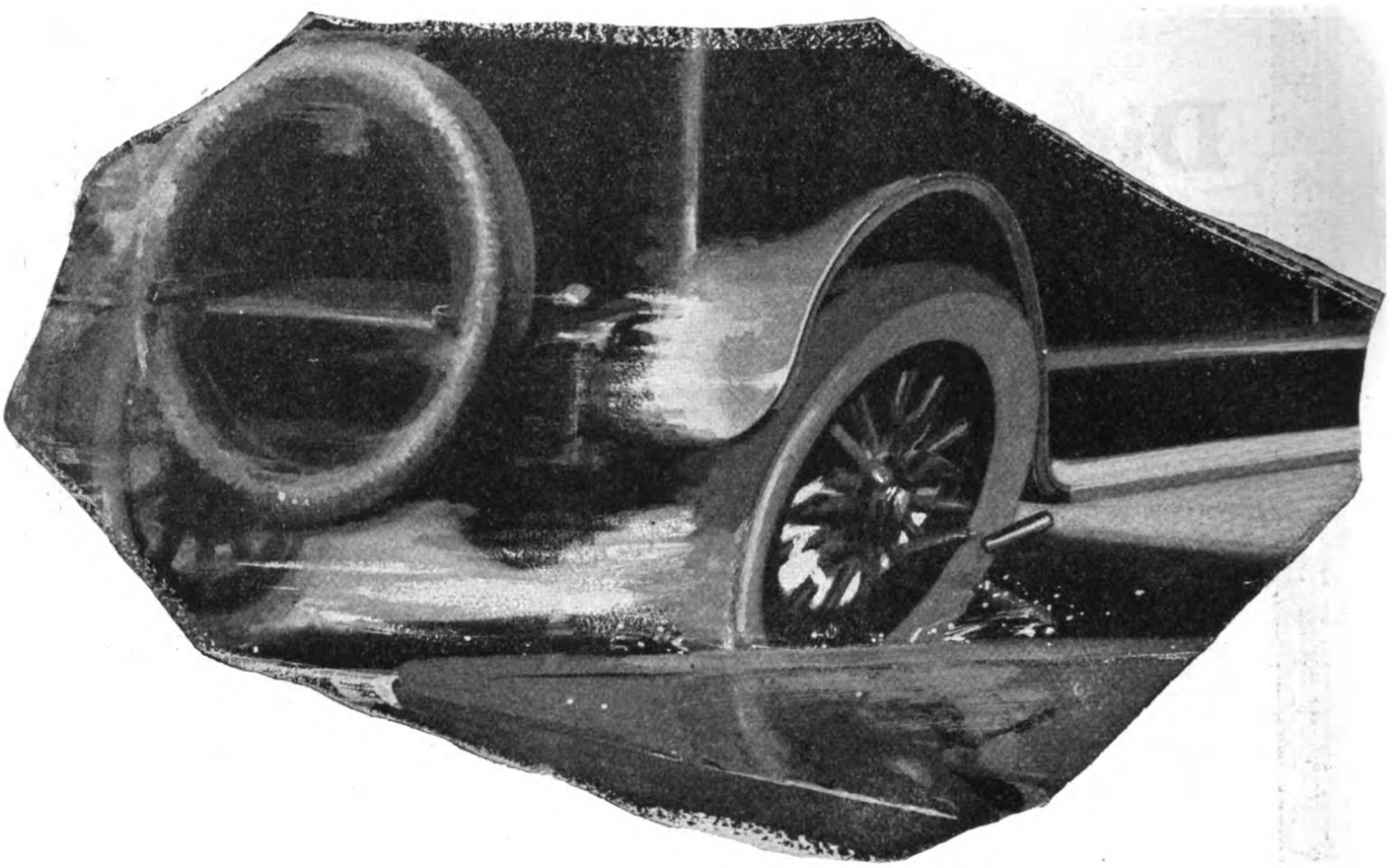
Powrlok in the Rear Axle



Prevents Skidding

Powrlok at one stroke minimizes skidding—the greatest danger—and stops stalling—the greatest inconvenience in automotive travel.

This is accomplished by a simple, time-tried and proven mechanical principle, which automatically distributes the power to the rear wheels as it should be—in direct proportion to the traction or hold which they have on the ground—instead of in indirect proportion as the ordinary differential does.

Powrlok has been in actual use for over five years in upwards of 40,000 cars, trucks and tractors—invariably making good.

Upon examination, you will find it as simple and durable, as accessible and fool-proof as the finest differential ever built.

We believe no other device has ever met with such a unanimous approval by manufacturers. Over Sixty manufacturers of cars, trucks, tractors and industrial trucks now use it as standard equipment.

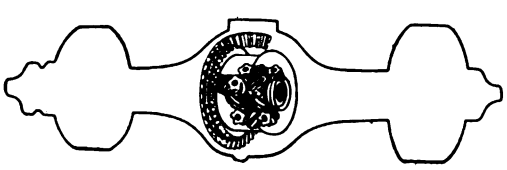
Complete information is given in our new booklet—"More Than A Differential." Ask for it.

Specify Powrlok in the rear axle when you buy any car, truck or tractor.

THE POWRLOK COMPANY, 1107 EAST 152nd Street, CLEVELAND, OHIO.

Foreign Representatives: The Powrlok Company, Ltd. Offices: 24 Maddox St. Regent St., London, England.
19 Avenue McMahon, Paris, France.

POWRLOK

"More than a  differential"

For Motor Trucks, Passenger Cars, Tractors, Industrial Trucks, Axles and Transmissions

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Madison

SUPERB ENDURANCE

Tires

Behind the Hand-built Madison

THERE is, first of all, our experience of forty years in this business, and our unshaken conviction that only the most careful hand-workmanship can build genuine tire endurance.

There is the pride of our craftsmen in the work of their hands—the essential human element.

There is our great modern plant at Buffalo, N. Y. where we have installed every mechanical aid.

Finally, there is the compelling enthusiasm of those who are selling and using the hand-built Madison, who have tried and proven the superb endurance of the tire. Will you join them?

Madison Tire and Rubber Company, Inc.
254 West 57th St., City of New York

859 Boylston St., Boston
1606 Michigan Ave., Chicago
Factories: Buffalo, N. Y.

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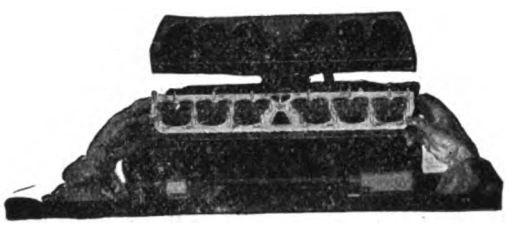
Victor Copper-Asbestos Gaskets Are For All Types of Motors



Showing perfect alignment of Victor Gaskets with studs, combustion chambers and waterways

Victor copper-asbestos cylinder head gaskets are stamped from dies cut according to the manufacturer's original specifications.

Each gasket is made for a particular motor and fits that motor perfectly.

With dies for more than 300 cylinder head gaskets and for more than 4,000 types of gaskets of all kinds, jobbers have a complete line to draw upon. They can furnish every motor from this line alone.

Write us for our proposition

Victor Manufacturing & Gasket Co.
World's Largest Gasket Manufacturers
5750 Roosevelt Road Chicago, Illinois

The World's Standard Gaskets

VICTOR COPPER-ASBESTOS GASKETS

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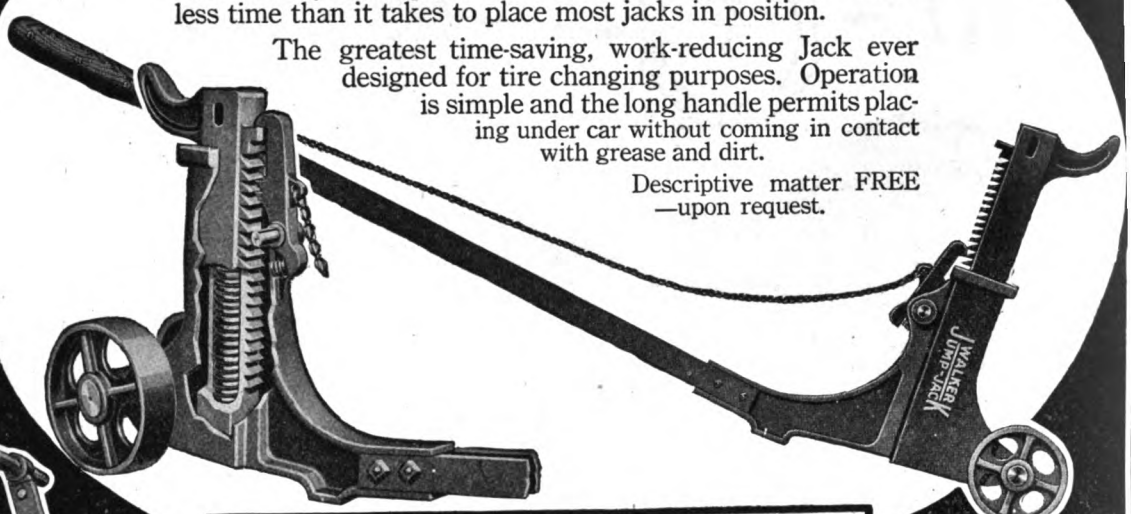
TWO MASTER JACKS

Walker Jump-Jack

The new Walker Jump-Jack is designed especially for tire removal and replacement. It meets a specific need in a most efficient way. Jump-Jack is built for speed—it raises a car in less time than it takes to place most jacks in position.

The greatest time-saving, work-reducing Jack ever designed for tire changing purposes. Operation is simple and the long handle permits placing under car without coming in contact with grease and dirt.

Descriptive matter FREE —upon request.



Walker Manufacturing Co.
Racine, Wisconsin

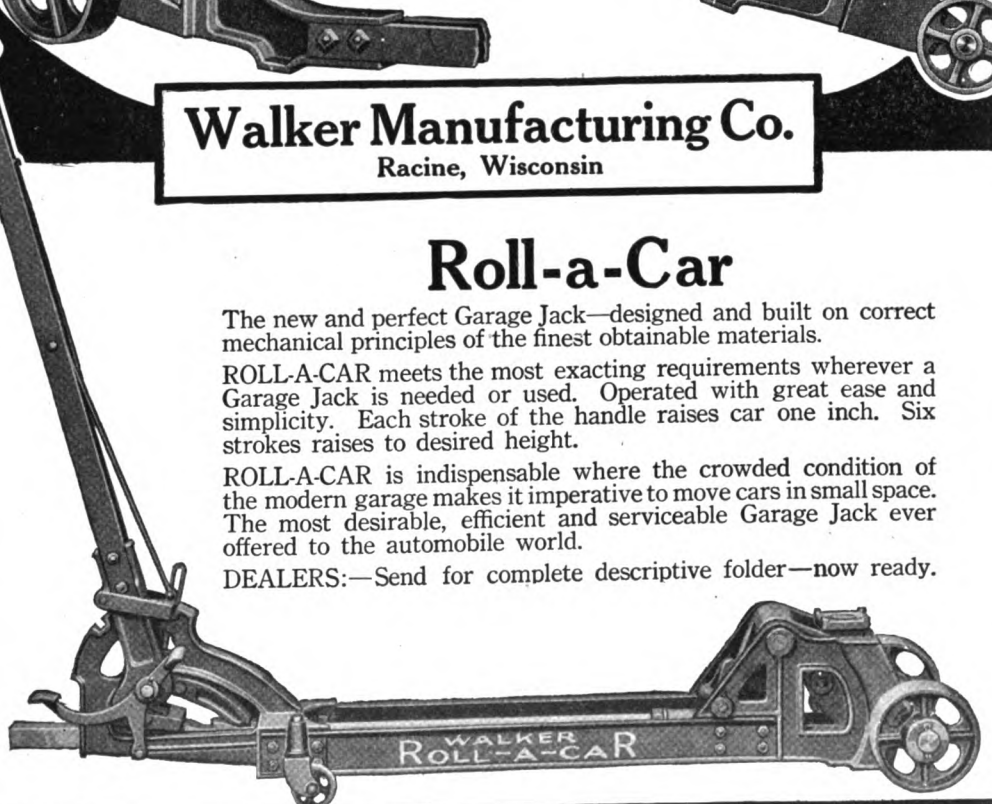
Roll-a-Car

The new and perfect Garage Jack—designed and built on correct mechanical principles of the finest obtainable materials.

ROLL-A-CAR meets the most exacting requirements wherever a Garage Jack is needed or used. Operated with great ease and simplicity. Each stroke of the handle raises car one inch. Six strokes raises to desired height.

ROLL-A-CAR is indispensable where the crowded condition of the modern garage makes it imperative to move cars in small space. The most desirable, efficient and serviceable Garage Jack ever offered to the automobile world.

DEALERS:—Send for complete descriptive folder—now ready.



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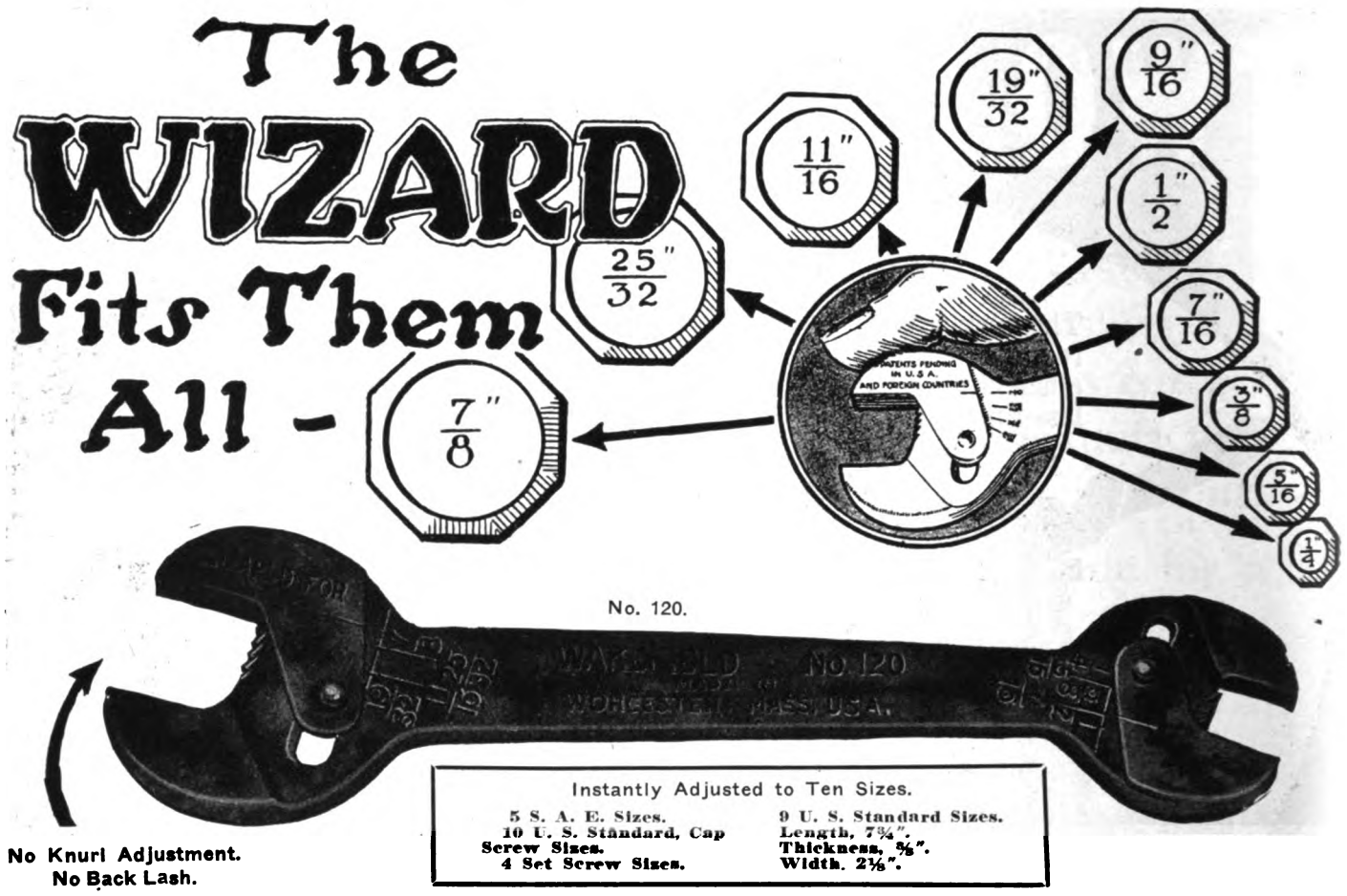

The Wizard wrench represents more than 30 years' specialization. No other tool equals its utility or time economy.

It is as serviceable as the average wrench set, for its 10 settings will fit practically all the bolts, nuts and cap screws of a car, truck, motorcycle or bicycle.

These range from 1-4 to 7-8 inch, can be made instantly, and there is no need of changing tools or finding or fitting parts.

Wizard wrenches are made of the finest grade of heat treated steel and bear the Wakefield trademark that is known the world over as a guarantee of quality.

In the hands of the mechanic, the driver or the owner it means a saving of time. Compared with the cost of tools of equal utility it is remarkably cheap.

The List price is $1.50

Jobbers and Dealers

Wizard wrenches sell at sight. We offer a sales proposition that means big profits. The discounts are generous. Write today for details.

C. E. WAKEFIELD

WORCESTER, *Sole Manufacturer, Established More Than 30 Years* MASSACHUSETTS

WAKEFIELD WIZARD WRENCH ADJUSTABLE OPEN END

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Quality Tires

THE AMAZON is a *Quality Tire* through and through.

Quality means unusual wearing qualities—less trouble—greater resilience than you could hope to receive from ordinary tires. It means true tire economy.

The satisfaction AMAZON TIRES give users make it a particularly desirable and profitable tire to handle.

The Amazon Rubber Company is protected against the scarcity of cotton fabric and in addition to supplying its own organization will be able to take care of a limited number of new accounts.

Dealers: Applications for territory should be made immediately

THE AMAZON RUBBER COMPANY
AKRON, OHIO

Rubber Biscuits Ready for Shipment on Upper Amazon River

AMAZON

(When Writing to Advertisers, Please Mention the Accessory and Garage Journal.)

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Stanwood is the big word in tire mileage.

Service of an advanced character—*exceptionally long, unusually care free*—rendering all ruling standards null and void.

VISION and TIRE TALENT are the main constructive forces back of STANWOOD TIRES, the Cord, the Fabric, the Truck Pneumatic.

Stanwood Rubber Company, Inc.

Executive Offices:
9 East Fortieth Street, New York City
Chicago Branch: 1712 So. Michigan Ave.
Plant: Elizabeth, N. J.

NOTE: DISTRIBUTORS are invited to investigate Stanwood products —Tires, Tubes, Repair Materials.

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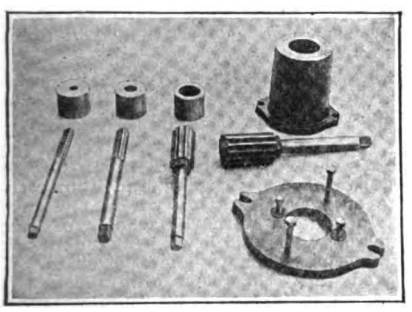
ACCESSORIES, EQUIPMENT AND TOOLS FOR THE GARAGE AND REPAIR SHOP

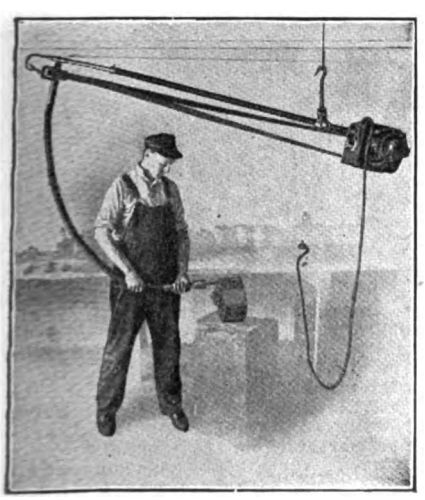
"Tribune" Transmission Rebuilding Tool for Ford Cars is designed to accurately ream the bushings in the gears of the Ford transmission. The reamers are made from hardened tool steel, especially adapted for this class of work and are provided with the proper guides for the different size gears. It is stated that work that originally took many hours to do with a lathe may now be done in 30 minutes by the use of the Tribune transmission re-



building tool. Each gear is locked in the large casting provided with the outfit and each reamer is piloted through a hardened steel bushing. The large drum has various diameters turned on the inside to accurately take each gear. All that is necessary to be done, it is stated, is to fit the gear having the new bushing, inside the large casting, bolting the large casting to the face plate when the bushing is ready to be reamed.

Manufactured by the Tribune Engineering Co., Oswego, N. Y. Price, complete, $75.

Stow Suspended Gee Whiz and General Utility Tool was designed to obtain extreme flexibility for grinding and to re-

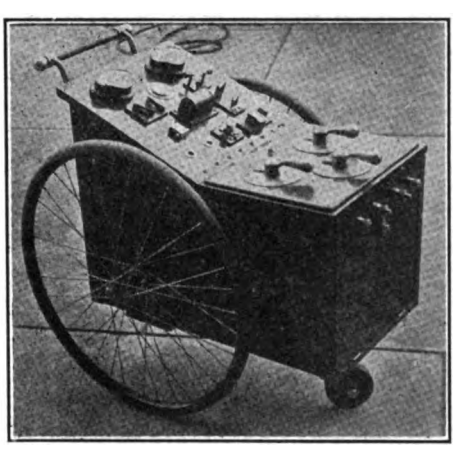


lieve the operator of all unnecessary weight as shown by the illustration. Besides the advantages stated, it is claimed that the tool provides the ideal method of suspending and driving a flexible shaft, insuring long life and low upkeep. Where the lack of floor space is an object or the operator wishes to work over a bench, such an arrangement gives greater flexibility and allows more freedom of movement. These tools can be supplied for light drilling and grinding and with the long arms it is possible to do work over a large area. The Utility tool is easily moved and can be adjusted for length of arm and height of standard.

The Utility tool will operate from any lamp socket and can be supplied for 110 to 220 volts direct current, or 60 cycles single-phase, alternating or universal current. These outfits are made in four sizes, Nos. 1, 2, 3, 4, supplied with a ¼ horsepower motor for the first three sizes and one horsepower motor for the fourth size.

Manufactured by the Stow Manufactur- Co., Inc., Binghamton, N. Y. Prices on request.

The Niehoff Test-Kart is the latest achievement in the way of a complete testing outfit for locating all electrical trouble in the ignition, starter, generator,



battery, wiring, relays, meters; in fact, anything in connection with the electrical mechanism of an automobile. It is not only a time and money saver to garages and electrical service stations, but also a convenience to the public, as it will enable the repair man to determine the trouble on the car while the motorist waits, consequently he can be intelligently informed as to what has to be done, and an estimate given on the approximate cost. The wagon is equipped with leads, ready for attaching to any part of the electrical system for locating shorts and grounds. Storage battery fits right in the wagon. All meters are special and of Weston make. It is the ideal rig for general automotive garage service stations.

Manufactured by Paul G. Niehoff & Co., 232-242 East Ohio Street, Chicago, Ill. Price, $350.

Rie Nie All Rubber Patch is a prepared patch for the motorist, combining patch and cement in a superior article that is applied to the tube puncture with the hands, without the use of tools, and is vulcanized into place by the heat generated by the tire running on the road. Rie Nie patches are made from pure gum rubber

and the best rubber cement obtainable. The manufacturer states that the patch is positively leak proof and makes a lasting repair for rubber goods of all kinds.

Manufactured by the Durkee-Atwood Co., Minneapolis, Cleveland and Toronto. Prices on request.

"Tribune" Camshaft Bearing Aligning Tool for Ford Engines is designed to accurately ream the rear camshaft bearing in the Ford engine and align it correctly with the center and front camshaft bearings. The tool consists of a steel bar of the right size, equipped with two dummy bushings that replace the center and front bushings of the camshaft. After the old

bushings have been removed the rear bushing is replaced with a new one, the reamer is fitted in place and the two bushings on the shaft are locked in place by means of set screws in the same position as the old bushings. In this manner the reamer cuts the rear bushing in line with those of the center and front bearings. The cutter in the tool is easily replaced

when dull so that the life of the tool is practically indefinite. The center and front bushings are usually replaced with new when worn so that the tool need not be used when fitting these two bushings. It is made of hardened steel and finished in a workmanlike manner.

Manufactured by the Tribune Engineering Co., Oswego, N. Y. Price, $5.75.

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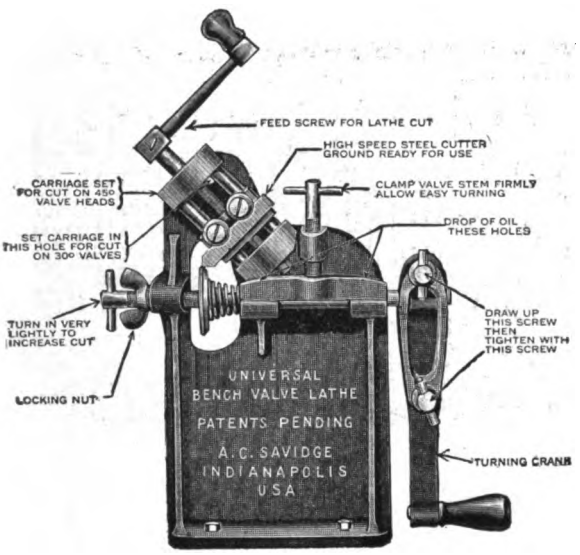


The Savidge Universal Valve Lathe is designed primarily for the service station repair shop. It is a bench tool, combining the desirable features of much higher priced machines, is very simple to operate and does it work with accuracy.

This lathe, it is stated, will reface any valve with 30 to 45-degree heads up to 2½ inches in diameter, and will true the hardest steel, as well as cast iron valve heads.

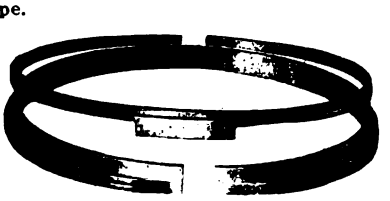
The valve lathe consists of a base casting that fastens to the bench, a detachable, adjustable turning handle, a removable block placed over the valve stem when refacing the valve, an adjusting screw and spring holding valve face in correct relation with cutter, a high speed steel cutter ground ready for use, a feed screw controlling the cutting tool, an adjusting carriage for 30 or 45-degree valves, and an adjustable screw with wing nut, allowing the tension on the valve head to be increased or decreased.

The Savidge valve lathe is manufactured from the best grades of iron and steel, is finished in gray, nickel plated, and they are guaranteed, the manufacturer agreeing to repair or replace at his option, without charge, except for transportation, any lathe which proves defective, if returned to the factory within one year from date of purchase.

Manufactured by the A. C. Savidge Co., Indianapolis, Ind. Price, complete with high speed cutter, ready for use, $12; extra cutter, $1.20.

Ingram Triple Seal Piston Rings show an entirely new thought in design of a two-piece piston ring. They are of two types, regular and De Luxe, which are inserted into piston grooves as one-piece rings and are securely sealed at three points and locked by a lip, thus preventing either of the rings oscillating over the other and opening joints. The locking lip is not an extra part, but is cast as part of the ring itself. Owing to the locking lip securely sealing the joint of the lower ring, while it permits of equal expansion, it at the same time provides a continuous seal at both joints, which prevents the leakage of compression and by-passing of lubricating oil. When the joint of the lower ring opens any distance the opening is protected by the entirely closed upper ring at the point of its positive locking device, the lip. When the ends of the upper ring open any distance on the other side, opposite the locking lip, they are sealed by the lower ring. These rings are sealed at three points, over the face and back of the joints. They have equal expansion and contraction for their entire circumferences and give a perfectly equalized contact with the cylinder wall.

The Ingram triple seal piston rings are made from individual castings, of a special mixture of gray iron, and are manufactured to a high degree of finish by improved methods by which the manufacturer claims accurate sizes and that 100 per cent. of their rings are the true round shape.

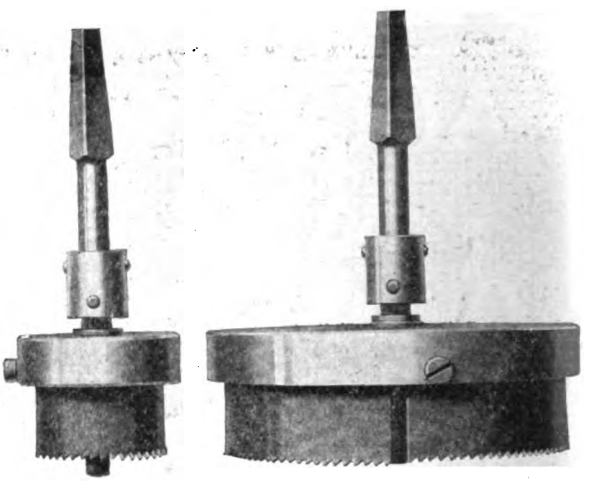


The lower ring is offset, over which the upper ring snugly fits, and the surfaces of rings are provided with oil retaining grooves. The upper ring has a lip that locks the two rings and prevents one ring from sliding around the other and opening the ends. The locking lip also securely locks both rings against any upward or downward motion at the joint.

When cylinders wear larger in the course of long usage it is not necessary to regrind them on account of the perfect wearing contact of these rings on the cylinder walls, which is due to the extraordinary long life of the rolled radial tension put into the rings, also due to their perfect expansion and contact all around

the cylinder wall they show the least tendency to rub and wear the cylinder wall "out of round." The radial tension is put into the rings by the rolling method, which also rolls the name of the ring on the innerside. This is patented and used exclusively by the manufacturer of these rings. The leakage of compression and by-passage of oil with these rings is limited to a maximum of two per cent.

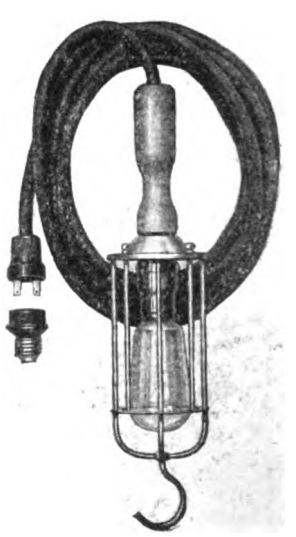
Manufactured by the Ingram Motor Co., Globe Building, 800 Broad Street, Newark, N. J. Prices, De Luxe type, $1.50 to $2.25 each; Ford, per set of 12, $15; regular type, $1.35 to $2. Regular type Ford special, per set of 12, $12.



A New Tool for Cutting Round Holes in Instrument Board of Ford Cars is designed for jobbers and dealers supplying fittings for the new Ford cars equipped with a metal covered instrument board. The two cutting blades are similar to those used in a hack saw, having been tempered and rounded to fit the casting. If a blade is broken a new one is inserted by loosening a set screw. It is stated that by using this tool and a regular hand-curved blade, one can readily cut through the metal covered board in about 1½ minutes.

Manufactured by the Van Sicklen Speedometer Co., Elgin, Ill. Price to the dealer or jobber, $3.

The Duracord Extension Lamp is designed for hard service in and about the garage or service station where the cord comes in contact with the wheels of cars or trucks, and is liable to kink or break, exposing the wires to short circuits. It is stated that Duracord eliminates this trouble, as it is woven in tubular form, covering the rubber insulation of the wire completely, and is made of a material that will stand severe usage without breaking or pulling apart. A special feature of Duracord is the method of fastening the



cable to the handle of the lamp, a patented "hold fast" fitting being provided in the handle, which takes all the strain from the terminals and puts it on the cord itself. It is stated that this feature obviates the possibility of the individual wires pulling away from the terminals. Duracord is a portable cord having a special cover woven from heavy cotton yarn, made similarly to fire hose, and will not scratch highly polished surfaces such as are presented on automobiles.

Manufactured by Tubular Woven Fabric Co., Pawtucket, R. I. Prices on request.

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White Stripe Transmission Lining for Ford Cars is made by a new method of weaving, using two separate sets of threads, one set constitutes a frame work running crosswise and lengthwise. Over this is a separate set of wearing

threads, which protect the frame work of the binding threads completely, it is stated, so that white stripe will not come to pieces as soon as the surface threads are worn through. On the contrary, when the surface threads are entirely worn away, there still remains a complete webbing composed of cross and lengthwise binding threads.

To make White Stripe Transmission Lining it was necessary to construct special looms. The wearing threads in White Stripe lining are of the finest quality hose cord yarn, with 21-ply filler in the cross strands, giving great strength, and preventing side spread. Every strand of White Stripe is treated in such a way as to keep the fabric soft and protect it from the hardening effect of hot oil and friction, producing a smooth grip and long wearing qualities.

Manufactured by the Advance Auto Accessories Corporation, 56 East Randolph Street, Chicago, Ill. Prices and literature on application.

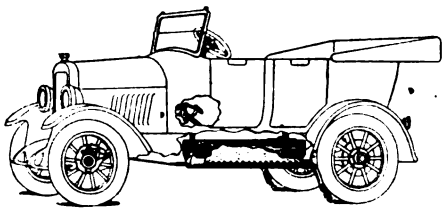
The Red Star Timer for Ford Cars is designed for the discriminating motorist who wishes to get the utmost power from his Ford car. The timer case is a metal stamping having an insulated ring of hard fiber fitted inside, in which are mortised contact shoes. It is stated that the wear occurs evenly and smoothly and that the race does not get pitted or bumpy.

The cam roller consists of a hardened steel arm to which is attached the roller contact. This contact works on the principle of a roller on a roller, that is, the pin supporting the inner roller is made fast to it, while the larger contact roller is allowed to roll freely. It is stated that this feature insures a smooth working, accurate timer that cannot drag or wear angular, as it rolls in perfect contact with the race at all times.

Manufactured by the Auto Components, Inc., 56 East Randolph Street, Chicago, Ill. Price, in the United States, $2; in Canada, $2.75.

The Antiskid-Sander for Automobiles and Trucks is a new device for which the inventor has recently obtained a patent. It is in two forms, in one of which the sand box is fitted to the running board of the car, one at each side, the sand being moved by a spiral extending the full length of the box and driven by a shaft partly rigid and partly flexible, from a gear attached to the front wheel hub on either side. The sand is forced from the boxes into tubes leading down and in front of the rear tires. The device is operated by a suitable pedal connected with the brake pedal and being operated by the foot brake.

A second form of the device stores the sand in two boxes placed under the rear seat at either side, the sand falling by gravity through two tubes extending down in front of the rear tires. A shut-



ter at the bottom of the boxes is opened by a pull cord passing over pulleys from the steering column. The shutter is closed by spring action. A small pin, located in a metal box fastened to the steering column, operates the cord to the shutter. Pressing down the pin opens the shutter, while pulling it upwards closes it.

The device is not at present being manufactured, but interested parties can obtain full information by writing the inventor.

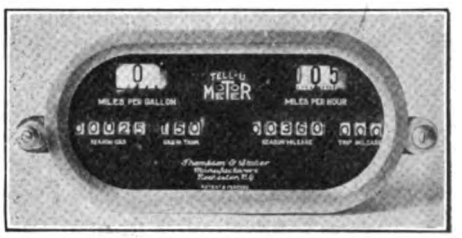
Invented by David Kupfer, care of Henry Kupfer & Son, 118-120 East 51st Street, Chicago, Ill.

The Tell-U-Motor-Meter is a small dashboard instrument about the size of the average speedometer, rectangular in shape, having an elliptical dial on which are plainly shown the total season gasoline used by the engine, the amount of gasoline in the tank and the miles made per gallon. The amount of gasoline in the tank is registered by the motorist when gasoline is filled into the tank, by turning a small thumb screw at the side. While the miles per gallon and the season mileage of the gasoline is obtained through a connection to the vacuum tank, the gasoline meter operates from the vacuum created by the suction of the pistons in the engine cylinders.

The instrument is also equipped with a regular standard speedometer of the magnetic type, which may be either operated from the hub of a front wheel, or from the drive shaft of the car. The speedometer gives the miles per hour, season mileage and trip mileage.

This instrument has been appropriately called the "Automobile Bookkeeper," as it gives the motorist the information he requires in regard to the fuel cost of operating his car. This device may also be found valuable to truck owners as its use gives a continuous check on the amount of gasoline consumed.

It is stated that at every 10th of a gallon the instrument is automatically corrected. Thus, for instance, if it shows 15 miles a gallon for some hundred miles, with the carburetor adjusted correctly,

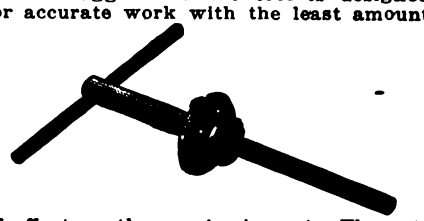


should something else happen to cut down the number of miles, the driver is informed of that fact before more than 1/10 of a gallon has been consumed under the new conditions.

The device is intended primarily for the motorist and not merely for the car manufacturer. It is not expensive, and the fact that it is claimed to be unfailing, accurate and furnishes information that every motorist wants, is expected to make it popular for use on passenger cars and commercial vehicles.

Manufactured by Thompson & Stuber, Rochester, N. Y. Prices and literature on application.

The Junior Safety Reamer for Ford and Fordson is designed to true the valve seats of the Ford and Fordson engine and keep the valves gas tight. The construction is rugged and the tool is designed for accurate work with the least amount



of effort on the repairer's part. The cutter is made of hardened steel and is capable of cutting a true seat, it is stated, regardless of the amount of pressure placed on the reamer T handle by the operator. It is claimed that anyone can

use the Junior reamer, as the depth of the cut is not measured by the pressure applied, but by the setting of the high-speed steel cutter.

Manufactured by the A. C. Savidge Co., Indianapolis, Ind. Price, in carton, $2.25; extra cutters, 60 cents each.

The Greb Bearing and Race Attachment No. 2 is designed to be inserted behind magneto, electric generator and starter bearings and races where it is impossible for the jaws of a puller to be attached. The device is provided with a knife edge which makes insertion easy,

while the puller may be fastened to the attachment and the race or bearing easily pulled. It consists of a two-piece forging, joined by two stud bolts, and tightened by two wing nuts after being located back of the race or bearing.

Manufactured by the Greb Co., Inc., 172-3 State Street, Boston, Mass. Price, $4.

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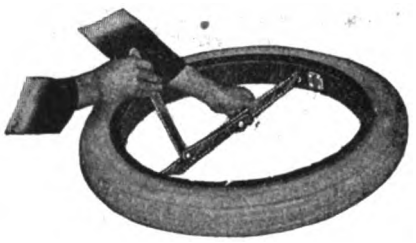
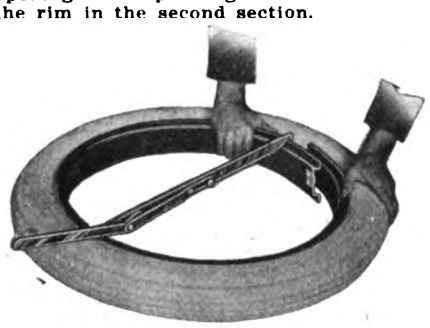
The "G T L" Push and Pull Rim Tool is designed for removing tires from demountable rims with the least effort. The power of the tool, it is stated, is multiplied one to nine, so that by applying a force of 100 pounds to the handle, a 900-pound pressure is exerted at the rim.

The tool is of durable construction, being made of steel throughout, consisting



of two sections, easily assembled when needed for the different sized rims from 30 to 36 inches in diameter.

The larger section consists of a long steel bar, having a hook at one end, and turned flanged edges in which the second section slides when opening or closing the rim. The handle is attached to the first section, a short distance from the hook, and to this is fastened a short bar of steel, having a slot in one end, which fits the opening corresponding with the size of the rim in the second section.



The second section is also provided with a hooked end, similar to the first, these ends slipping over the edge of the rim when being opened or closed.

The tool is made throughout of the best of material and, it is stated, will do practically all work without the use of other tools.

Manufactured by the Metal Products Manufacturing Co., 2416 University Avenue, Minnapolis, Minn. Prices, plain, $3.50; japanned, $3.75; white nickel, $4; bronze, $4.25; polished nickel, $5. Adjustable for 30, 31, 32, 33, 34, 35 and 36-inch tires.

The Huskee Two-Speed Portable Electric Drill was designed to supply an existing demand for an electric drill that would be free from objectionable features peculiar to some tools of this type, at the same time adding a few new and novel improvements that should make it particularly interesting to service station repairers. The two-speed feature is especially effective when metals of different degrees of hardness are encountered, as only a second is required to make the change from a fast to a slow speed and this may be easily done while the drill is in motion. The change of speed is accomplished by simply pulling out or pushing in a pin that is located on the bottom of the gear case.

The gears in the gear housing are attached to shafts (not studs), which gives the gearset a rigidity not otherwise obtained. The housing is grease and oil tight and simply encloses the gearset, protecting it from dust and dirt. Two spirit levels are attached to the Huskee drill, one on the side for horizontal drilling and one at the top for vertical work. This enables the repairer to see at a glance whether he is drilling straight or not.

The "lightning" switch is located in the handle, under the finger tips, and, it is stated, that this is the quickest and most positive switch in action that can be produced, and is claimed to be 100 per cent. faster than others of like type. It is guaranteed for a period of five years under any and all conditions.

With the Huskee drill is included, free of charge, a substantial wooden stand,

strong and well made, to be used as a holder for the drill when not in use. This in a measure provides insurance that the drill will be kept in proper shape for use.

The Huskee drill is furnished complete with Jacobs geared chucks, stocked regular for 110 or 220 volts, with the motor universal for alternating or direct current.

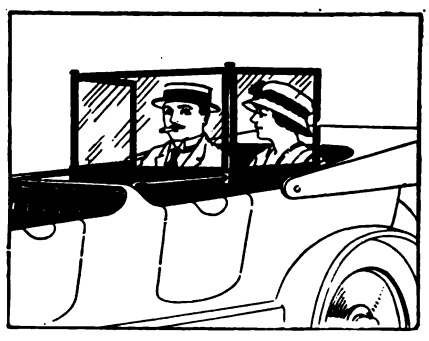
Manufactured by the Consolidated Machine Tool Co., 42-44 Southbridge Street, Worcester, Mass. Price, 110-volt, $78; 220-volt, $82. Sold by jobbing trade or may be purchased direct. Specify voltage required.

The J. H. Tonneau or Rear Seat Shield was designed and perfected with the idea of being adaptable for use on any car built and especially for use on domestic cars.

The shield is a patented device that is attached by fasteners at the rear of the front seat and when not in use can be folded down out of the way, occupying about the same space as a folded robe.

The shield consists of a main frame with two folding wings, fitted with a fine quality of glass. A removable water proof apron hangs from the bottom of the shield when in use, affording complete protection from under draughts and keeping the robes clean and dry. When not in use the apron folds over the shield, out of the way.

The shield is mounted on a pair of extending steel arms, which are attached to a pair of steel body irons securely fastened to the frame of the front seat, beneath the upholstery. The shield is firmly attached to the extending arms by means of a pair of heads. A simple turn of these allows the shield to be drawn back and to be rigedly fastened upon its main supports. Once in position, a slight push or pull will open or close the shield or place it in any position desired, where it is held by friction and the locks.

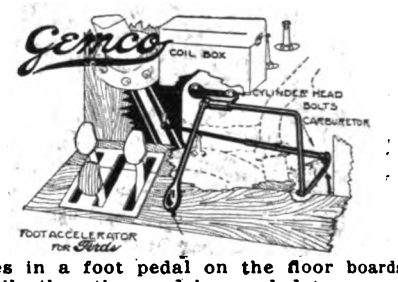


The side wings are held by friction to any angle desired by turning them as a door or shutter. Placed at an angle they deflect the wind from the passengers in the tonneau.

The J. H. tonneau shield can be easily attached to any car in a few moments time, giving the advantages of an open car, or the protection of a closed as desired.

Manufactured by the Tonneau Shield Co., Inc., 1777 Broadway, New York City. Prices on request.

The Gemco Accelerator for Ford Cars is designed to be attached in such a manner that the operation of the accelerator pedal will not tire the driver. The pedal consists of a rod bent in the form of a double letter L, attached by a hanger to the two rear engine head bolts at the top of the engine. One end of the rod termin-

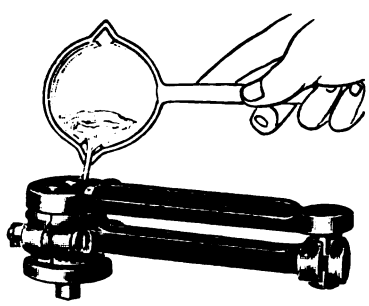


ates in a foot pedal on the floor boards, while the other end is coupled to an arm or rod fastened to the carburetor throttle rod. The action of the accelerator is stated to be entirely independent of the hand throttle and either may be worked without interfering with the other.

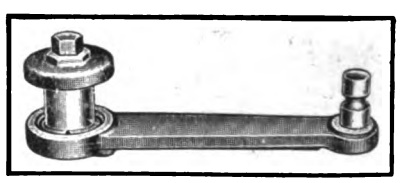
The accelerator is made throughout of the best of material and may be attached in a few moments time by any one handy with tools.

Manufactured by Gemco Manufacturing Co., Milwaukee, Wis. Prices on request.

"Tribune" Babbitting Jig is a patented device with which it is possible to pour new babbitt bearings in Ford connecting rod bearings in a simple manner. The jig consists of a pin to take the place of the



wristpin and a stud to form the arbor for the new bearing, both securely fastened at the correct distance apart on a cast arm. The arbor is equipped with a grooved cap, fastened to it by a machine bolt, while the end of the arm is provided with a groove similar to the cap which positions the bearing when held on the arbor. Holes are provided in the fixed end of the arm through which the molten babbitt is poured. The connecting rod is



placed in the jig, the sides of the bearing fitting the grooves above and below, the jig is tightened, placed in a vise and the molten babbit poured in through the openings in the end of the arm.

The jig is made throughout of the best of material and by skilled workmen and is guaranteed to be accurate.

Manufactured by the Tribune Engineering Co., Oswego, N. Y. Price, $1.50 each.

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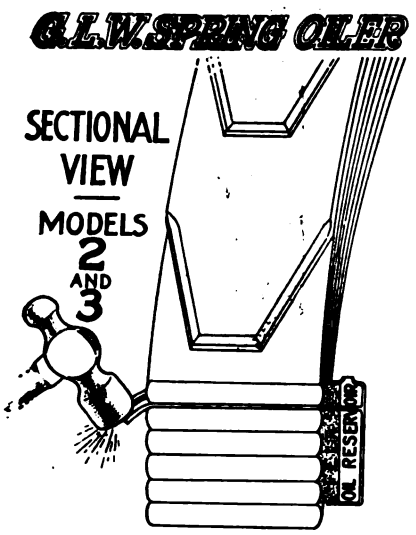
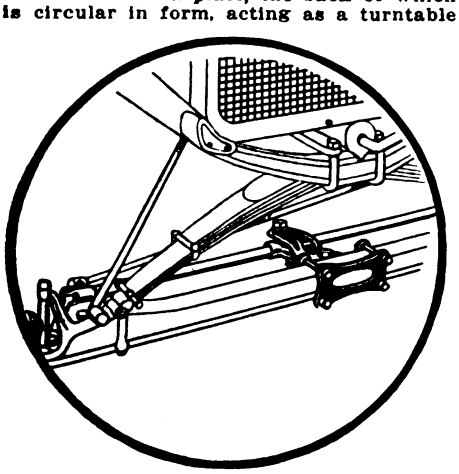
The G. L. W. Spring Oiler is designed primarily for cantilever springs, the manufacturer stating that it can also be used equally as well on springs of other types, fitting springs five inches wide or less. The oiler consists of a metal container, one side of which is filled with felt wicking, fitting snugly against the leaves of the spring at the side as shown in the illustration. The oiler is fastened to the spring by a thin strip of metal, which



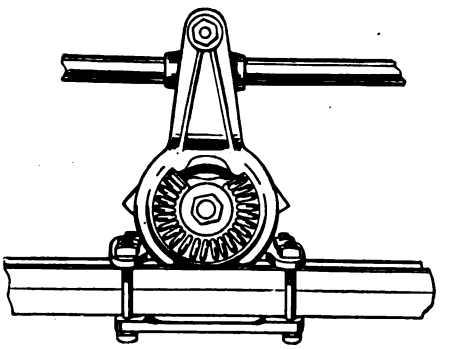
passes through between the top leaf and the leaf under it, and is attached to the spring by bending over the end with a hammer as shown. The insertion of the strip is accomplished by placing a jack under the center of the spring, raising the car body slightly, allowing the spring ends to open enough so that a screw driver can be inserted under the leaf when the strip is inserted. It is stated that this device will keep the spring leaves lubricated and free from rust and allow them to work freely without squeaking.

Manufactured by the G. L. W. Spring Oiler Co., Savoy Theater Building, San Diego, Cal. Prices and literature on request.

The Over-Land Guide for Ford Cars consists of a spring actuated attachment connecting the radius rod of the steering gear with the front axle. The device consists of a malleable iron casting shaped in the form of an arm, in three sections. The first section consists of a clamp that is fastened securely to the front axle by four bolts and a plate, the back of which is circular in form, acting as a turntable

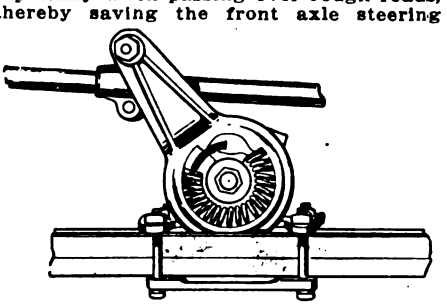


on which the movable arm travels when the steering gear is turned. The second section includes the arm, having a similar shaped circle, which is fastened to the first circle by a large bolt, the two circles being packed in cup grease and, it is stated, are practically weather proof. The third section is made up of a tubular clamp that



fastens to the radius rod, the end of the cast arm being attached to it by means of a bolt fastening. A floating spring is fitted to the circular plate of the arm, acting as a means of springing the arm back into a central position after the steering gea has been turned to either side.

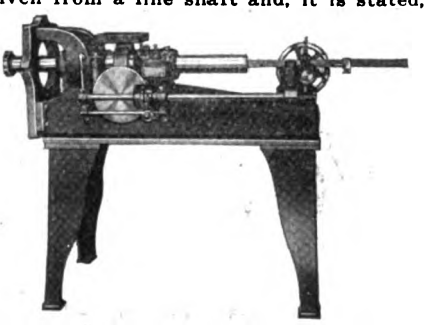
It is claimed that this device will greatly improve the steering of the Ford car, especially when passing over rough roads, thereby saving the front axle steering



gear and its component parts from excessive wear and bending of the parts. The device is made from the best of materials throughout and is guaranteed to give satisfaction.

Manufactured by the Meixell Co., 216 Board of Trade, Indianapolis, Ind. Price, $8.50, in localities where not represented by the jobbing or dealer trade.

The New Marvel No. 5 Cylinder Reboring Machine is designed for service station machine shops where a high class of cylinder reboring is desired. It is power driven from a line shaft and, it is stated,



is a great labor saver, one man being able to set the machine on a cylinder reboring job, start it, and attend to other work while the reborer is in operation.

The Marvel reboring machine is built for hard service, from the best material obtainable, by skilled workmen. It is equipped with variable feed speeds and an automatic release, enabling the owner to multiply the man power of his shop.

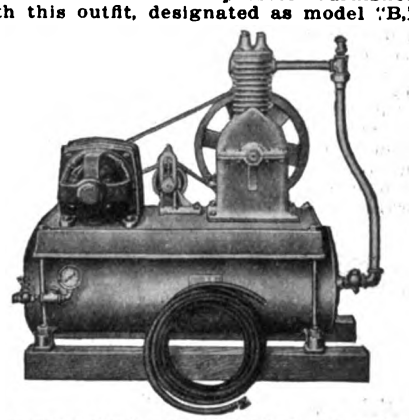
It is stated that this machine is unequalled for accuracy, speed, reliability, capacity and simplicity of operation.

Manufactured by the Marvel Machinery Co., 511 Loan and Trust building, Minneapolis, Minn. Prices and literature on application.

The Curtis Style "V" Motor Driven Stationary Air Compressor is manufactured for garage and service station work, is a self-contained outfit, including all the necessary equipment and possessing the power to successfully handle tire inflation for all sizes of passenger car tires and many of the smaller pneumatic truck tires.

The outfit consists of a steel tank capable of carrying a pressure of 150 pounds and includes gauge and safety pop valve, the necessary piping between the compressor and tank, as well as dash pot and check valve. Fifteen feet of best oil proof hose with tire chuck is included in the outfit and an alternating or direct current motor as desired.

The Curtis air compressor furnished with this outfit, designated as model "B,"



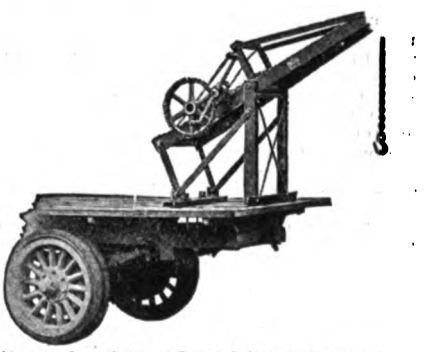
is the controlled, splashed oiled, air cooled type, with belt fan flywheel, belt tightener and leather belt drive or, if desired, may be furnished with a cut flywheel gear, raw hide pinion and gear guard. The outfit comes mounted on 4 by 4-inch hard wood skids, electric cord, push bar and hose rack not included.

This model of compressor is listed in five sizes with electric motors of five different powers, ranging from ¼ horsepower to three horsepower on the larger size. Extras may be included, if desired, with prices according.

Manufactured by the Curtis Pneumatic Machinery Co., New York office, 30 Church Street; factory, St. Louis, Mo. Prices and literature on request.

The Manley General Utility Garage Crane is designed for general use about the garage or may be mounted at the rear of a truck body and used as a wrecking crane for towing in disabled passenger cars or trucks. The General Utility crane is complete with wood portable base, mounted on roller casters, and is constructed of steel throughout, except the gearing, which is cast iron, and the base, which is seasoned white oak.

Due to its four-unit construction, it is stated, two men can take it apart and put it together again in five minutes time.



So it can be changed readily into a wrecking crane mounted on a service car or for garage use. Or it may be disassembled, taken in a touring car to the point needed and quickly reassembled.

The General Utility crane is claimed to be especially adaptable for unloading cars or trucks from freight cars, removing cars from ditches and lifting the rear or front ends of passenger cars and trucks.

Manufactured by the Manley Manufacturing Co., York, Pa. Prices, No. 100, 1½ tons capacity, weight 500 pounds, $125; No. 101, two tons capacity, weight 400 pounds, $113.

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The New Burd Quick Seating Piston Ring is of the step-joint type, the outer surface, which comes in contact with the cylinder wall, having raised edges, which wear down quickly, it is stated, seating perfectly with a glass-like surface in harmony with the cylinder wall, in about 45 minutes. A channel, .002 of an inch in depth is in the center of the face and carries an oil film that prevents cylinder wear during the seating process.

In automobile cylinders that have been run for some length of time the inside cylinder walls attain a hard, glass-like surface. The piston rings attain a similar surface, which is desirable and necessary for obtaining maximum efficiency, and until a piston ring does obtain such a surface there is considerable loss of power, wastage of gasoline and lubricating oil.

There has long been a demand from garages and repair shops for a piston ring

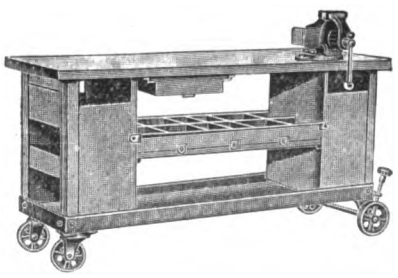
having the quick seating feature of a narrow ring, combined with the wall pressure tension of a wide ring.

The Burd quick seating ring is made of the highest quality dense tough gray iron, filtered so that all impurities are removed to insure absolute uniformity of metal texture, maximum strength and resiliency, prompt and perfect seating and freedom from flaws, porous spots and other defects. They are ground to micrometric accuracy of .00025 of an inch, are exceptionally resilient, exert an unvaried wall pressure and, it is stated, will not break down under cylinder heat conditions. The Burd quick seating piston ring promptly adjusts itself to a new or worn cylinder, within reasonable limitations, and perfect seating is obtained almost immediately.

Manufactured by the Burd High Compression Ring Co., Rockford, Ill. Rings are made in all sizes and for practically every make and model of engine, sizes up to four inches inclusive, retailing at 60 cents each; over four inches and up to five inches, 70 cents each.

Manley Portable Work Benches Nos. 201 and 202 are designed respectively for small garages and the larger service stations. It is of substantial steel construction throughout with the exception of the wood top, which is of heavy two-inch oak planking, to which the vise and other tools may be fastened. The steel drawers are provided with wood partitions and are guaranteed not to bind. The bench is mounted on steel roller casters and is equipped with a locking device, so that work may be performed at the vise in similar manner as at a stationary work bench.

All tools necessary for a certain repair job may be carried on this portable work bench and, it is stated, saves unnecessary steps while doing the work. The Manley

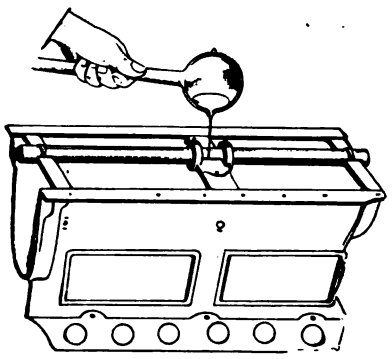


portable work bench No. 201 is small and light and is intended primarily for minor repairs and service work. Bench top is 44 inches long by 13 inches wide and 34 inches high, weighing 150 pounds.

The Manley portable work bench No. 202 is larger and heavier and intended for use mostly in general repair shop work. The bench top is 64 inches long by 20 inches wide and 34 inches high, weighing 300 pounds.

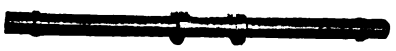
Manufactured by the Manley Manufacturing Co., York, Pa. Prices, No. 201, $38; No. 202, $52.

"Tribune" Rebabbitting Fixture for Ford Engines is designed to provide a quick and easy means of rebabbitting



the main bearings of the Ford engine. The fixture consists of a shaft the exact size of the crankshaft, and long enough to reach from the outside of the front bearing to the outside of the rear one. On this

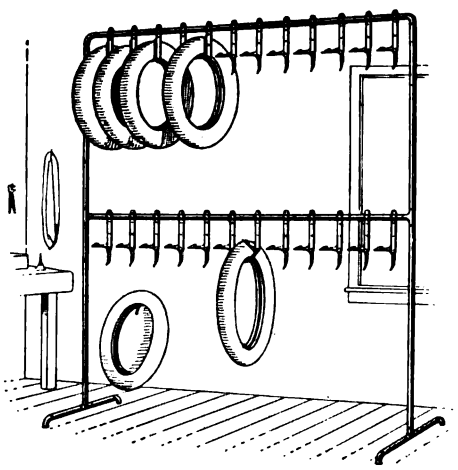
shaft are two loose collars, which are just the thickness the bearing metal should be. The two larger collars are movable, are machined on the sides so that they will fit perfectly to the crankcase bearings and



also have a projection that extends over the bearing at the top. The collars are movable, and it is possible to pour all bearings in a similar manner.

Manufactured by the Tribune Engineering Co., Oswego, N. Y. Price, $10.

The Mankey System for Tire Display is designed for rapid handling of tire sales, either in the garage, service station or sundry supply houses. By its use tires are hung on patented hooks, clamped to a pipe



that may be stood upon the floor or suspended from the ceiling. This type of storage facilitates tire sorting, freedom from dust and the damage liable when tires are piled loose on the floor.

The patented hanger consists of two flat strips of steel held together by two rivets, one at the center and the second at the bottom. The lower rivet acts as a fulcrum or hinged joint for the patented hook, while the upper rivet is used as a fastener for the catch on the hook.

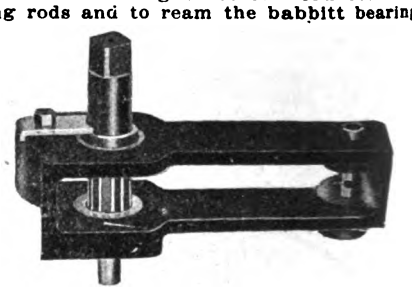
The center bearing of the hook is slotted so that in placing a tire on the hook a natural motion is employed to push the hook upward, allowing the catch to slip over the rivet, while the weight of the tire on the hook slips the catch into place, a spring held in place between the flat steel sides aiding the catch to seat. In

removing the tire from the hook, simply lifting the tire removes the spring tension, freeing the catch and allows the tire to swing forward and downward, causing the tire to slip out of the hook easily. The upper ends of the flat steel strips form a clamp that fits the pipe of the display stand.

The stands are made in various sizes, accommodating one, two, three or four dozen tires as desired. The suspension hooks are finished either in black enamel or nickel and in either large or small sizes, to suit the convenience of the purchaser. They may be purchased separate or in dozen quantities, or the complete outfit can be furnished for either overhead suspension or with a floor stand.

Manufactured by the Aberdeen Wholesale Saddlery Co., Aberdeen, S. D. Prices and literature on request.

"Tribune" Connecting Rod Reaming and Testing Jig for Ford Engines is designed to test the straightness of Ford connecting rods and to ream the babbitt bearing



true. The device consists of a cast machined fixture in which the rod is placed. A wristpin is passed through the smaller opening in the fixture and through the wristpin opening in the head of the connecting rod. The rod can then be tested for straightness. After the rod has been straightened the bearing end can be reamed out the exact size of the crank-

shaft and with a true relation to the distance between the wristpin and the crankshaft.

Manufactured by the Tribune Engineering Co., Oswego, N. Y. Price, testing and reaming fixture, $30; reamer only, $7.50.

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Two New Westinghouse Automotive Ammeters have recently been added to the Westinghouse line of instruments as type BI and type BX.

The type BI ammeter, it is stated, is an inexpensive instrument, rugged in construction, reliable and amply accurate for the service for which it is intended. The instrument operates on the polarized vane principle, without springs or moving coils,

is dead beat and is capable, it is stated, of withstanding momentary overloads of 500 amperes without injury. The dial is two inches in diameter, the scale indicating amperages from 15 to 30, charge and discharge, and is 1½ inches long. The meter will be furnished in either black dials with white figures and needles, or white dials with black figures and needles, as desired. The meter is arranged for flush mounting in the dash or cowl.

The type BX ammeter was originally designed for government radio service and is the smallest D'Arsonval instrument made. Though but two inches in body

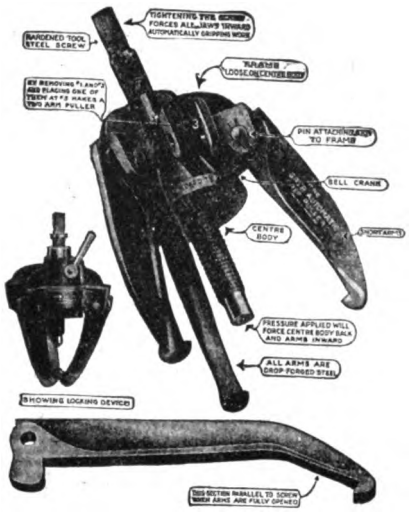
diameter, this instrument, it is claimed, possesses all of the delicacy of action, high sensibility, great accuracy and ruggedness of the standard switchboard type. The ammeter is supplied for flush as well as projection mounting. Voltmeters, with

scales ranging from three volts upwards, are also supplied in the BX type.

Manufactured by the Westinghouse Electric & Manufacturing Co., East Pittsburgh, Pa. Prices and literature on application.

The Greb Automatic Grip Puller is designed for heavy work and combines a one-man puller with a locking device, a hub having a threaded opening through which the threaded steel screw operates and another hub provided with lugs to which the arms are attached. The lower ends of the three arms are provided with hook ends to grip the gear or pulley to be pulled, while the backs of the arms are reinforced by a ribbed casting.

The No. 1 Senior size has a capacity from one to 18 inches, and is equipped with two sets of jaws, one set opening from seven to 10 inches, and the second from 12 to 18 inches. The screw is made of specially hardened steel, one inch in diameter and 14 inches long and is operated by a wrench fitting the square end at the top.



The No. 2 Junior size is designed for all types of engines and, as is stated, will remove magneto and pump shaft gears, couplings, etc. The puller has a capacity from one to seven inches, is equipped with two sets of jaws, one 3½ inches opening to four inches, and the other six inches opening to seven inches.

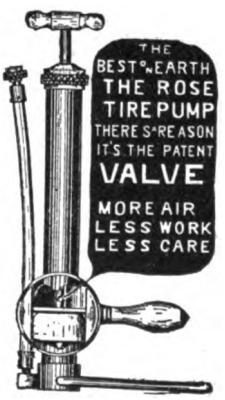
The No. 3, an intermediate size, is designed to pull average engine gears, such as timing, pinion, transmission, differential and crankshaft gears, universal joints and pulleys.

Its capacity is from one to 12 inches and the outfit is complete with two sets of jaws as follows: Five-inch jaws opening to eight inches and 9½ inches opening to 12 inches. The screw is made of hardened steel, ⅞ inch in diameter and 10 inches long.

Manufactured by the Greb Co., Inc., 172-3 State Street, Boston, Mass. Prices: No. 1, $25; No. 2, $12; No. 3, $18.

The Rose Tire Pump gets its air supply through a small opening at the bottom of the plunger rod, below the leather of the plunger. This is a patented feature employed by this manufacturer, and is claimed to eliminate the use of soft leather in the plunger and allows the use of a packing that will stand wear.

The Rose tire pump is composed of a single cylinder made of steel, hollow steel plunger rod, brass valve with leather valve washer and valve flapper. The base and top are machined from screw stock



and, it is stated, will neither break nor become loosened in the tool box. The handle of the pump is of rose wood, highly finished, while the body is finished in baked enamel. Each pump is tested three times before leaving the factory to detect imperfections. The hose is 24 inches long, five-ply fabric, with a wall of pure Para rubber.

Manufactured by J. H. Haney & Co., Hastings, Neb. Prices: 1¼ inch cylinder, $3; 1½ inch cylinder, $3.50.

Savidge Safety Seat Reamers are constructed on the plane principle. The reamer block is equipped with a high-speed steel cutter, which is said to do perfect work for an indefinite period. The cutter is easily removed in case sharpening is necessary and may be resharpened on an oil stone and readjusted by means of the cutter adjusting screw.

The reamer blocks are hardened steel

and accurately ground, the cutters are properly set and each tool tested before leaving the factory. The guide stems are interchangeable and shouldered on the ground surface of the reamer block to insure accuracy. With each stem or set of reamers is furnished a locking bar to quickly attach or detach the guide stem from the handle without the use of pliers.

It is stated that it can easily be told by the feel when a perfect job is done with the Savidge reamer, as the high-speed steel cutter will miss the low spots, taking off the least material possible until the seat is perfectly formed. The cutter cannot dig in, it is claimed, no matter how much pressure is applied, for it is set for the lightest possible cut.

The Savidge reamer set includes one handle stem with T bar, 5/16, ⅜ and 7/16-inch guide stems; 1⅝, 1⅞, 2, 2⅛ and 2¼-inch reamer blocks with high-speed cutters ready for use.

Manufactured by the A. G. Savidge Co., Indianapolis, Ind. Price, complete, $20.

The Howe Timer for Ford Engines is designed to operate without oil and to facilitate starting of the engine in cold weather. The timer shell is made of heavy gauge stamped metal, finished in heavy nickel plate, while the insulating fiber is of the best bone hard, natural seasoned stock. The steel contact segments are unusually long, well machined and accurately trued up with fiber surface.

The distributing finger or brush is unique in construction, differing from usual practise, as instead of a roller, a sliding contact consisting of two sections is used, forming a shoe, held in place on the brush arm by spring tension and

the riveted end of brush arm. The first section has a sharp edge, which cleans the surface of the segments, the second section following making the contact and closing the circuit. This shoe and the long segments are made of hardened steel, which resist wear.

Manufactured by the Howe Lamp & Manufacturing Co., 115-123 E. Ontario Street, Chicago, Ill. Price, $1.75.

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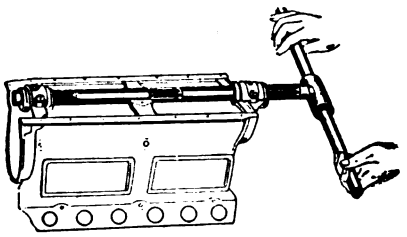
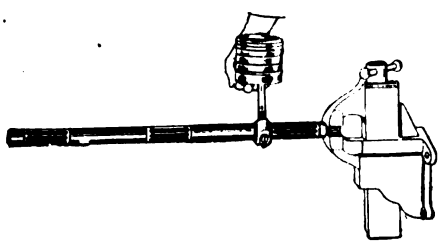
"Tribune" Crankshaft Bearing Aligning and Connecting Rod Bearing Reamer is designed to simplify the fitting of the main and connecting rods, thus reducing the amount of hand work.



The tool consists of a set of three reamers and three pilots formed on a single steel rod and having a squared end to which can be attached a handle for turning the reamers. The pilots are placed in the main bearings of the engine after the crankshaft has been removed, the bearing caps are tightened down and all three bearings reamed at one time. This method

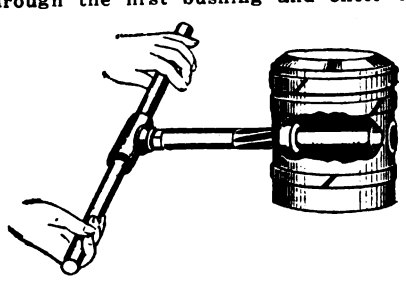
precisely aligns the three bearings and fits them accurately with the crankshaft. The pilots are made .005 of an inch less in diameter than the blades of the reamer, this being found to remove the required amount of babbitt from a worn set of bearings to give a perfect fit.



When used as a connecting rod reamer the tool is clamped in a vise, the connecting rod bearings are taken one at a time, clamped to the pilot and reamed to exact size, the connecting rod being turned by hand.

Manufactured by the Tribune Engineering Co., Oswego, N. Y. Price, $12.

"Tribune" Piston Pin Bushing Reamer is designed to ream the bushings in the piston bosses. It is made up of two pilots besides the reamer. The front pilot is the size of the new bushing and will pass through the first bushing and enter the



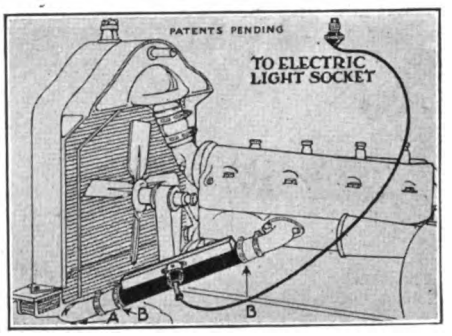
second before the reamer reaches the first bushing. This keeps the reamer in line. The second pilot is the size of the reamer after the bushing has been reamed and causes the reamer to line up both bushings correctly.

The tool is made of a high grade steel, ground and hardened accurately. It is stated to be fool proof and that it does not require expert workmen to operate it.

Manufactured by the Tribune Engineering Co., Oswego, N. Y. Price, $3.75.

The Mayall Engine Heater is designed to be installed in the circulating system of an automobile to keep the water warm and the automobile ready for instantaneous service in any weather and in any garage whether steam heated or not.

The Mayall engine heater is an electrical device, easily and quickly installed by the motor car owner and may be retained as a permanent part of the car equipment. Its operation is very simple. Connection is made to any convenient lamp socket in the garage and the current turned on. When not in use the wire

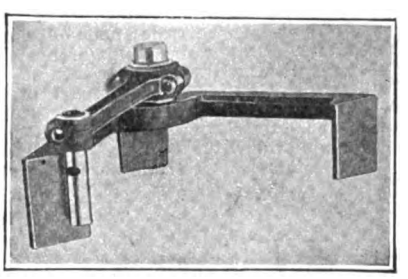


and plug are coiled and tied up out of the way of the working parts of the engine.

The principle of this heater is exactly the same as that of the hot water heating system in a house. The water is heated at approximately the lowest point in the system and naturally rises, creating a continuous circulation. It is stated that the coil in the heater uses about one-half the amount of current needed to operate an electric iron or toaster.

Manufactured by the Knight Metal Products Co., 259 East Willis Avenue, Detroit, Mich. Sold under an absolute one-year guarantee. Price, including extension cord, Ford size, $10. Other sizes will soon be in production. Jobber and dealer trade solicited.

The "Tribune" Connecting Rod Testing Fixture for Ford Cars is designed for testing the alignment of Ford connecting rods and for showing quickly whether or not the rods are bent.



The fixture consists of a three-legged stand, the two outer legs of which are joined to the center leg by arms, the fixture being a one-piece casting. To test a connecting rod, fit the crankshaft end over the large stud at the center, which is the exact size of the Ford crankshaft bearing. Swing the rod in one direction until the piston pin seats against the flat surface. This will show whether the rod is bent. If it is it should be straightened. Then swing the rod in the opposite direction until it touches the other flat plate. This will show if the rod is twisted. When the piston pin rests perfectly parallel with the flat plates the rod is straight. It is manufactured from the best of materials and guaranteed to give accurate results.

Manufactured by the Tribune Engineering Co., Oswego, N. Y. Price, $8.

The Manley Engine Stand is especially designed to hold the engine in such a position that the repairer can perform work upon it with a greater degree of accuracy, is enabled to see his work better and can turn the engine to any desired angle.

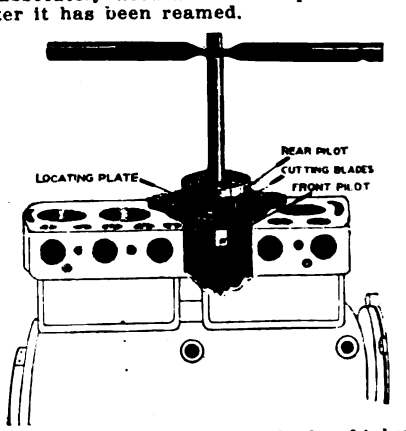
The stand can be purchased mounted or unmounted as desired. When mounted on roller casters it is easily movable to any part of the service station by one man. It consists of a heavy base of angle steel, on

which is mounted the two cast uprights holding the engine frame. The frame is pivoted at the sides to the uprights by heavy shafts, which turn in heavy bearings in the uprights. Slots in the sides of the uprights are connected to the ends of the frame at each side by heavy straps, which allow it to be turned to and fastened at any desired angle. Cross members at the ends provide for lateral adjustment of the frame, so that engines of different widths are accommodated easily and, it is stated, engines of three-point suspension are as easily handled in this frame as four-point.

The Manley stand is manufactured throughout of the best of materials, by men experienced in this class of work.

Manufactured by the Manley Manufacturing Co., York, Pa. Prices, regular stand, plain and geared, stationary, $48; portable. $59; commercial type stand, plain and geared, stationary, $63; portable, $74.

"Tribune" Cylinder Reamer for Ford Cars is designed for rapid reaming of Ford engine cylinders and consists of a locating plate which is fastened to the head of the cylinder, a front pilot which is inserted into the cylinder before the locating plate is fastened down, cutting blades which are sharpened and cut only at the front end, and the rear pilot, which is the same size as the reamer. This method is claimed to give a cylinder that is absolutely accurate from top to bottom after it has been reamed.



The reamer is made of the highest grade of steel and is said to need regrinding only at infrequent intervals and that it can be done by any mechanic who understands grinding tool steel.

Manufactured by the Tribune Engineering Co., Oswego, N. Y. Price for 1-32 (.031) oversize pistons, complete, $20. Any special over-size for Ford cylinders, $25.

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RECORD OF BUILDING OPERATIONS FOR MARCH

Contracts Made and Plans Contemplated for Alterations or Erection of Garages, Repair Shops, Service Stations and New Plants.

CONTEMPLATED PLANS AND SPECIFICATIONS.

Birmingham, Ala.; Smith-Throckmorton-Schultz Real Estate & Investment Co.; one-story brick garage, 50x100; $15,000.

Little Rock, Ark.; Andrew H. Scott; two-story auto show room, 50x140; tile floor, electric elevator. Lessee, Universal Motor Co.

Hartford, Conn.; A. Goldstein, 398 Windsor street; two-story brick garage, 100x108; $75,000.

New Haven, Conn.; C. H. Abramowitz, 42 Church street; one-story garage and show room, 40x190. Lessee, Vim Truck Co., 260 State street.

South Manchester, Conn.; Stevensant & Williams, 135 East Middle turnpike; one-story brick garage, 80x195; $55,000.

Washington, D. C.; James A. Benson; two-story brick and hollow tile garage, 75x120.

Washington, D. C.; W. A. Luke, care of Aikinson & White, 818 Connecticut avenue; one-story brick and concrete privat garage at 2301 S street; $5000.

Daytona, Fla.; Horton Brothers; one-story garage, 110x115; stucco front with colored tile coping.

Key West, Fla.; Trevor & Morris; one-story garage, 50x150.

St. Petersburg, Fla.; C. L. Kiplinger; two-story garage; $2000.

St. Petersburg, Fla.; Cleve Leneave; two-story garage; $2500.

Tampa, Fla.; J. C. Davis; one-story garage, 50x100; $20,000.

Atlanta, Ga.; C. A. Sesson; one-story brick garage; $18,000.

Atlanta, Ga.; Randall Brothers; one-story brick and hollow tile garage; $29,000.

Chicago, Ill.; Rissman & Hirschfield, 139 North Clark street; one-story brick and stone trim garage, 93x125, at Sunnyside and Clark streets; $35,000.

Chicago, Ill.; Olsen & Urbin, 155 North Clark street; one-story brick and stone private garage at 532 North Paulina street; $2500.

Chicago, Ill.; L. Larocca, 1600 South Michigan avenue; one-story brick and stone garage, 80x125, at 4794 South Wabash avenue; $35,000.

Chicago, Ill.; J. E. Anderson, 19 South La Salle street; one-story garage at 2272 Logan boulevard; $3500.

Chicago, Ill.; Frank X. Madd, 4301 West Madison street; one-story brick garage, 50x175, at 4136 West Madison street; $20,000.

Chicago, Ill.; J. J. Novy, 2434 South Ridgeway avenue; one-story brick private garage, 25x54; $4500.

Chicago, Ill.; N. Swanson, 645 Drexel avenue; one-story brick private garage, 19x34; $2800.

Chicago, Ill.; S. S. David Warehouse Co., 2616 Milwaukee avenue; one-story brick and reinforced concrete garage, 75x90, at 484 North Clark street.

Chicago, Ill.; E. Bausenbach; one-story brick garage, 50x150, at Thorndale street and Broadway.

Chicago, Ill.; E. E. Beach, care of W. P. Whitney, 122 South Michigan avenue; one-story brick sales room and service station, 25x160; $45,000.

Chicago, Ill.; Mrs. T. Towney, 6633 Ellis avenue; one-story brick and stone garage, 72x120, on 75th street, between Jeferey and Euclid avenues; $25,000.

Chicago, Ill.; Henry Apelbach, 111 West Monroe street; two-story brick and reinforced concrete public garage, 100x100, at Grand avenue and Cass street; $50,000.

Forest Park, Ill.; E. H. Bosenberg, Adams and Hannah streets; one-story brick private garage, 24x36; $2500.

Kewanee, Ill.; Fisher & Pickerel; two-story brick auto display and sales room; $15,000.

Kewanee, Ill.; William Pierce; three-story brick public garage; $150,000.

Marion, Ill.; Davis Brothers; two-story brick and reinforced concrete garage, 85x115; $85,000.

Oak Park, Ill.; Harry E. Stevens, 4231 West Monroe street; one-story brick sales room, 52x75; $16,000.

Bloomington, Ind.; Dell Garage Co.; one-story brick garage, 60x80.

Boswell, Ind.; W. H. Cook; one-story brick and stone trim commercial garage, 60x120; $30,000.

Fort Wayne, Ind.; E. W. Stemhart Co., 11th and Meridian streets; three-story brick, reinforced concrete and terra cotta garage and sales room; $150,000.

Hartford City, Ind.; Hartford City Vulcanizing Co., 116 East Washington street; one-story brick and concrete garage, 60x120.

Indianapolis, Ind.; Indianapolis Auto Hotel Co., Inc., 130 South Pennsylvania street; six-story commercial garage, 97x202, at Wabash and Delaware avenues.

Indianapolis, Ind.; George H. Moore, 213 Lenicke building; two-story garage and sales room, 60x200, at 1025 North Meridian street; $75,000.

Lafayette, Ind.; Big Four Sales Co.; one-story commercial garage, 66x85, at Third and Alabama streets; $20,000.

Washington, Ia.; C. J. Wilson; one-story brick garage, 44x120; $25,000.

Hutchinson, Kan.; J. J. Dearth; two-story brick and stone trim garage, 50x150; $38,000.

Hugoton, Kan.; H. E. Downs; one-story garage, 75x120; $21,000.

Topeka, Kan.; Trefry Motor Co., 1014 Kansas avenue; three-story brick reinforced concrete and stone trim garage, 75x100, at Ninth and Quincy streets; $100,000.

Topeka, Kan.; George Seybold, 1015 Kansas avenue; one-story brick and stone trim garage, 50x75, at 1013 Kansas avenue.

Wellington, Kan.; Frederick Sellerts; one-story brick and stone trim garage, 100x140; $25,000.

Louisville, Ky.; Mahan Bowman Co.; one-story brick garage; $20,000.

Welsh, La.; Welsh Motor Car Co.; one-story brick garage; $20,000.

Baltimore, Md.; Charles H. Steffey, 18 East Lexington street; one-story garage and sales room, 120x150.

Baltimore, Md.; Baltimore Buggy Top Co., 107 Mount Royal avenue; one-story garage and repair shop, 90x162.

Baltimore, Md.; Forrest Park Garage Co.; one-story garage, 88x168.

Baltimore, Md.; W. E. Harn Co., 2314 Oak street; one-story garage, 50x100; for H. L. & E. L. Blum; $20,000.

Bladensburg, Md.; Washington Sand & Gravel Co., Munsey building, Washington, D. C.; one-story concrete garage, 50x160.

Easton, Md.; J. B. Clark; two-story brick garage and sales room, 100x250; $50,000.

Detroit, Mich.; Frank Knoblock, St. Aubin and Superior streets; one-story brick garage, 60x100.

Detroit, Mich.; John J. Waynn, Jr., 721 Ford building; two-story brick garage, 60x140; $25,000.

Detroit, Mich.; W. D. Block Motor Co., 1225 Woodward street; three-story brick, reinforced concrete and terra cotta garage, sales room and service station; $200,000.

Detroit, Mich.; Winer & Fuller, 231 East Faliner street; one-story brick garage, 148x171, at 190 Garfield street; $20,000.

Flint, Mich.; Marshall Auto Co.; two-story brick, stone and reinforced concrete garage, 50x183, at Fourth and Court streets; $50,000.

Hillsdale, Mich.; Pinkham & Wright; one-story garage and repair shop, 150x270; $40,000.

Muskegon, Mich.; C. A. Will & Son; one-story brick garage, 60x76; $25,000.

Olivet, Mich.; Adelfried Kellog and Frank Hazzard; one-story brick garage, 44x90; $80,000.

Owosso, Mich.; Owosso Sugar Co.; one-story brick garage, 50x60; $15,000.

Roscommon, Mich.; J. H. Dye; one-story brick and hollow tile garage, 50x80; $15,000.

Cambridge, Minn.; E. F. Gillespie; one-story brick and concrete public garage, 50x100; $12,000.

Minneapolis, Minn.; Johnson Tire Co., 1010 Nicollet avenue; one-story brick auto service garage at 13th and Mary place; $10,000.

Robinsdale, Minn.; Joseph Foss, Fairbault, Minn.; two-story garage, 66x106; $33,000.

St. James, Minn.; North Star Garage; one-story brick public garage, 60x90.

St. Paul, Minn.; Eric Strandloff, 1676 Wesley avenue; one-story brick garage, 60x121; $15,000.

St. Paul, Minn.; Edward F. Swanson, 816 University avenue; one-story brick and reinforced concrete garage, 48x104.

Zumbrota, Minn.; J. N. Groner; one-story concrete and tile garage, 60x110.

Greenwood, Miss.; Schilling Auto Co.; two-story garge, 150x150.

Bethany, Mo.; Charles Hacker & Son; two-story brick and stone trim garage, 82x100; concrete floor, metal store front, plate glass; $40,000.

Excelsior Springs, Mo.; McDavid Brothers; one-story garage, 57x114.

Joplin, Mo.; Joplin Supply Co.; five-story brick and stone trim auto sales room, 75x120.

Kansas City, Mo.; Durham & McMasters, 3005 Gillham road; two-story brick and stone trim service station, 60x120.

Kansas City, Mo.; William F. Beck, 2604 Victor street; one-story brick garage, 49x122; trussed steel roof, cement floor, heating plant; $10,000.

Kansas City, Mo.; Southern Oil Co., Security building; one-story frame and stucco filling station, composition roof, 35x40.

Kansas City, Mo.; Tri-State Motor Co.; two-story gargae, 71x103; $50,000.

Moberly, Mo.; J. N. Taylor, 211 North Fourth street; one-story public garage, 10x140; $75,000.

Aurora, Neb.; Sandin Auto Co.; one-story brick garage, 120x211; $60,000.

Columbus, Neb.; Gottberg Auto Co.; two-story brick and terra cotta trim garage, 90x132; $80,000.

Fallon, Neb.; George Conerston; one-story concrete garage, 50x85; $10,000.

Manchester, N. H.; William B. O'Neil, 272 Walnut street; one-story public garage, 85x100, at Union and Brooklyn streets; $15,000.

Atlantic City, N. J.; Bertram Ireland, Guarantee Trust building; two-story brick public garage, 50x175; $40,000.

Bayside, N. J.; George F. Rohl, 250 East 60th street, New York; one-story brick garage, 49x100, east side of Broadway, north Higgins avenue; $12,000.

Bordentown, N. J.; Raymond Robbins; one-story brick public garage, 60x70; $10,000.

Montclair, N. J.; William L. Greenbaum; one-story brick public garage, 60x100, at 371-373 Bloomfield avenue; $10,000.

Newark, N. J.; I. Gorb, 312 North Broad street; 30 one-story brick community garages, 10x18 each; $10,000.

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Newark, N. J.; Israel C. Richer, 68 Wallace street; two-story brick public garage, 111x72x34x48, at southeast corner Morris and South Orange avenues; concrete floors.

Newark, N. J.; McAllister, Canto & Stutz Corporation, 1003 Broad street; two-story brick and reinforced concrete garage and show room, 66x300, at 997-999 Broad street; $125,000.

Newark, N. J.; Carnegie Steel Co.; one-story brick garage, 62x75; $9500.

Newark, N. J.; Samuel Solomon, 210 Belmont avenue; one-story brick public garage, 45x100, at 208 Belmont avenue; $16,000.

Paterson, N. J.; Botta & Co., 290 Straight street; one-story brick garage, 97x111; southwest corner Market and Madison streets.

Trenton, N. J.; I. Gorg, 312 North Broad street; 30 one-story community garages, 10x18 each; $10,000.

West Hoboken, N. J.; George Zache; one-story concrete public garage, 35x50, at 114 Lake street; $12,000.

Albany, N. Y.; Edward McArdle, 169 Northern boulevard; one-story concrete public garage, 40x63, at 153 Northern boulevard; $12,000.

Albany, N. Y.; Walter D. Watson, 295 Quarl street; seven-story brick and reinforced concrete commercial garage, at 12 Central avenue; $100,000.

Albany, N. Y.; Herman Goodman, 418 Delaware avenue; one-story brick and concrete garage, 75x175; $45,000.

Binghamton, N. Y.; M. Kresner, 129 Water street; two-story brick garage and machine shop, 96x150.

Brooklyn, N. Y.; Lowenstein & Loeh, 833 St. John's place; one-story brick garage, 50x130, north side Sterling place, west Classen avenue; $18,000.

Brooklyn, N .Y.; Louis Dretzen, 231 Graham avenue and C. Samuel Kosler, 214 Scholes street; one-story brick garage, 21x62, at 18-20 Beaver street and 14-16 Division place; $10,000.

Brooklyn, N. Y.; M. Bonicke, 1712 45th street; one-story brick garage, 30x40, at Sheepshead Bay road and West First street; $5000.

Brooklyn, N. Y.; Estate John and Madelina Hennett, 44 Court street; one-story brick garage, 103x171, north side Coney Island avenue, south Caton place; $30,000.

Brooklyn, N. Y.; Tobemsar Realty Co., 1404 Eastern parkway; one-story brick garage, 150x102x40; $40,000.

Brooklyn, N. Y.; M. Friedman, care Philip Caplan, 16 Court street; one-story brick garage, 100x150; $35,000.

Brooklyn, N. Y.; Tobemsar Realty Co., 1404 Eastern parkway; one-story brick garage, 100x100; south side Warren street, west Fourth avenue; $25,000.

Brooklyn, N. Y.; Seelig & Finklestine, 26 Court street; one-story brick garage, 100x100; southeast corner Neptune and First avenues; $35,000.

Brooklyn, N. Y.; Hygrade Homes Co., Inc., 1203 Atlantic avenue; one-story garage, 75x170; $40,000.

Brooklyn, N. Y.; Meyer Caplan 296 Marcy avenue; one-story brick garage, 100x125, at 1282-1294 De Kalb avenue; $32,000.

Brooklyn, N. Y.; G. & G. Construction Co., 1399 St. John's place; one-story brick garage, 100x100; north side 40th street, west Third avenue; $30,000.

Brooklyn, N. Y.; Boyd Thistle, 200 Madison street; one-story brick garage, 50x50, at 1258-1262 Prospect place; $10,000.

Brooklyn, N. Y.; Levine Realty & Mortgage Corporation, 215 Montague street; one-story brick garage, 105x126, south side St. Mark's avenue, east Classon avenue; $35,000.

Brooklyn, N. Y.; Square Lumber Co., Neptune avenue and 20th street; one-story brick garage, 80x100, at southwest corner 21st street and Neptune avenue; $18,000.

Buffalo, N. Y.; Supervisors Erie Co., Chamber of Commerce building; two-story garage; $30,000.

Buffalo, N. Y.; Monroe Motor Car Co., 1034 Main street; one-story brick sales room and service station at Lafayette avenue and Main street; $125,000.

Buffalo, N. Y.; Joseph King, 47 Bird street; one-story brick and tile public garage, 40x49, at 49 Bird street; $3000.

Buffalo, N. Y.; John V. Wadsworth, 370 Franklin street; one-story brick garage, 43x125, at 77 Edward street; $30,000.

Buffalo, N. Y.; George Schlickler & Sons, Liberty building; one-story brick garage, 70x180; $20,000.

Corona, L. I., N. Y.; G. Simonelli, 28 Conselyea street, Brooklyn; 2½-story brick garage, 40x94, south side Ditmars avenue, west 55th street; $10,000.

Ellenburg Depot, N. Y.; Cheesman & Muncie; two-story brick and tile auto sales room, 48x100; $25,000.

Elmhurst, L. I., N. Y.; Midwood Building Corporation, 44 Court street, Brooklyn; one-story brick and concrete garage, 100x200, on Jackson avenue, between 21st and 22nd streets; $70,000.

Glens Falls, N. Y.; Charles W. Hopes, 4 Smith street; four-story reinforced concrete garage, 60x90.

Hudson, N. Y.; Barhart Auto Sales & Storage Co.; two-story brick public garage at 310 Warren street; $20,000.

Jamaica, L. I., N. Y.; Harry Feir, 626 Essex street, Brooklyn; one-story brick garage, 75x173, south side Hillside avenue, east Pay street; $35,000.

Long Island City, L. I., N. Y.; Adam Boyle, 641 Jamaica avenue; one-story brick garage, 75x90; $25,000.

Malone, N. Y.; Northern Garage Corporation, 18 Broadway; one-story hollow tile and stucco garage; $20,000.

Massena, N. Y.; Frank Cutri and Joseph Cosenza; one-story brick and tile public garage at Willow street and Bishop avenue; $6000.

Middle Village, L. I., N. Y.; Isidore Grotzeit, 9 Wayne street; one-story brick garage, 70x100, north side Metropolitan avenue, west La Forge street; $20,000.

Mt. Vernon, N. Y.; I. Liccone; two-story hollow tile garage, 80x100, at Mt. Vernon avenue and West street; $35,000.

Niagara Falls, N. Y.; Richard N. Pattison, 1719 Pierce avenue; one-story brick public garage and sales room, northwest corner Spruce and Main street; $30,000.

New York, N. Y.; Prince & Mulberry Garage Corporation, 299 Broadway; one-story brick garage, 93x99, at 249-255 Mulberry street and 46-52 Prince street; concrete floor; $40,000.

New York, N. Y.; Isadore Dietelbaum, 163 West 170th street; one-story brick public garage, 74x153, at 513-515 West 130th street; $15,000.

New York, N. Y.; Frederick Kummerle, 2529 Cambridge avenue; one-story brick garage, 28x43, south side Fordham road, west Arthur avenue, Bronx; $3000.

New York, N. Y.; Klein Contracting Co., 603 West 131st street; one-story brick garage, 90x100, southwest corner Madison avenue and 136th street; $150,000.

New York, N. Y.; Harry Klein, 425 West 54th street; three-story brick public garage, 50x105, at 427 West 54th street; $50,000.

New York, N. Y.; Charles Guyser, 65th street and Amsterdam avenue; six-story brick garage, 50x100, west side 65th street, east West End avenue; $35,000.

New York, N. Y.; Marcus & Goldstein, 175 East 96th street; two-story brick garage, 50x92, at 528-530 West 19th street; $20,000.

New York, N. Y.; Abraham Klinghofer, 259 West 140th street; two-story brick and concrete garage, 60x100, at 119 Manhattan street and 1 and 9 Old Broadway; $70,000.

New York, N. Y.; Regulus Realty Co., 3295 Broadway; one-story brick public garage, 90x200; $60,000.

New York, N. Y.; Rosewater Realty Corporation, 51 Chambers street; three-story brick, steel and concrete garage, 70x90, east side Prospect avenue, south 169th street; $85,000.

Ogdensburg, N. Y.; George M. Murray; one-story brick garage and show room, 70x93; $25,000.

Rockaway Beach, L. I., N. Y.; Joseph Rott, 1379 Hollywood avenue; one-story brick garage, 81x125, northeast corner Boulevard and Park avenue; $8000.

Troy, N. Y.; Scott D. Nichols, 235 River street; one-story brick garage and sales room, 32x62, at Sixth and Hoosick streets; $10,000.

Utica, N. Y.; I. R. Gardenier Motor Car Co.; one and two-story brick garage and service station, 60x220; $35,000.

Utica, N. Y.; Sherman Sales Co., 516 John street; two-story brick and tile garage and sales room, 120x135; $150,000.

Utica, N. Y.; Rockway Truck Sales Co.; one or two-story brick and tile public garage, 75x100, at Second and Broadway.

Asheville, N. C.; W. L. Black and E. M. Alexander; one-story garage; $12,000.

Charlotte, N. C.; C. C. Caddington, Inc.; six-story reinforced concrete garage, stone and ornamental brick finish, 90x198; two freight and one passenger elevators, water cooling system, steam heating plant; compressed air chutes, repair shop; $400,000.

Charlotte, N. C.; Burwell-Walker Co.; four-story garage, 87x175; $200,000.

Greensboro, N. C.; W. C. Tennille; two-story fireproof garage, 40x140; $20,000.

Salisbury, N. C.; Rouzer Garage Co.; two-story reinforced concrete garage, 65x198.

Fargo, N. D.; J. C. Vincent, 1211 North Park avenue; four-story brick and concrete public garage, at Third and North Park avenue; $90,000.

Fargo, N. D.; George Schoss; one-story public garage, 55x100.

Marshall, N. D.; Northern Motor Co.; one-story brick public garage, 50x140.

Wahpeton, N. D.; Dahl Motor Co.; one-story brick public garage, 50x150.

Cincinnati, O.; Sandman Estate; two-story brick public garage, 88x115.

Cleveland, O.; Peter Hughes Express Co., 707 East Eighth street; two-story private garage, 80x100, at 831 East Third street.

Cleveland, O.; Realty Syndicate Co., 309 Williamson building; three-story garage, 25x166; brick walls, stone and terra cotta trim, concrete floor; at East 79th street and Hough avenue; $400,000.

Dayton, O.; Dodge Brothers Auto Sales Co., First and Jefferson streets; three-story brick garage and sales room, 66x97; $60,000.

Dennison, O.; F. C. Lightner; one-story garage, 32x160; $10,000.

Monroeville, O.; Schmidt & Meedham; one-story brick and reinforced concrete garage, 47x140; $20,000.

Van Wert, O.; Lybarger & Son; two-story garage, 66x132, at Walnut and Central streets; $35,000.

Ada, Okla.; W. E. Harey, Empress Theater building, Oklahoma City, Oklahoma; two-story brick, stone and reinforced concrete garage, 40x50.

Altus, Okla.; Elkner-Henry Motor Sales Co.; one-story brick garage, 70x140; $25,000.

Altus, Okla.; W. E. Phipps; two-story fireproof garage, 75x140; tar and gravel roof, cement floor, two-pope steam heating system, automatic electric elevator; $50,000.

Chickasha, Okla.; T. C. Hall; one-story reinforced concrete garage, 100x165; $35,000.

Haskell, Okla.; I. O. Dowdy Motor Co.; one-story brick garage, 75x140; install motors, air compressors, drills, etc.

Tulsa, Okla.; C. H. Seger and W. T. Everhard; one-story brick and stucco garage, 60x180; glass front; $35,000.

Tulsa, Okla.; Universal Motor Co.; one-story auto building, 140x200.

Tulsa, Okla.; Robinson Packer Co.; one-story garage, 90x130.

Bridgeville, Pa.; Reed, Staner & Reed; one-story brick public garage, 40x70.

Columbia, Pa.; Fred Schlotthauser, care Keystone Motor Car Co.; one-story brick and reinforced concrete public garage, 100x200, at Second and Chestnut streets; $15,000.

Greensburg, Pa.; P. R. James; two-story brick and reinforced concrete garage, 82x168; $150,000.

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Harrisburg, Pa.; Denev Wildman, 2206 North Third street; one-story brick and concrete garage, 82x250; $40,000.

Huntingdon, Pa.; Charles C. Huston & Brothers; one-story brick public garage, 50x160; $30,000.

Mechanicsburg, Pa.; Miller Auto Co.; one-story brick and concrete garage, 54x135, at 52 West Main street; $15,000.

New Kensington, Pa.; S. L. Miner, Cinder block; two-story garage, 25x50; $10,000.

Pittsburgh, Pa.; Autocar Sales & Service Co., 1830 Forbes street; one and two-story garage and sales room, 175x225, at Baum boulevard and Liberty avenue; $150,000.

Pittston, Pa.; Sutherland & McMullan, 10 Sutherland place; one-story frame and stucco garage, 45x65, at 106 Liberty street; $5000.

Scranton, Pa.; O. D. De Witt, 730 Wyoming avenue; one-story brick public garage, 90x177; $45,000.

Wilkes-Barre, Pa.; Gildersleeve Estate; two-story brick public garage, 45x225; $100,000.

Wilkes-Barre, Pa.; Henry A. Marer, Coal Exchange building; one-story concrete public garage, 90x110.

Wilkes-Barre. Pa.; I. L. Johnson, 6 West Ross street; one-story brick garage and welding shop, 56x173; $15,000.

Providence, R. I.; Leon E. Danforth, 76 Dorrance street; one-story cement block public garage, 40x80; $12,000.

Belton, S. C.; A. W. Boggs, A. Y. Shirley and E. T. Breazeale; one-story brick auto building, 40x70.

Greenville, S. C.; Fitzpatrick-Terry Co.; one-story garage, 40x75, for Marshall B. Prevost; $11,000.

Salem, S. D.; L. M. Feesler; one-story brick public garage, 66x140.

Chattanooga, Tenn.; Hardwick-Buick Co.; five-story concrete auto building, 75x100; $200,000.

Knoxville, Tenn.; Cary F. Spence; one-story garage, site 75x200.

Knoxville, Tenn.; Tate Motor Co.; one-story fireproof garage, 75x140, brick with steel frame, concrete floor and walls; $15,000.

Knoxville, Tenn.; Victor H. McLean; three-story fireproof storage garage, 100x135; three entrances, separate compartments for cars, repair shop, filling station.

Knoxville, Tenn.; H. A. Aurin, 508 Henson building; one-story brick and steel garage, 50x175; composition roof, concrete floors, heating plant, elevators; $15,000.

Knoxville, Tenn.; Imperial Motor Co.; two-story service station, 60x140; heavy polished plate glass front, steel and concrete support columns at front covered with tapestry brick; first floor, hard wood laid over concrete; wire glass roof set in steel frames; elevators; ladies' rest room.

Bay City, Tex.; S. C. Creech Co.; one-story brick and tile auto building, 50x140; $10,000.

Corpus Christi, Tex.; Glover Johns; one-story brick or hollow tile garage, 100x150.

Houston, Tex.; San Antonio Machine & Supply Co.; one-story garage; $60,000.

Pittsburg, Tex.; S. R. Greer; two-story brick garage and shop, 75x125.

San Antonio, Tex.; Arsinger Motor Sales Co., 221 Main avenue; two-story fireproof sales room and service station; $60,000.

San Antonio, Tex.; Main Avenue Improvement Co.; one-story garage: $35,000.

Alexandria, Va.; Sperden & Sperden, 1403 New York avenue, Washington, D. C., northwest; two-story brick and reinforced concrete public garage, 77x125; $40,000.

Keysville, Va.; Hammer Motor Car Co.; two-story brick garage, 72x200.

Lebanon, Va.; Clinch Motor Co.; two-story brick garage, 63x75.

Richmond, Va.; David Brothers, 2510 West Main street; two-story brick garage, 130x175, at Gary street and Colonial avenue; $40,000.

Roanoke, Va.; Gibson & Packett; two-story garage; $75,000.

Antigo, Wis.; Antigo Hardware Co.; one-story brick garage, 30x100; $15,000.

Black River Falls, Wis.; J. R. McDonald; two-story brick and tile garage, 90x120, at Harrison and Water streets; $40,000.

Cambridge, Wis.; Ben A. Thomson; one-story hollow tile public garage, 75x80.

De Pere, Wis.; G. T. McGeehan; two-story reinforced concrete public garage and sales room, 72x120; $25,000.

Medford, Wis.; Ford Garage, Abbotsford, Wis.; on-story brick garage, 50x150; $10,000.

Menominee Falls, Wis.; Schumann Motor Co.; one-story brick garage, 75x150; $50,000.

Randolph, Wis.; I. A. Huff; two-story brick garage, 36x50; $12,000.

Waterford, Wis.; L. I. Tinoll; two-story brick and reinforced concrete garage, 60x190; $50,000.

CONTRACTS AWARDED.

Birmingham, Ala.; Smallman Bruce Construction Co.; one-story fireproof garage, 140x150, for Cruse-Crawford Manufacturing Co.; $130,000.

Birmingham, Ala.; Gulf Refining Co. of Louisiana; one-story brick and concrete filling station, 75x150.

Hartford, Conn.; W. T. Ryan & Son, 149 Park street; two-story garage, 50x100, for G. I. Whitehead & Son, 4 Crescent street.

New Haven, Conn.; Standard Construction Co., 42 Church street; one-story garage, 20x54, for Gustave A. R. Hamre, Branford, Conn.

Wilmington, Del.; Joseph Schunder, 600 Rodney street; one-story garage, 80x140, west side Pine street, between 12th and 13th, for James S. Lowe, 224 French street; $20,000.

Wilmington, Del.; S. H. McCoy, 2213 Washington street; one-story garage, 9x18, at northwest corner 29th and West streets, for E. W. Dunlap; $4500.

Wilmington, Del.; Concrete Construction Co., 1618 Thompson street; one-story garage, 80x80, northwest corner 11th and Tatnall streets, for Keil Motor Co.; $46,000.

Atlanta, Ga.; Arthur Tufts; one-story garage, 75x363, for Walter T. Candler; $150,000. Lessee, Black & Moffett.

Atlanta, Ga.; King Bridge Co., Cleveland, Ga.; one and two-story concrete garage and display room; reinforced concrete floors, concrete foundations; for White Automobile Co., East 79th street and St. Clair avenue, Cleveland, Ga.; $150,000.

Bloomington, Ill.; Charles Hall, People's Bank building; one-story public garage, 45x90, for Frank Cole; $6000.

Chicago, Ill.; Edward Hock, 6924 Sheridan road; one-story private garage, 21x42; $3000.

Chicago, Ill.; J. Mortenson, 5625 Princeton avenue; one-story garage, 100x230, on Stony Island avenue, between 64th and 65th streets; $50,000.

Chicago, Ill.; John Lundstrom, 1355 Balmoral avenue; one-story garage, 100x125, at 6244-6254 Broadway, for R. J. Davis, 1304 Chamber of Commerce; $18,000.

Chicago, Ill.; B. & W. Construction Co., 10 South La Salle street; one-story public garage, 120x175, at 23rd and Calumet streets; $60,000.

Chicago, Ill.; National Tea Co., 2175 West North avenue; one-story garage and repair shop, 100x150, at 1022-1030 Larrabee street; $70,000.

Decatur, Ill.; L. S. Baker & Brothers, 709 West Main street; one-story public garage, 80x150, for Pierce & Caldwell.

Kewanee, Ill.; Oscar Schneider; one-story public garage for Wolsey, Newbert & Sperge, Reo agents; $75,000.

Fort Wayne, Ind.; Tom Snook, 502 West Jefferson street; one-story commercial garage, 75x100, rear 502 West Jefferson street, for Clifford L. Bornschein, 620 High street.

Indianapolis, Ind.; Bedford Stone & Construction Co.; one or two-story commercial garage, 93x150, at 445 Virginia avenue, for Wangelin Sharp Co., 459 Virginia avenue.

Indianapolis, Ind.; Caldwell-Marshall Co., Public Savings building; six-story garage, 97x202, at Wabash and Delaware streets, for Indianapolis Auto Hotel Co.

Lafayette, Ind.; Abe Kemmer, 644 North Seventh street; two-story garage, sales room and service station, 80x180, at Seventh and Main streets, for Lee Van Reed Motor Co.; $50,000.

Marion, Ind.; Bowman Construction Co., 226 West Second street; one-story garage and sales room, for Baker Morris Auto Co., 505 South Adams street; $35,000.

Monticello, Ind.; A. E. Kemmer, Lafayette, Ind.; one-story garage, sales room and service station, 53x165, for H. & B. Auto Sales Co.; $50,000.

Atlantic, Ia.; Charles Wertz & Son, Des Moines, Ia.; two-story garage, 140x200, at Third and Poplar streets, for Atlantic Auto Co., 217 Chestnut street; $150,000.

Des Moines, Ia.; Howell & Taylor, 315 Masonic Temple building; one-story garage 24x24, at 3600 Ingersoll street; $3000.

Des Moines, Ia.; A. H. Newman, 419 Hubbell building; two-story garage, 44x138, at 14th and Locust streets, for G. W. Jones, 1212 Locust street; $50,000.

Grinnell, Ia.; R. G. Coutts; one-story garage, 75x165, for Lamberstein & Hunt; $25,000.

Louisville, Ky.; Alfred Struck Co., Garden and Chestnut streets; two-story service station, 50x120, for Andrew Cowan Co.

Shreveport, La.; W. H. Werner; one-story garage, 80x150, for S. A. & C. M. Dickson; $50,000. Lessee, Yellow Cab Co.

Baltimore, Md.; F. W. Felte, 319 South Pulaski street; two-story garage, 15x125, at Bentalow and Christian streets; $4000.

Baltimore, Md.; H. Rosen, 2235 Madison avenue; two-story garage, 40x99, at 2400-2402 Pennsylvania avenue, for E. Dickler; $6000.

Baltimore, Md.; Merin Brothers, 1024 East Baltimore street; three-story garage, 50x72, at 1504 Guilford avenue; $25,000.

Baltimore, Md.; Consolidated Engineering Co., Calvert building; one-story brick auto building for Backus Motor Co., 10 East North avenue; $15,000.

Baltimore, Md.; E. Eyring & Son, 800 South Third street; one-story garage, 65x221, at Forester street and Lakewood avenue, for J. Charles Linchieum & Brothers, 214 St. Paul street; $8000.

Baltimore, Md.; N. Dashields, 411 North Milton avenue; one-story garage, 40x250, at 1601-1637 Norwood avenue, for Cliftview Garage; $10,000.

Chestertown, Md.; W. G. Pippin; two-story garage, 42x200, for A. S. Turner & Son; $25,000.

Boston, Mass.; T. Farley, 27 State street; one-story public garage; $50,000.

Boston, Mass.; John Varnum & Son, 321 Norfolk street, Dorchester district; one-story public garage, 55x140, at 80 Neponset avenue.

Middleboro, Mass.; George Howard & Sons, 633 Warren avenue, Brockton, Mass.; one-story public garage, 75x135, for Plymouth-Buick Co.; $30,000.

Worcester, Mass.; Keefe Brothers, 20 London street; one-story garage, for J. Henry Harterett, 130 Vermont street; $9000.

Ithaca, Mich.; G. L. Pierce, Agostini block, Ionia, Mich.; two-story garage, 50x125, for F. M. Reynolds; $35,000.

Minneapolis, Minn.; G. S. Koberg, 4202 Fifth avenue; one-story public garage, 52x60, at 57-63 Western avenue, for M. M. Benjamin Iron & Metal Co., 2011 Tremont avenue; $5200.

St. Paul, Minn.; J. B. Bristol, 804 Sargent street; one-story garage, 78x130, for N. N. Fletcher, 329 Jackson street; $10,000.

St. Paul, Minn.; Edward Bjorklund, 286 Como boulevard; one-story garage, 100x150, for State Highway Commissioner, 902 Guardian Life building; $50,000.

Cape Girardeau, Mo.; E. C. Geehard Construction Co.; two-story garage, 50x144, at Taylor and Masterson streets, for Norman L. Hely; $30,000.

Kansas City, Mo.; Swenson Construction Co., Shubert Theater building; one-story garage, 50x140, for A. B. Lafoeth.

Kansas City, Mo.; George M. Bliss Construction Co., Lathrop building; one-story garage and storage station, 130x132, southeast corner 12th and Oak streets, for Dr. Woods estate.

Poplar Bluffs, Mo.; A. W. Greer; one-story garage, for Carl Fie; $25,000.

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St. Joseph, Mo.; Lehr Construction Co., 1712 Frederick avenue; two-story garage, 19x114, at 25th and Jones streets, for T. L. Richey; $10,000.

St. Louis, Mo.; B. J. Carleville, 810 Chestnut street; one-story garage, 100x130, for Burdeau Real Estate Co., 801 Chestnut street.

St. Louis, Mo.; Erdbruegger & Beummer, 2909 Natural Bridge road; one-story garage, 95x177, for J. C. Roeber.

South Sioux City, Neb.; Carl Jensen; one-story garage, 50x120, for Thompson & Proctor; $14,000.

Bridgeton, N. J.; Cumberland Garage; one-story public garage, 54x161; $20,000.

Jersey City, N. J.; D'Elia Contracting Co., 574 Newark avenue; one-story garage, at 271 Mercer street, for P. Arnabile, 221 Wayne street; $9000.

Buffalo, N. Y.; C. E. Irwin, Elliott Square building; five-story public garage, 80x118, at 40 Swan street; $125,000.

Geneva, N. Y.; L. E. Risor, 63 Pultaney street; one-story brick public garage, 96x196, for O'Malley Motor Co.; $20,000.

Little Falls, N. Y.; Thomas & Denneen; one and two-story reinforced concrete garage, service station and show room, at Main and 34th street; $35,000.

New York, N. Y.; Summit Holding Co., 295 Alexander avenue; one-story garage, 100x125, west side 137th street, east Lincoln avenue; $25,000.

Schenectady, N. Y.; John Dugid, 863 Emmet street; one-story cement block garage, for Winter & Cryne, 1510 Union street; $30,000.

Charlotte, N. C.; Blythe & Isenhour; four-story garage, 86x175, for Burwell-Walker Co.

Salisbury, N. C.; A. R. Lazenby; three-story reinforced concrete garage and service station, 66x198, for Rouzer Garage Co.; $100,000.

Cleveland, O.; Guarantee Building Co., 214 Union building; four-story garage and sales room, 60x150, at East 55th street and Prospect avenue; $100,000.

Cleveland, O.; National Fireproofing Co., 1315 Citizens' building; one-story public garage, 50x97, for Astrup Co., 2937 West 25th street; $15,000.

Cleveland, O.; C. D. Wilson, 1211 Cook avenue, Lakewood, O.; one-story garage, 30x39, at 1317 St. Clair avenue, for Cleveland Builders' Supply Co., Leader-News building; $10,000.

Mansfield, O.; Schell Woolf Co.; one-story brick garage and service station, 60x120, for A. M. Colby; $20,000.

Toledo, O.; J. Spieker, Elm and Utica streets; one-story brick garage, 49x94, at 925-939 George street, for Lakeside Biscuit Co.; $15,000.

Toledo, O.; Toledo Contracting Co., Nasby building; one-story garage and sales room, 90x120, at Broadway and Colburn avenue, for Triangle Garage & Motor Sales Co.; $30,000.

Youngstown, O.; Charles Shuthrump & Sons, Home Savings & Loan building; two-story commercial garage, 50x50, for Ohio Garage Co.; $60,000.

Duncan, Okla.; H. F. Jobert; one-story garage, 50x125, for Mrs. Gamblin; $12,000.

Oklahoma City, Okla.; C. E. Frye; two-story fireproof garage and sales room, 50x135; mezzanine floor; for Markham Motor Co.; $80,000.

Oklahoma City, Okla.; Hugh L. Turner, 32 East Second street; two-story garage, 50x141, at Eighth and Broadway, for McClelland-Gentry Motor Co.; $100,000.

Oklahoma City, Okla.; Campbell & Price, 605½ West Main street; two-story sales room, at Eighth and Broadway, for McClelland-Gentry Motor Co., 825 Broadway; $100,000.

Oklahoma City Okla.; F. A. Gross Construction Co., Mercantile building; two-story garage and sales room, 50x135, at 512-514 West Broadway, for B. H. Markham; $85,000.

Okmulgee, Okla.; John Caruthers, Fourth and Grand streets; one-story reinforced concrete garage, 75x140; composition roof, reinforced concrete floor; $20,000.

Tulsa, Okla.; E. T. Everard; one-story fireproof garage, 60x180, for C. H. Seger; $30,000.

Elizabethville Pa.; Howard Helwig, Millersburg, Pa.; one-story garage, 40x180, for C. T. Romberger.

Harrisburg, Pa.; Harold Hipple, 14 South Second street; two-story brick public garage, service station and show room, 130x206, at 14th and Howard streets, for United Ice & Coal Co.; $100,000.

Monessen, Pa.; C. A. Derby; two-story brick commercial garage, 48x100, for David Seder; $30,000.

Philadelphia Pa.; William C. Wright; oone-story garage, southwest corner Grover's lane and Navahoe street, for Mrs. Beaumont Whitney; $2500.

Philadelphia, Pa.; A. Earl Barnes Co.; one-story brick garage, 56x70, southwest corner Ontario and Rand streets, for Fred Munz; $10,000.

Philadelphia, Pa.; E. E. Hollenbach, Inc., 1804 Brandywine street; one-story garage, 40x40, for O. F. Zunn Co., Broad and Lehigh avenue.

Philadelphia, Pa.; Philadelphia Realty Co. 111 West Mt. Avery avenue; one-story garage, 100x140, at 6233 Haverford avenue; $28,000.

Philadelphia, Pa.; R. C. Daley; one-story garage, 24x30, at 2210 Atlantic street, for John Bradley; $2500.

Philadelphia, Pa.; Walter Cloak & Brother; one-story garage, 19x45, at 247 East Armat street, for James Fraser; $3000.

Philadelphia, Pa.; Robins Construction Co., 1139 North Front street; one-story public garage, 55x200 at Third and Cambridge streets, for Harry Weinreich; $40,000.

Philadelphia, Pa.; Robert J. Makin; one-story garage, 30x49, at southwest corner 25th and Panama streets, for William J. Barr; $4000.

Philadelphia, Pa.; Walter Schoen; one-story garage at southeast corner Second street and Roosevelt boulevard; $1500.

Philadelphia, Pa.; Charles Colgan; one-story brick garage at 7021 Clarkview street; $2000.

Philadelphia, Pa.; Jacob Iagnaton; one-story garage at 1101 North 42nd street; $1500.

Philadelphia, Pa.; C. W. Sibel; one-story garage at 540 Carpenter street, for I. Cartmell; $5500.

Philadelphia, Pa.; G. W. Rimer; one-story garage, rear 4948 Griscom street, for Harry Hub; $2000.

Philadelphia, Pa.; David Sterrett; one-story garage, north side Windrim avenue, east 13th street; for Adolph Schuch; $3000.

Philadelphia, Pa.; Warren E. Briscoe, 3954 Ludlow street; one-story public garage, 40x80; at 4823 Brown street; for Fred M. Kissling, 4702 Parrish street; $6100.

Philadelphia, Pa.; M. Moister; one-story garage, 22x40; at 1581 North 52nd street; for Herman Harvey; $1000.

Pittsburgh, Pa.; William A. Balch, 870 Woodward avenue, Detroit, Mich.; five-story brick reinforced concrete and terra cotta trim garage and service station, 57x224, at Craig street and Baum boulevard; $200,000.

Pittsburgh, Pa.; Edward A. Wehr, Highland building; one-story brick and concrete garage, 40x62, at Commerce street and Baum boulevard, for Firestone Tire & Ruber Co., 5932 Baum boulevard; $6000.

Pittsburgh, Pa.; Toupet, Bell & Conly, Inc., 5814 Ellsworth avenue; one-story garage, 98x113x40x45, at 5405 Baum boulevard, for Schusler Motor Co., 6116 Statin street; $25,000.

Pittsburgh, Pa.; D. T. Riffle, Keenan building; one and two-story brick garage, 61x120, at California avenue and Rankin street, for Herst & Mooney Co., 716 East Diamond street; $45,000.

Pittsburgh, Pa.; North Side Packing Co., 1448 Spring Garden avenue; one-story brick commercial garage, 52x52; $12,000.

Pittsburgh, Pa.; Toupet, Bell & Conly, 5814 Ellsworth avenue; 2½-story brick garage and sales room at 435 Craig street, for J. H. Toupet and F. G. Conly, 127 North Highland avenue; $50,000.

Wilkes-Barre, Pa.; Merkins Brothers, 39 Worrall street; one-story garage and welding shop, 56x173, for J. L. Johnson, 6 West Ross street; -15,000.

Wilkes-Barre, Pa.; Kenrode Brothers, 115 Park avenue; one-story private garage, 30x60, at 434 Hazel street, for John G. Mattern, 438 Hazel street; $6000.

Wilkes-Barre, Pa.; John A. Schmitts Sons, Bennett building; one-story brick private garage, 15x23, for Mrs. Victoria Schmidt 176 Main street; $3000.

Wormleysburg, Pa.; W. E. Bushey, Lemoyne, Pa.; one-story garage, 50x130, for Appler & Myers, Lemoyne, Pa.; $15,000.

Providence, R. I.; Thomas F. Cullinan, 63 Olive street; two-story garage, 83x118, for Fred J. P. Riley, East Greenwich, R. I.; $100,000.

Providence, R. I.; C. I. Bigney Construction Co., 898 Westminster street; three-story public garage and service station, 31x80, for Herbert A. Mayer, 404 Weybosset street; $35,000.

Greenville, S. C.; Crouch & Redmon; two-story brick garage, 33x88.

Greenville, S. C.; Williams & Zimmerman; six two-story brick and hollow tile auto sales rooms; $250,000.

Rock Hill, S. C.; J. E. Healan; two-story garage, 40x100; for Spencer, Sturgis & Cobb; $25,000.

Clarksville, Tenn.; Foster-Creighton Co., Nashville, Tenn.; two-story auto building, 96x109; for Carney Automobile Co.

Memphis, Tenn.; H. P. Hurt; one-story brick garage; $54,000.

Austin, Tex.; O. A. Ashley; two-story auto building, 46x160, for Bright Motor Co., 204 East Fifth street; $40,000.

San Antonio, Tex.; James Aiken; two-story fireproof garage, 21x54; for Charles Schreiner.

San Antonio, Tex.; Wright & Sanders, Alamo Bank building; two-story reinforced concrete garage, 86x104; for Joseph Cowrand; $20,000.

Leesburg, Va.; Ives Eshleman; one-story garage and sales room, 50x100, for L. H. Frye; $12,000.

Lynchburg, Va.; W. T. Jones; two-story reinforced concrete garage, floor space for 150 autos; for Apperson-Lee Motor Co.; $80,000.

Norfolk, Va.; Johnson Auto Co.; one-story garage, 47x100, for D. H. Goodman; $30,000. Lessee, Wilcox Motor Corporation.

Norfolk, Va.; Steffans & Co., Board of Trade building; one-story garage and repair shop, 48x75, at 13th and Colonial avenue, for M. I. Greenwood, 147 Granby street.

Norfolk, Va.; Morrison Brown; two-story brick garage; $7205.

Norfolk, Va.; Seacoast Construction Co., 804 Granby street; one-story garage, 50x220; for Samuel Ask, 537 Church streett.

Richmond, Va.; J. T. Wilson, Mutual building; two-story brick, stone and reinforced concrete garage, 65x139, for Laburnum Corporation, 10th and Main streets; $40,000.

Roanoke, Va.; J. P. Prettyjohn & Co., Lynchburg, Va.; two-story garage, 105x200, for Gibson & Packett; $86,000.

Welch, W. n.; H. A. Lucas, Kimball, W. Va.; four-story reinforced concrete and hollow tile garage, 75x150; ornamental terra cotta, interior tile, wire glass windows, reinformed concrete and tile floors, reinforced concrete roof, vapor heat, elevator; $100,000.

Menomenee Falls, Wis.; Foster Construction Co., 534 Caswell block, Milwaukee, Wis.; two-story garage, 75x150, for Schumann Motor Co.; $50,000.

Milwaukee, Wis.; Riessen Brothers, 86 Michigan street; one-story garage, 60x70, at Martin and Van Buren streets, for S. Buchbinder, 545 Van Buren street; $15,000.

Two Rivers, Wis.; Lento Motor Sales Co.; one-story garage; $10,000.

Wausau, Wis.; Theodore Kohl, 924 Jefferson street; one-story public garage, 60x125, at Fifth and Jackson streets, for W. F. Bilke, 1335 Grand avenue; $25,000.

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NEW CONCERNS RECENTLY INCORPORATED

Monthly Record of New Business Houses for Which Charters Have Been Issued in the Various States and Classified According to Nature of Business.

DEALERS IN CARS, TRUCKS AND TRACTORS.

Conway, Ark.; United Motor Co. to take over automobile business of Frauenthal & Schwarz and the Conway Motor Sales Co.; $50,000; Leo Hamberg, Ila Wheat, Leo Crafton, Opie Hartj, William R. James, W. D. Cole, George W. Clark.

Dover, Del.; Admiral Stores Corporation, to deal in automobiles, etc.; $2,000,000; Wilford Jordan, Bevan P. Y. Jordan, William J. Lanson, Philadelphia, Pa.

Dover, Del.; Chandler-Cleveland Sales Co., to deal in automobiles; $150,000; M. L. Rogers, L. A. Irwin, W. G. Singer, Wilmington.

Dover, Del.; Criterion Motors Co.; $1,000,000; Walter J. Leinbach, Victor R. Chandler, E. Edward Dean, Indianapolis, Ind.

Dover, Del.; Gloria Motors Corporation; $5,000,000; Edward S. Napolis, Edgar H. Napolis, Frances E. Jaffe, Philadelphia, Pa.

Dover, Del.; Jackson Distributing Corporation, to deal in automobiles; $30,000; T. L. Croteau, C. H. Blaske, S. E. Dill, Wilmington.

Dover, Del., Liberty Tunnel Motor Co., to deal in automobiles, etc.; $100,000; T. L. Croteau, C. H. Blaske, S. E. Dill, Wilmington.

Dover, Del.; Rogers Tractor & Trailer Co., to deal in automobiles; $1,000,000; T. L. Croteau, M. A. Bruce, S. E. Dill.

Dover, Del.; Thomart Motor Co.; $15,000,000; T. L. Croteau, M. A. Bruce, S. E. Dill, Wilmington.

Dover, Del.; Turbigas Motors Corporation; $1,000,000; M. L. Horty, M. C. Kelly, S. L. Mackay, Wilmington.

Dover, Del.; Westcott Auto Co., to deal in automobiles and supplies; $10,000; Elwood L. Westcott, Etta Westcott, William J. Westcott, Lewes, Del.

Wilmington, Del.; Keldon Motor Truck Corporation, to sell automobiles, etc.; $500,000; M. M. Lucey, M. Butler, L. S. Dorsey.

Wilmington, Del.; Omaha Taxicab Co., to own and conduct a general taxicab and automobile business; $600,000; T. L. Croteau, S. E. Croteau, S. E. Knox, S. E. Dill.

Miami, Fla.; J. T. Weathers Motor Car & Equipment Co., to deal in automobiles and all kinds of motor vehicles; $50,000; John T. Weathers, James L. Boring, William Russell Hutchinson.

Indianapolis, Ind.; Acme Vulcanizer Manufacturing Co., to deal in automobiles and accessories; $10,000; Charles F. Neffle, O. R. Breeden, H. B. Hoffman.

Davenport, Ia.; Davenport Motor Sales Co.; $25,000; R. J. Walsh, I. W. Simons.

Dubuque, Ia.; Vyverberg Co., to deal in motor cars; $50,000; H. E. Vyverberg, president; Karl Staufembeil, vice president; George Hille, treasurer.

Sioux City, Ia.; North American Tire Co., to deal in automobiles and accessories; $100,000; Leon Davidson Julian M. White, Harold W. Levinger, Osvaldo de Zuliana.

Ashland, Ky.; Ashland Motor Co.; $5000; Joseph T. Mock, John Mock, Walter C. Beard.

Glasgow, Ky.; Glasgow Buick Co.; $20,000; R. H. Barton, W. R. Dickinson, Brents Dickinson.

Cumberland, Md.; Alleghany Motor Co., Inc.; $100,000; Daniel P. Cabage, Charles Allen, Edwin F. Stahl.

Boston, Mass.; Boston Trailer Co., Inc., to deal in automobiles, trucks and trailers; $25,000; Edmond P. Blake, Somerville; Elmer F. Butler, Cambridge; William W. Fisk, Boston.

Boston, Mass.; Massachusetts Sales & Garage Association, Inc., to deal in motor vehicles; $100,000; John B. Hall, Brookline; Albert J. Carter, Boston; Ralph C. Holliday, Winthrop.

Boston, Mass.; Walter Transport Sales Co., to deal in motor vehicles; $50,000; Lester B. Hull, Somerville; George N. Benoit, Rockland; Mary E. Barrett, Melrose.

Lowell, Mass.; Merrimack Motor Co., to deal in motor vehicles; $50,000; George W. Taggart, Brookline; Constantine Sonslides and Louis Solon, Boston.

Worcester, Mass.; Service Truck Co. of Worcester, Mass.; $25,000; Benjamin H. Blaney, president; Holman H. Hazelton, 297 Pleasant street, treasurer; L. H. Blaney, clerk.

Duluth, Minn.; Northern Motor Co.; $100,000; R. J. Whiteside, R. F. Burke, J. R. Delleperche.

Crawford, Neb.; Furman Auto Co.; $100,000.

Omaha, Neb.; Omaha Park Tractor Co.; $100,000.

Orange, N. J.; Excl Motors Co., to conduct a general automobile business; $125,000.

Trenton, N. J.; Trenton Motor Sales Corporation, to deal in automobiles, equipment, etc.; $25,000; Harry F. Bonham, Hyman K. Gerofsky, Francis Gerofsky.

Albany, N. Y.; Franklin Car & Truck Corporation; $200,000; A. J. Yengst, L. J. Shearer, L. J. Klett.

Brooklyn, N. Y.; Blumenthal & Rubinsky Realty Co., realty and autos; $5000; S. Blumenthal, I. Rubinsky, S. Lustig, 586 Manhattan avenue.

Brooklyn, N. Y; Castle Motor Car Co.; $10,000; S. Davis, R. Davis, A. R. Heinzerling.

Brooklyn, N. Y.; Olympic Auto Exchange; $10,000; E. Horowitz, J. Romano, W. Dietz, 506 Eastern parkway.

Buffalo, N. Y.; Male Motor Truck Co.; $25,000; H. L. Payne, L. E. and W. J. Male.

New York, N. Y.; Adelphia Auto Warehouse, Manhattan Borough; $10,000; H. S. Hutchings, G. Paschat, L. Nunghardt, 250 West 78th street.

New York, N. Y.; Aetna Motors Corporation of New York, Manhattan Borough; $1,000,000; H. May, V. P. Manne, W. B. Whelpley, 47 East 129th street.

New York, N. Y.; Audrey Motors Corporation, Manhattan Borough; $500,000; H. P. Clarke, H. P. Friedman, H. J. Liebskind, 200 Fifth avenue.

New York, N. Y.; Bronx Used Car Co., Bronx Borough; $5000; R. Toplitz, S. R. Lash. L. Groom, 13-21 Park row.

New York, N. Y.; D. & B. Motors Distributing Co.; $50,000; A. J. Davis, L. R. Best, B. F. Foster.

New York, N. Y.; Dolt Motor Truck Co., Queens Borough; $50,000; H. G. Dolt, J. W. Liston, S. Seymour, New Brighton.

New York, N. Y.; John A. Gifford & Son, Inc., to conduct an automobile business; $100,000; J. A. Gifford.

New York, N. Y.; Holland Sales Co., Manhattan Borough, auto business; $50,000; G. Siegmund, P. A. Peyser, E. Kogreiz, 640 West 58th street.

New York, N. Y.; India Tire & Rubber Sales Co. of New York, to deal in automobiles; $25,000; R. A. Wicksel, H. M. Goodman, M. Levy.

New York, N. Y.; Larry-Green Co., Manhattan Borough, auto business; $20,000; L. F. Bargebuhr, T. L. Green, M. Frank, 701 West 177th street.

New York, N. Y.; Packard Auto Exchange Co.; $20,000; D. Widdi, A. B. Silverman, C. L. Gonnett.

New York, N. Y.; Packard Motors Export Corporation; $50,000; A. Macauley, R. A. Alger, F. M. Alger.

New York, N. Y.; Riverside Motor Sales, Manhattan Borough; $15,000; E. G. White, W. S. Goeltz, E. D. Wright, 550 West 157th street.

New York, N. Y.; Roys Motor Corporation, Manhattan Borough; $100,000; A. H. Ackere, E. A. Lovingston, W. E. Bisp, 57 West 37th street.

New York, N. Y.; Washington Auto & Wagon Works; $10,000; E. Specter, C. Hande, I. Levitt.

Olean, N. Y.; Forbes Sales Corporation, to conduct an automobile business; $10,000; W. J. Brannan, R. N. Forbes, H. R. Rungie.

Rochester, N. Y.; Kern Motor Sales Co.; $20,000; G. T. Howell. H. Kern, S. J. Kern.

Syracuse, N. Y.; Barlow Motor Car Co.; $10,000; L. E. Whittig, S. S. Barlow.

Syracuse, N. Y.; Goodrich Motors Corporation; $50,000; J. E. Austen, S. A. Goff, G. E. Goodrich.

Syracuse, N. Y.; Onondaga Motor Corporation; $50,000; W. B. Candee, C. Dean, E. E. Murray.

Syracuse, N. Y.; Sheils Motor Co.; $15,000; T. F. Dolan, Jr., J. W. Bailey, P. J. Sheils.

Syracuse, N. Y.; Whiteside-Roth Motor Corporation; $10,000; J. C. and J. S. Roth, J. M. Whiteside.

Asheville, N. C.; Erskine Motor Co.; $25,000; J. V. Erskine, James M. Erskine, M. A. Erskine.

Charlotte, N. C.; Balanced Six Motor Co., to sell automobiles; $100,000; J. F. Cannon, Cameron McRae, J. F. Mangum.

Charlotte, N. C.; Goss, Heath & Co. to deal in automobiles and tractors; $50,000; B. D. Heath, A. S. Goss, W. F. Dowd, Jr.

Charlotte, N. C.; Queen City Motor Co., Inc.; $125,000.

Rocky Mount, N. C.; Gate Tire Station Co., to sell and repair automobiles; $10,000; J. L. Peele, Jr.

Winston-Salem, N. C.; Standard Motor Co., Inc.; $250,000.

Bismarck, N. D.; Baker-Toppings Co., to do a general automobile business; $10,000; Frayer Baker, A. F. Toppings, Benton Baker.

Fargo, N. C.; Bellin Motor Car Co., Berry building, 315 First avenue, north, to distribute Jordan cars in 10 counties in southeastern North Dakota and six counties in western Minnesota.

Fargo, N. D.; Fargo Nash Co., to distribute Nash cars in southeastern North Dakota and parts of Minnesota; J. E. Movius, president.

Akron, O.; Templar Akron Motor Car Co.; $50,000; R. M. Eagen, R. E. Werner, Bernard J. Amer, N. B. Roby, J. B. Sieber.

Cleveland, O.; Ohio Machine & Motor Co.; $50,000; I. H. Case and others.

Cleveland, O.; Oliver Motor Truck Co.; $50,000; R. B. Oliver.

Philadelphia, Pa.; White Sales Co. of Chester county, to deal in automobiles; $200,000; F. R. Hansell, J. Vernon Pimm, S. E. MacFarland.

Pittsburgh, Pa.; Allison-Hill Motor Co.; $30,000; E. W. Allison.

Providence, R. I.; United States Motor Co.; James Danahey, John B. Creigh, Eugene Cummings.

Bennettsville, S. C.; Dee Dee Motor Co.; $25,000; John L. McLaurin.

Columbia, S. C.; Stegall Sales Co.; to conduct an automobile business; $50,000; Avery Carter, E. S. Ketner.

Johnston, S. C.; Consolidated Auto Co.; $6000; G. G. Ballentine.

Saluda, S. C.; Saluda Motor Co.; $15,000; D. N. Smith, J. H. Thrallkill.

Castlewood, S. D.; Carter Automobile Co.; $20,000; Hugh I. and William A. Carter, Thomas G. Magee.

Nashville, Tenn.; Bacon-Dickey Motor Co., Green county; $20,000; J. P. Bacon, F. C. Dickey, R. B. Dodson, W. L. Brayles, George C. Taylor.

Nashville, Tenn.; Owen Motor Co, Shelby county, to conduct a business of selling automobiles; $50,000; W. L. Owen, R.

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C. Tarlton, C. E. Smith, C. C. Robbins, J. W. House, Jr.

Austin, Tex.; Forbes-McWhirt Motor Co., Sherman, Tex.; $25,000; F. A. Forbes, William McWhirt, J. N. Touchstone.

Eastland, Tex.; Auto Sales Co.; $10,000; J. M. Sears, Maple Wilson, O. E. Brashear.

Lubbock, Tex.; Lub-Tex Motor Co.; $20,000; C. E. Maedgen, H. P. Bradley, J. C. Bradley.

San Antonio, Tex.; Orsinger Motor Sales Co.; $20,000; G. Orsinger, W. Orsinger, J. C. De Pue.

Norfolk, Va.; Gary & Slaughter, Inc., to conduct a general automobile and accessory business; $15,000; W. E. Slaughter, E. W. Gray.

Norfolk, Va.; Southern Branch Motor Corporation, to deal in automobiles and automobile accessories; $50,000; C. W. Hornegay, president; A. T. McDonald, secretary; H. L. Bondurant.

Richmond, Va.; Bell Tire & Rubber Co., to deal in automobiles and accessories; $50,000; R. J. Bell, H. W. Powers.

Windsor, Va.; Windsor Motor Co., to deal in automobiles and accessories; $5000; C. F. Joyner, G. E. Joyner.

Spokane, Wash.; Inland Motor Car Co., 906-908 West Sprague avenue, to sell Case car; H. H. Herzog, S. S. Bleiweiss, Samuel Edelstein.

Spokane, Wash.; Interstate Motor Co., 1313 West First avenue, to distribute Allen, Velie, Moon, Dort and Briscoe car for Eastern Washington and Northern Idaho; W. F. Stein, W. R. Delay, L. S. Christofferson, E. M. Ward, manager.

Spokane, Wash.; Spokane-Wash. Motor Co, 1525 First avenue; R. K. McIntosh, Charles Heidenreich, Joe S. Bain.

Augusta, Wis.; Union Motor Co., to deal in automobiles, tractors, farm implements and auto accessories; $15,000; Rudolph Thiel, George Warner, Harry Rick.

Black River Falls, Wis.; Jackson County Auto Co.; $40,000; C. J. Hogg, J. R. McDonald, J. D. McCallum.

Marshfield, Wis.; Franklin-Ritt Co., to deal in automobiles, trucks and supplies; $30,000.

Merrill, Wis.; Merrill Buick Co.; $10,000; W. H. Nohr, Ida J. Nohr, H. C. Nelson, Hannage Nelson.

Milwaukee, Wis.; Anderson Sales Co., to deal in automobiles, etc.; $50,000.

Milwaukee, Wis.; Hummell Automobile Co.; $10,000.

Milwaukee, Wis.; Milwaukee Auto Specialty Co.; $35,000; William J. Schubert, Walter J. Raley, Walter R. Fleisher.

Oshkosh, Wis.; J. B. Cudliff Co., to conduct a general automobile and accessory business; $10,000; J. B. Cudliff, C. C. Konrad, Sophia Konrad.

Superior, Wis.; Carlson Motor Car Co.; $25,000; Frank Carlson, William H. Hoover, Joseph E. Flynn.

MANUFACTURERS OF CARS, TRUCKS, TRACTORS, ETC.

Dover, Del.; Auto Sales & Service Co., to manufacture autos, etc.; $200,000; Franklin L. Mettler, M. E. Mettler, L. F. Mettler, Wilmington.

Dover, Del.; Chanslor & Lyon Co., to manufacture automobiles, etc.; $11,000,000; T. L. Croteau, M. A. Bruce, S. E. Dill, Wilmington.

Dover, Del.; Duesenberg Automobile Motors Co., to make autos, etc.; $15,000,000; H. L. Higgins, L. F. Reynolds, E. A. Carlin, New York, N. Y.

Dover, Del.; Federal Motor Truck Co. of Philadelphia, manufacturer; $100,000; T. L. Croteau, M. A. Bruce, S. E. Dill, Wilmington.

Dover, Del.; Grohman Motor Manufacturing Co., Inc., to manufacture motors and motor trucks; $500,000.

Dover, Del.; Hullett Motor Car Co., to manufacture motor cars; $10,000,000; T. L. Croteau, M. A. Bruce, S. E. Dill.

Dover, Del.; Hyve Motor Sales Corporation, to manufacture automobiles; $500,000; T. L. Croteau, M. A. Bruce, S. E. Dill.

Dover, Del.; Jacquet Motors Corporation of America, manufacturer; $100,000; M. L. Horty, M. C. Kelly, S. L. Mackey, Wilmington.

Dover, Del.; E. A. Nelson Automobile Co.; $20,000,000; Emil A. Nelson, James A. Hibbard, Charles F. Delbridge, Detroit, Mich.

Dover, Del.; Pennsylvania Automotive Corporation, the manufacture and sale of automobiles, etc.; $50,000; W. I. N. Lofland, Frank Jackson, Mark W. Cole.

Dover, Del.; Premier Motor Corporation of America, to manufacture automobiles; $2,000,000; James Potter, Timothy O'Leary, Charles B. Downes, Philadelphia, Pa.

Dover, Del.; Queen City Motor Co., to manufacture automobiles; $75,000; T. L. Croteau, M. A. Bruce, S. E. Dill, Wilmington.

Dover, Del.; Queen Tire Co., to manufacture motorcycles, etc.; $1,000,000; Frederick Seeber, Alexander Goldstein, Fred Becker, Jr., New York, N. Y.

Dover, Del.; Republic Truck Sales Corporation, to manufacture motor trucks, etc.; $100,000; T. L. Croteau, M. A. Bruce, S. E. Dill, Wilmington.

Dover, Del.; United States Axle Co., to make trucks, supplies, etc.; $1,000,000; T. L. Croteau, M. A. Bruce, S. E. Dill, Wilmington.

Wilmington, Del.; Atlas Tractor Co.; $1,000,000.

Wilmington, Del.; International Manufacturing Co., to manufacture farming implements; $150,000; William F. O'Keefe, George G. Steigler, E. E. Aberlee.

Wilmington, Del.; Petroleum Motors Corporation, to manufacture automobiles; $1,250,000.

Wilmington, Del.; Stewart Products Service Corporation of Rhode Island, to manufacture automobiles and parts; $100,000.

Jacksonville, Fla.; Mangels-Kirby Co., Inc., to manufacture, buy, sell, rent, hire and repair automobiles, motor cars, motor trucks, motorcycles, motor boats, electric motors, dynamos, gas engines, steam engines; $200,000.

Indianapolis, Ind.; Preferred Motor Car Co., to manufacture automobiles, etc.; $2,000,000; Ira Chase Koshne, Louis Lescuson, S. C. Bodner.

South Bend, Ind.; Red Arrow Motors Co., to manufacture automobiles; $1,000,000; Irving L. Stoney, Albert B. Bowman, Louis E. O'Neil.

St. Paul, Minn.; Lamoreaux-Boomer Co., Scribner-Libby building, Mackubin and Burgess streets, to make road machinery; $200,000.

Passaic, N. J.; Standard Motor Sales Co., to manufacture and deal in automobiles; $30,000; Maurice Kinkelman, I. C. Boder, S. I. Finkelman.

Buffalo, N. Y.; Wheat Tractor & Tiller Co., to manufacture automobiles and tractors; $1,000,000; M. D. B. Smith, M. H. Munson, H. C. Seil, Alf E. Tovey, C. L. Lyon.

New York, N. Y.; Ranier Motor Corporation, Manhattan Borough; $900,000.

Philadelphia, Pa.; Morgan Motors Corporation, to manufacture automobiles; $600,000.

Charlottesville, Va.; Charlottesville Aero & Motor Corporation, to build air planes and deal in machinery and motor driven vehicles of all kinds; $20,000; Dr. J. C. Coulter, president; Robert E. Clark, secretary; J. B. M. Carter, J. P. Grove.

MAKERS OF PARTS, EQUIPMENT, ETC.

Dover, De.; Adjusto Manufacturing Co., to manufacture the "Saf-T-Vu" windshield products; $40,000; Edward N. Smith, Durant J. Thompson, Brooklyn, N. Y.; H. A. Stewart, New York, N. Y.

Dover, Del.; Auto Signal Detector Co.; $750,000; William Custer Waltman, John W. Marsden.

Dover, Del.; Chapman Master Battery Co.; $1,075,000; T. L. Croteau, M. A. Bruce, E. E. Aberle, Wilmington.

Dover, Del.; Claude Carburetor Co., to manufacture carburetors, etc.; $500,000; Samuel B. Howard, Harry C. Hand, Robert K. Thistle, New York, N. Y.

Dover, Del.; J. & G. Tire Co., to manufacture auto tires, etc.; $2,500,000; D. D. Wharton, L. B. Phillips, M. S. Anderson.

Dover, Del.; Maumee Tire & Rubber Co., to manufacture tires, etc.; $27,500,000; George Trent Morrison, Carl F. Weissenberger, Jerome B. Paterson, Toledo, O.; Robert Butler, Barberton, O.

Dover, Del.; Plainfield Body Corporation; $2,750,000; T. L. Croteau, M. A. Bruce, S. E. Dill, Wilmington.

Dover, Del.; Polish-American Rubber Manufacturing Co.; $2,000,000; T. L. Croteau, C. H. Blaske, S. E. Dill, Wilmington.

Dover, Del.; Rubber Corporation of America; $2,000,000; T. L. Croteau, M. A. Bruce, S. E. Dill, Wilmington.

Dover, Del.; United Tire Stores Co., to manufacture tires; $10,500,000; T. L. Croteau, M. A. Bruce, S. E. Dill, Wilmington.

Dover, Del.; Unity Tire & Rubber Co., to manufacture rubber tires; $1,000,000; T. L. Croteau, C. H. Blaske, S. E. Dill.

Dover, Del.; Wharton Motors Co., to make auto motors; $5,000,000; Thomas P. Wharton, Martha Troy, L. S. Tone, New York, N. Y.

Wilmington, Del.; American Motor Patents Co., to manufacture springs; $1,000,000; M. L. Rogers, L. A. Irwin, W. C. Singer.

Wilmington, Del.; Baehr Body Corporation, to manufacture automobile bodies, etc.; $1,000,000.

Detroit, Mich.; Motor Vehicle Equipment Co., to manufacture bodies for motor trucks; $600,000; Fred England, president.

East Orange, N. J.; J. J. Breese Automobile Refinishing Co., 9½ North Grove street; $10,000; George A. and G. Willis Cain, John J. Breese.

Hamilton Township, Mercer County, N. J.; Trenton Patent Manufacturing Co., to manufacture piston rings for auto motors, etc.; $200,000; William H. Jaeger, William Leedom, Duke A. Yergy, Trenton.

Newark, N. J.; American Auto Body Building Co., 164 Market street; $25,000; Max Palowsky, Harry Brown, Anna Stein, Harry Pochter.

Newark, N. J.; National Auto Products Corporation, 810 Broad street, to manufacture a special type of rim lug; $2,000,000; James M. Power, John P. Coulon, Peter Orance, Richard Moldenke, William J. Power.

Newark, N. J.; Workmen's Clinton Hill Jitney Co., to manufacture automobile bodies; $10,000; Rubin Pratos, Louis Bakalor, Joseph Lazowitz.

Gloversville, N. Y.; Nelson A. Taylor Co., to make auto tops, etc.; $15,000; M. Buehler, H. A. and F. F. Taylor.

Jamaica, N. Y.; Simpson Universal Tire Co. of New York; $300,000; A. Simpson, A. Goetz, A. Scholl, Jr., Richmond Hill.

New York, N. Y.; Heiss, Anton & Co., Bronx Borough, to make truck, wagon and auto bodies; $6500; A. I. Heiss, F. Wegmann, J. Juttner, 529 East 135th street, Bronx.

New York, N. Y.; Channel Packing & Rubber Co., Manhattan Borough; $50,000; A. M. Hardes, F. J. O'Conner, T. P. Hastings, 73 Pineapple street, Brooklyn.

New York, N. Y.; D. L. C. Manufacturing Co., Manhattan Borough, to make auto supplies; $8000; M. Teich, O. Feldman, I. Steinberg, 1800 Pitkin avenue, Brooklyn.

New York, N. Y.; F. A. Manufacturing Co., Manhattan Borough, to make leather mats and auto accessories; $500,000; B. Abraham, I. Schmal, S. Taubenhaus, 234 East street.

New York, N. Y.; Harriman Products Co., Manhattan Borough, to make parts for autos and air planes; $50,000; J. L. Marshall, W. L. Moseley, G. V. Harriman, 34 Vermilyea avenue.

New York, N. Y.; Hurlburt Service, Manhattan Borough, to make motor accessories; $50,000; M. L. Bayard, S. E. Dunkle, W. N. Hurlburt, 10 East 39th street.

New York, N. Y.; Ignition Co. of America, to manufacture spark plugs for automobiles; $2,000,000; Leslie R. Pratt, G. A. Moses, William Barnes.

New York, N. Y.; Ignition Specialties Co., Manhattan Borough; $50,000; O. R. Gischow, C. Fay, S. H. Kunstitch, 24 Mount Morris park west.

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Rochester, N. Y.; Commonwealth Battery Plate Co.; $50,000; G. S. Van Blaricom, J. C. Harris, L. F. Heberger.

Utica, N. Y.; Balch Body Corporation, to design auto bodies; $25,000; F. W. and F. E. Balch, H. J. Dillenback.

Cleveland, O.; Ohio Machine & Motor Co.; $50,000; I. H. Casem, M. E. Evans, W. W. Richmond, E. G. Carnes, T. E. Vormelker.

Cynwyd, Pa.; Advanced Products Corporation, to manufacture automobile parts, etc.; $250,000; Thomas Sanders, Jr., Cynwyd; A. A. Van Orsdale, Philadelphia; Pierre Lebourg, Paris, France.

Philadelphia, Pa.; Jaques Manufacturing Co., to manufacture automobile bodies; $300,000; F. R. Hansell, J. Vernon Pimm, George H. B. Martin.

Charlotte, S. C.; Cyclone Starter & Truck Co.; $1,000,000.

Memphis, Tenn.; Perfect Stop Compression Brake Co., Cleveland street and Monroe avenue; $100,000; James Able, Nashville, president; E. B. Bennett, Memphis, vice president; John Guthrel, St. Louis, Mo., vice president; E. F. Stahl, secretary; Mrs. James Able, assistant secretary; other directors, W. C. T. Berlin, J. Haas, L. E. Parker; sales manager, J. F. Jones.

Dallas, Tex.; Western Gears & Parts Co.; $100,000; J. H. Connell, L. K. Weaver, E. F. Moser.

Richmond, Va.; Service Station Equipment Corporation, to manufacture and deal in automobile accessories.

Wheeling, W. Va.; Ohio Generator Co.; $100,000.

GARAGES, REPAIR SHOPS AND SERVICE STATIONS.

Dover, Del.; Mutual Auto Service Association of North America; $100,000; T. L. Ernst, L. S. Dumisil, Edward A. Castle.

Dover, Del.; Real Service Garage; $65,000; William H. Slayton, Charles J. Dalzell, William S. Townsend, Washington.

Wilmington, Del.; L. & C. Motor Sales Co.; to conduct garages; $100,000.

New Albany, Ind.; Edward J. Hackett Garage Co.; to store trucks and tractors; $100,000; Edward J. Hackett, Sr., William A. Shumate, Edward J. Hackett, Jr.

Davenport, Ia.; American Auto Renting & Service Co.; to conduct a garage; $50,000; R. A. Watros, R. A. S. Christiansen, Charles W. Wolf.

Boston, Mass.; Beacon Auto Machine Co.; garage; $25,000; James Galway, Bertha L. MacMillan, Charles S. MacMillan.

Lawrence, Mass.; Abbott Street Garage, Inc.; $5000; Fred L. Greaves, George H. Casey, John D. Marks.

Bainbridge, N. Y.; Bainbridge Garage; $25,000; C. P. Case, O. L. Throp, J. Scott.

Brooklyn, N. Y.; Leward & Taylor; garage; $12,000; F. E. Taylor, A. T. and E. H. Leward, 180 Hancock street.

Brooklyn, N. Y.; 1946 Pitkin Garage; $10,000; S. Waxberg, M. Knopman, H. Grossman, 415 Pennsylvania avenue.

Brooklyn, N. Y.; Pearl Garage; $1000; R. Dunn, S. Buchbinder, S. Liebman, 350 Broadway.

Freeport, N. Y.; Sophie Tucker Garage; $10,000; P. A. Buza, F. and S. P. Westphal, Hotel Claridge.

Gouverneur, N. Y.; Whitney Garage Co.; $35,000; J. L. Skinner, W. C. Goodison, V. M. Goodison.

Middletown, N. Y.; Electric Auto Service System; $25,000; E. Strack, F. H. Beakes, G. W. Cross.

New York, N. Y.; B. F. & B. Garage Co., Manhattan Borough; $9000; B. and M. Berkowitz, N. Finkel, 185 Orchard street.

New York, N. Y.; Bluebird Garage, Manhattan Borough; $100,000; W. G. and A. V. Potter, T. J. Meehan, 52 Wall street.

New York, N. Y.; Boulin & Robinson, Manhattan Borough, garage; A. S. Boutin, L. C. Robinson, A. M. Bailey, Yonkers.

New York, N. Y.; Bronx Automotive Sales Corporation, to conduct a garage; $25,000; J. Nesil Cella, J. L. Cella, 1729 Filmore street, Bronx.

New York, N. Y.; Courtlandt Garage & Realty Corporation, Bronx Borough; $35,000; J. P. Kosman, M. E. Kaplan, L. Streusand, 138 East 94th street.

New York, N. Y.; Evergreen Garage, Queens Borough; $6000; G. D., H. and F. Gerken, 389 Cypress avenue.

New York, N. Y.; Little Green Garage, Manhattan Borough; $5000; G. L. Casseneuve, E. M. Brennan, E. L. Shea, 288 Ryerson street, Brooklyn.

New York, N. Y.; Feldman & Goldberg Garage; $10,000; I. Feldman, P. J. Goldberg, B. Bernstein.

New York, N. Y.; Motor Inn Garage Co., Manhattan Borough; $25,000; A. Hueflich, I. and A. Wendell, 234 East 202nd street.

New York, N. Y.; Owl Garage, Manhattan Borough; $5000; L. I. and M. Crossfield, Jr., S. W. Kroll, 116 Nassau street.

New York, N. Y.; Prudential Garage, Manhattan Borough; $6000; J. G. Eichenbaum, M. Feder, R. Dundy, 350 Broadway.

New York, N. Y.; Rose Garage, Manhattan Borough; $10,000; M. and J. I. Goldberg, I. Neuwirth, 277 Broadway.

New York, N. Y.; Turin & Poughkeepsie Motor Repair Co.; $10,000; G. Siegmund, E. Kegreisz, P. A. Peyser.

Niagara Falls, N. Y.; Falls Garage Corporation; $150,000; R. A. Knowles, B. Rubillard, C. R. Runals.

Niagara Falls, N. Y.; Powerful Garage Corporation; $10,000; B. and A. D. Meyers, O. Rich.

Poughkeepsie, N. Y.; John Van Benschoten, Dutchess county, garage; $400,000; J. P. Martan, J. and C. Van Benschoten.

Rochester, N. Y.; Vail & Irvin Auto Co., to conduct a garage; $200,000; J. Crocker, R. J. Irvin, K. K. Vail.

Rochester, N. Y.; Vail & Irvin Auto Co., Inc.; general taxicab, auto and garage business; $200,000; E. S. Hawley, 50 Vanderbilt avenue, New York.

Yonkers, N. Y.; Newport Auto Service Co.; $20,000; A. R. McMackin, C. C. Loomis, H. Wilvin.

Yonkers, N. Y.; White's Corporation; garage; $5000; J. and J. Bentz, J. White.

Scotland Neck, N. C.; Central Garage & Sales Co.; $50,000; W. O. Lawrence.

Fargo, N. D.; Fargo Garage Co., First avenue south and Fifth street.

Towner, N. D.; Towner Motor Co.; to operate a garage and deal in farm and general machinery; $15,000; J. A. Wik, B. J. Faken, J. W. E. Leach.

Dunkirk, O.; Mitchell Garage Co.; $50,000; Mrs. Effie Mitchell, I. J. Mitchell, Mrs. Kappa Mitchell, Mrs. K. E. Mitchell, Mrs. Odah Mitchell.

Portland, Ore.; Hughson & Hollingsworth, repair shop, formerly the Oregon Motor Car Co.; Robur Hughson, Bruce Hollingsworth.

Philadelphia, Pa.; Arnold Garage Co.; $15,000; F. R. Hansen, George B. Martin, J. Vernon Pimm.

Nashville, Tenn.; Auto Wash Shop of Nashville, Tenn., to wash, polish and store automobiles; $5000; Robert A. Williams, W. B. Clendenning, M. D. Atkinson, H. C. Davis, D. S. Atkins.

Memphis, Tenn.; Tennessee Auto Top & Painting Co.; to conduct automobile shop, etc.; $15,000; John E. Shipp, John E. Levy, J. W. Young, L. W. Ceasor, A. H. Durrell.

Houston, Tex.; Houston Tire & Vulcanizing Co.; $10,000; H. W. Oglesby I. W. Coles T. A. Pendarvis.

San Antonio, Tex.; Ideal Auto & Garage Co.; $100,000; David Gittlieh, Sidney H. Weiss Murray Brooks.

Toledo, Wash.; Toledo Garage & Land Co.; to conduct a general automobile business; $6000; Lawrence Carpenter, Clara H. Carpenter, Grace V. Carpenter.

Appleton, Wis.; Milhaupt Spring & Auto Co.; $40,000.

Eau Claire, Wis.; Battery Service Co.; $5000; Frank R. Sebenthal, Frank G. Sebenthal, John K. Kidd.

Webster, Wis.; Babcock Brothers Incorporation; garage; $5000.

DEALERS IN ACCESSORIES, SUPPLIES AND EQUIPMENT.

Bristol, Conn.; Land & Auto Supply Co.; $25,000.

Dover, Del.; Ex-Cel Auto Supply, to deal in parts, etc.; $25,000; Thomas R. Lloyd, Robert G. Davis, G. S. Leive, Pittsburgh, Pa.

Dover, Del.; Folk Roller Bearing Co.; $15,000; John P. Bracken, Robert D. Minch, E. V. Gaughan.

Peoria, Ill.; Illinois Battery Steamer Co.; $15,000; Charles Knetzger, Theodore B. Wissing, Alphonse J. Wissing, Otto Rohman, Ralph V. Raff, Marie Z. Wissing.

Kokomo, Ind.; Automotive Accessories, Inc., to deal in motor accessories and supplies; $100,000; Frank S. McNeal, J. Sam Strauss, Burt J. Hubbard.

Kokomo, Ind.; Instant Starter Co.; $25,000; Raymond W. Nichols, March W. Haynes.

Frankfort, Ky.; Scott's 638 Tire & Auto Co.; $10,000; H. P. Scott, Clara Scott, Will Penn.

Watertown, Mass.; Hood Rubber Products Co., 31 South Franklin street, Chicago, Ill.; $1,500,000; R. E. Bain, manager.

Hoboken, N. J.; Hollander Auto Supplies Co., Bergenline avenue, Union Hill; $25,000; to deal in auto supplies and accessories; Edward Hall, 28 Liberty place, Weehawken; Louis Hollander, 238 Avon avenue, Newark; Samuel Hollander, 38 Huron avenue.

Newark, N. J.; J. J. Dick Wheel Corporation, 800 Broad street; $60,000; to deal in automobile parts; John O. and Walter R. Johnston, Peter Stone.

Newark, N. J.; Voorhis-Campbell, 59 Coeyman street; $125,000; to deal in automobile engines and parts; Richard D. Voorhis, Alfred B. and Edward W. Campbell.

Singac, N. J.; Singer Auto Supply Co.; $25,000; Fred Swithenbank, John Chivers, M. L. Swithenbank.

Brooklyn, N Y.; Auto-Automatic Signal Co.; $40,000; R. A. and G. Gnam, C. F. Marston, 2230 Tilden avenue.

Brooklyn, N. Y.; Auto Outfitters; $10,000; A. Allenberg, G. H. Howard, D. D. Vogel.

Buffalo, N. Y.; International Accessories Corporation; vehicle accessories; $50,000; E. F. Buckley, J. R. Fitzsimmons, C. D. Magee.

Buffalo, N. Y.; Marvel Auto Specialties Corporation; $50,000; C. T. Horton, R. A. Schmidt, W. B. Grandison.

Buffalo, N. Y.; Prudential Rubber & Airless Tire Co.; $25,000; J. Dirogolmo, J. Parrino, H. Hennig.

Buffalo, N. Y.; Farrar Motors Corporation; $50,000; machinery tools; A. A. Miller, J. W. and C. W. Farrar, Buffalo.

Buffalo, N. Y.; Fox-Richardson Co.; $25,000; auto and mechanical supplies; F. G. Fox, H. R. and C. E. Richardson, Buffalo.

Buffalo, N. Y.; Slohm Tire & Mold Co.; $10,000; H. Raflovich, L. Slohm, W. H. Hartsberg, Buffalo.

Buffalo, N. Y.; United Accessories Corporation; $100,000; auto accessories; B. H. Boench, E. S. Murphy, H. H. McCorkle, 100 Broadway.

Jamestown, N. Y.; Economy Auto Supply, Inc.; $25,000; W. A. Abrams, R. N. Forbes, H. Schafer, Dunkirk.

Middletown, N. Y.; Electric Auto Service System; $25,000; E. Strack, F. H. Beakes, G. W. Cross.

New York, N. Y.; A. B. C. Automotive Accessories, Manhattan Borough; mercantile business; $100,000; A. Day, J. P. Booth, T. A. Sherman, 100 Broadway.

New York, N. Y.; Burglar-Proof Auto Lock & Car Specialty Corporation; $10,000; J. F. Hennessy, E. Horton, F. J. Gannon, 160 East 65th street.

New York, N. Y.; Daff Tire Co.; $50,000; J. H. Jackson, C. Gaschott, M. M. Coughlin.

New York, N. Y.; General Auto Lock Corporation, Manhattan Borough; $8000; A. M. McGiff, H. H. Chinsky, S. Heitel, 850 Hewitt place.

New York, N. Y.; Globe Auto Parts Co., Manhattan Borough; $10,000; A. L. Feigus, E. I. Heins, P. R. Kail, 910 Prospect avenue, Bronx.

New York, N. Y.; Knickerbocker Auto Parts Co.; $10,000; M. R. Deibel, A. I. Okanst.

New York, N. Y.; McClaren Rubber Tire Co., Manhattan Borough; $28,000; W. F. Smith, C. E. and A. F. Lynch, 56 East 59th street.

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New York, N. Y.; Bartley Brothers & Hall, Inc., Manhattan Borough; $150,000; saddlery and auto accessories; A. F. Bartley, Montclair, N. J.; P. C. Hall, 84 Edgecliff terrace, Yonkers.

New York, N. Y.; Berman Tire Co., Manhattan Borough; $5000; M. Levin, J. Savelotn, S. Berman, 2.2 West 28th street.

New York, N. Y.; Cleveland Amalgamated Tire Stores Corporation, Manhattan Borough; $20,000; S. and A. Newman, G. J. Bates, 1932 Broadway.

New York, N. Y.; Globe Auto Parts Co., Manhattan Borough; $10,000; A. L. Feigus, E. I. Heins, P. R. Kall, 910 Prospect avenue, Bronx Borough.

New York, N. Y.; Henderson Tire Export Co., Inc., Manhattan Borough; $250,000; tire business; P. A. Zizelman, 38 Park row; H. P. Hill, 1482 Broadway; R. C. Owens, Wallick hotel.

New York, N. Y.; P. & F. Auto Supply Co., Manhattan Borough; $10,000; W. H. Pederson, A. S. Flanagan, T. F. Von Dorn, 305 West 97th street.

New York, N. Y.; Reindeer Tire & Rubber Co., Manhattan Borough; $50,000; M. F. Dennis, P. M. Tonn, A. Foy, 112 West 23rd street.

New York, N. Y.; Re-Nu Tire & Rubber Co., Manhattan Borough; $10,000; J. Messner, G. Graff, G. Snyder, 271 Madison avenue.

New York, N. Y.; Trans-Continental Tire & Rubber Co., Manhattan Borough; $20,000; W. W. Lessellbaum, F. Druss, E. Eisenstein, 128 Broadway.

Syracuse, N. Y.; Auto Toggery Shop; $50,000; R. A. Carpenter, D. F. Tandy, E. W. Morgan.

Syracuse, N. Y.; Denlinger Lamp & Ignition Co.; auto accessories; $12,000; F. A. Brown, C. J. Benentt, M. G. Denlinger.

Syracuse, N. Y.; Latta's Electric Station, to deal in batteries; $100,000; C. E. Kreuzer, R. E. Wight, G. Latta.

Wilmington, N. C.; Hanover Motor Co.; to sell and repair motors; $50,000; C. H. Heritage.

Wahpeton, N. D.; Wahpeton Auto & Machine Co.; to deal in equipment, etc.; $100,000; H. H. Chrisman, Frederick Loop, S. J. Levy.

Kent, O.; Franklin Tire & Rubber Co.; $101,000; W. A. Cluff, J. H. Diehl, H. W. Sidnell, D. M. Mason, J. G. Miller.

Toledo, O.; Matt Spring Tire Co.; $25,000; T. Garrison.

Rock Hill, S. C.; Sealy Brothers Auto Supply; $10,000; Paul M. Sealy.

Huron, S. D.; Huron Auto Supply Co.; $50,000; Frank Smith, Alva Adsit, I. A. Churchill.

Sioux Falls, S. D.; Sioux Tire & Rubber Co.; $5000; C. T. Sawyer, W. W. Muckler, C. W. Sawyer.

Nashville, Tenn.; Broadway Tire & Vulcanizing Co.; to deal in accessories; $10,000; K. S. Fregoe, Sam Fite.

Nashville, Tenn.; Motor Battries Co., Shelby county; $25,000; J. W. Gates, N .M. Armstrong, F. N. Fincher, R. L. Jordan, J. E. Holmes.

Beaumont, Tex.; Rupert Cox Auto Supply Co., Inc.; $75,000; Rupert Cox, L. E. Ney, G. H. Sheppard.

Dallas, Tex.; Mason Tire & Rubber Co. of Texas; $10,000; J. W. Milner, G. A. Andlauer, J. E. Burdick.

Richmond, Va.; W. C. Quarles Co., to deal in automobile accessories; E. K. Mosley, R. D. Pullen.

Spokane, Wash.; Motor Tire Supply Co., 1218 First avenue, to handle Givens tire; L. M. Kroetch, R. J. Surdival, H. Kiesel.

Spokane, Wash.; Trubl Pruf Tire Co., 1407 West First avenue, to distribute Lambert and Cupples tires; M. Garrett, R. F. Hunt, D. McLaughlin, E. E. K. Schmitt.

Milwaukee, Wis.; Edgar Engine Warmer Co.; $25,000.

Milwaukee, Wis.; Marathon Tire Co., to deal in accessories; $15,000; Edwin H. Berge, Ernest T. Bode, Max C. Schalbe, F. M. Lemmers.

MISCELLANEOUS.

Hartford, Conn.; Hartford Motor Bus Transportation; for passenger motor bus service; $1,000,000; E. H. Newton, vice president and general manager.

Dover, Del.; Interstate Motor Express Co.; $100,000; T. L. Croteau, M. A. Bruce, S. E. Dill, Wilmington.

Dover, Del.; King Aircraft Corporation, to manufacture air planes, etc.; $100,000; F. R. Hansell, E. M. MacFarland, J. Vernon Pimm, Philadelphia, Pa.

Dover, Del.; Tractor & Trailer Transportation Co. of America, to operate trailers, transportation; $10,000; T. L. Croteau, C. H. Blaske, S. E. Dill, Wilmington.

Des Moines, Ia.; Iowa Motor Securities Co.; $100,000; C. D. Van Dyke, Edward G. Deorfler.

New Orleans, La.; Louisiana Motor Club; social club for auto owners, etc.; $500,000; Hughes D. La Vergas, Howard B. Gentry, Joseph Raymond.

Boston, Mass.; Luxus Auto Co., to carry on a general transportation and taxi business; $1,100,000.

Newark, N. J.; Barth Auto Trucking Co.; $5000; Albert H. Barth, Arthur S. Zabriskie, Jay W. Johnson.

Newark, N. J.; Guarantee Auto Trucking Co. of Newark; $50,000; Joseph Zelner, L. L. Meyers, Anthony Harris.

New Brunswick, N. J.; Grant Transportation Co.; trucking; $25,000; Stephen F. Pickup, D. W. Saunders, George R. Loblen.

Brooklyn, N. Y.; Devon Auto Trucking Co.; $10,000; O. E. Vonau, O. L. Demarest, C. Z. Demarest.

Brooklyn, N. Y.; Rosalind Taxi Co.; $10,000; O. and J. Weislow, H. Kahn, 8628 18th avenue.

New York, N. Y.; Amy Auto Renting Corporation; $5000; I. J. Bemak, H. Lehman, W. J. Magee.

New York, N. Y.; Efficiency Auto Renting Co., Manhattan Borough; $5000; W. Walsh, M. Kirshenbaum, J. N. Halperin, 56 Willett street.

New York, N. Y.; Eureka Trucking Co., Manhattan Borough; $25,000; F. Gabriel, W. Vermehren, M. Levine, 255 Pearl street.

New York, N. Y.; Federal Taxi Co., Manhattan Borough; $10,000; H. M. Strouse, B. Bernstein, C. Franklin, 701 11th avenue.

New York, N. Y.; J. L. Air Service Corporation, to operate passenger air planes and motor vehicles; $3000; Edgar A. Pollack, Richard J. Crone, Clifford Chalven.

New York, N. Y.; Peter McGovern Trucking Corporation; $10,000; R. J. Robeson, M. E. McGovern, P. J. McGovern.

New York, N. Y.; Murray Hill Taxi Co., Manhattan Borough; $10,000; E. Butler, J. Corrigan, T. E. Shea, 311 West 78th street.

New York, N. Y.; Queen's Motor Boulevard Co., Queens Borough; $10,000; W. A. Reichert, M. and W. H. Bennett, Jamaica.

New York, N. Y.; Tujoe Taxi Co., Manhattan Borough; $20,000; L. and J. Blaustein, J. Moskowitz, 969 Simpson street, Bronx.

Chillicothe, O.; Fay Motor Bus Co.; $50,000; T. J. Fay and others.

Nashville, Tenn.; Motoraid Chemical Co., Shelby county; $100,000; George E. Petty, Harris Laws, T. F. Kelley, J. R Buchigani, M. G. Beatty.

Nashville, Tenn.; Motor Life Manufacturing Co., Shelby county; $100,000; George E. Petty, Harry Lang, T. F. Kelley, J .T. Walsh, M. G. Beatty.

CHANGE IN NAME.

Dover, Del.; Hupp Automobile Corporation to Flexo Motive Corporation; capital increased from $600,000 to $1,000,000.

Wilmington, Del.; Cole Motor Sales Co. to Ratledge Motors Co.

Wilmington, Del.; Pennsylvania Aero Service Corporation to Aero Service Corporation.

Wilmington, Del.; DuPont Motor Manufacturing Co. to DuPont Motors; increase of capital from $2,000,000 to $4,800,000.

Lafayette, Ind.; Motor Implement Co. to Fred Reule, Inc.

Philadelphia, Pa.; Philadelphia Automobilists' Guarantee Corporation to Globe Motor Club.

Muncie, Ind.; Muncie Machine Tool & Supply Co. to Muncie Machinery & Supply Co.

Duluth, Minn.; Rosendahl, Martin & Co., to Rosendahl Motor Co.

New York, N. Y.; Arrow Specialty Co., Manhattan Borough, to Shultis Automotive Corporation.

New York, N. Y.; Clay Garage, Manhattan Borough, to Brown & White Taxi Co.

New York, N. Y.; Harris Oil & Refinishing Co., to Mitchel Petroleum Co.

New York, N. Y.; John J. Kerwin & Co., Manhattan Borough, to Franklin Motor Service Co.

New York, N. Y.; System Auto Repair Co., Manhattan Borough, to P. and M. Motor Car Co.

Richfield Springs, N. Y.; Simmons Garage & Machine Shop, to Simmons Garage Co.

Saratoga, N. Y.; Saratoga Taxicab Co. to Saratoga Taxi Co.

Yonkers, N. Y.; Havey Auto Sales Co. Yonkers Motor Corporation.

Sanford, N. C.; Sett Jones Motor Co., to Republic Motor Co.

Waco, Tex.; Holt Auto Supply Co. to Nelson-Bell Co.; capital increased from $75,000 to $100,000.

INCREASES IN CAPITAL.

Birmingham, Ala.; Preston Motors Corporation; $1,000,000 to $10,000,000.

Berne, Ind.; A. J. Moser & Co.; $60,000 to $80,000.

Cedar Rapids, Ia.; Rude Auto Co.; $140,000 to $400,000.

Louisville, Ky.; Broeck Tyre Co.; $50,000 to $1,500,000.

Detroit, Mich.; Union Motor Truck Co.; $1,500,000 to $1,650,000.

Rutherford, N. J.; Sterling Tire Corporation; $2,500,000 to $3,700,000.

Buffalo, N. Y.; A. C. G. Tire & Rubber Co.; $250,000 to $1,000,000.

New York, N. Y.; Ajax Rubber Co., Manhattan Borough; $10,000,000 to $20,000,000.

New York, N. Y.; Bennett Auto Sales Co., Queens Borough; $10,000 to $50,000.

New York, N. Y.; Crest Garage, Manhattan Borough; $1000 to $50,000.

New York, N. Y.; Hamilton Auto Repairing Co., Manhattan Borough; $8000 to $10,000.

New York, N. Y.; Mercer Motors Corporation; $11,000,000 to $20,000,000.

New York, N. Y.; Pennsylvania Piston Ring Co., Manhattan Borough; $100,000 to $200,000.

New York, N. Y.; Phoenix Motor Co., Manhattan Borough; $3000 to $20,000.

New York, N. Y.; Carlisle Tire & Rubber Co. of New York; from $200,000 to $750,000.

New York, N. Y.; Yorkville Motor Co., Manhattan Borough; $15,000 to $50,000.

Oneida, N. Y.; Oneida Motor Car Co.; $25,000 to $50,000.

Rochester, N. Y.; Rochester Aircraft Corporation; $30,000 to $250,000.

Troy, N. Y.; North End Auto Supply Co.; $5000 to $200,000.

Utica, N .Y.; Utica Automotive Corporation; $10,000 to $25,000.

Bedford, O.; Owen Tire & Rubber Co.; $850,000 to $1,250,000.

Canton, O.; Hercules Motor Manufacturing Co.; $1,000,000 to $1,500,000.

Cleveland, O.; Andes Tire & Rubber Co.; $100,000 to $2,500,000.

Dayton, O.; Master Tire & Rubber Co.; $300,000 to $1,000,000.

Warren, O.; Supreme Motors Corporation; increased to $2,000,000.

Bay City, Tex.; Bay City Auto & Sales Co.; $50,000 to $75,000.

Dallas, Tex.; Holt Motor Co.; decrease from $100,000 to $75,000.

Wichita Falls, Tex.; Wichita Motors Co.; increase from $800,000 to $1,800,000.

Lebanon, Va.; Lebanon Motor & Supply Co.; $10,000 to $50,000.

Martinville, Va.; O. D. Ford Motor Co., Inc.; $50,000 to $100,000.

Eau Claire, Wis.; Union Auto Co.; $75,000 to $150,000.

Edgerton, Wis.; Highway Trailer Co.; $180,000 to $500,000.

Green Bay, Wis.; Du Bois, Heavers & Co.; $75,000 to $100,000.

Milwaukee, Wis.; Latex Tire & Rubber Co.; $100,000 to $500,000.

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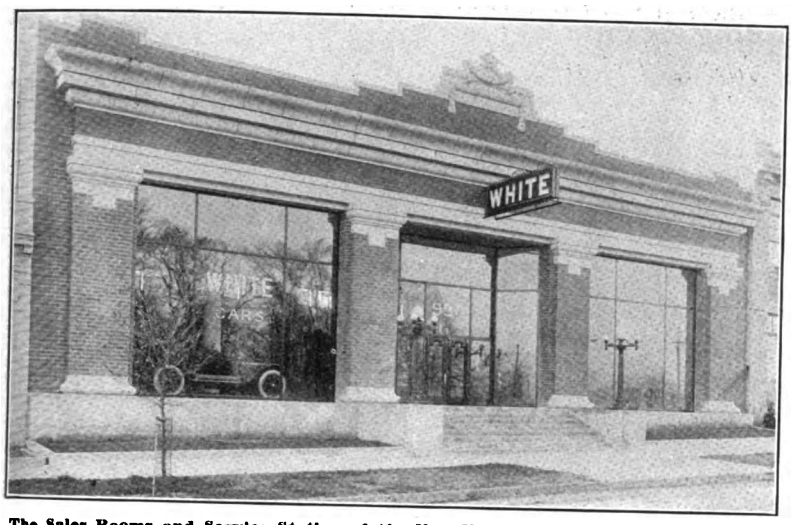


The Sales Rooms and Service Station of the New England Branch of the White Co., 930 Commonwealth Avenue, Boston, One of the Largest and Most Complete of a Splendidly Developed System.

Hathaway Manager of White Co.

J. S. Hathaway is the well known manager of the New England branch of the White Motor Co., maker of White trucks, Cleveland, O., with headquarters at 930 Commonwealth avenue, Boston. The White Co. is one of the few larger automotive concerns that is confining its activities in this field to the production of commercial wagons. The name "White" has long had a prestige in connection with the production of high-grade sewing machines, bicycles, etc., which has continued into this later sphere of motor car manufacture. The White Co. was one of the pioneers of the industry and first began the production of passenger cars, which after a few years was enlarged to include commercial motor vehicles as well. The output of this department was increased year after year until the United States engaged in war with Germany, when the great plant at Cleveland was concentrated on trucks, for this country and its allies, and at the cessation of hostilities the demand for White trucks was such that the manufacture of passenger cars had not been resumed.

White trucks are produced in five sizes, from ¾ to five tons. The number in use, as ascertained from the company's roll call sent out in April, 1919, included 2774 fleets in active service, totaling 33,319 trucks, this being in addition to all the users of single trucks.

A novelty is shown this year in the line of fire fighting machinery. It is the "Triple B Combination," a pumping engine, chemical engine and hose car, all in one. It is the latest thing in motor fire apparatus, combining in one piece all of the various types.

Keep the tractor in as dry a place as possible in winter months. Coating the metal surfaces with oil is a splendid protection against rust.

McCORD GASKET POSTER.

The McCord Manufacturing Co., Detroit, Mich., has just issued an effective piece of publicity which is rather unique. It consists of an attractive poster showing the various types of copper-asbestos cylinder head gaskets used on all American passenger cars, motor trucks and tractors, reproduced in the natural copper color. A total of 89 different gaskets are shown, used on 140 passenger cars of different models, 47 motor trucks, 31 tractors and three miscellaneous motors. An alphabetical list of cars, trucks and tractors is included, giving the numbers of McCord gaskets, which are built to the specifications on the manufacturers' blue prints for these particular motors.

The McCord company will be pleased to forward these posters to any service station or dealer.

The eighth annual convention of the United States Good Roads Association will take place at Hot Springs, Ark., April 13-17.

Holland System Sells Clydesdale

One of the newest automobile concerns to enter business in Boston is the Holland System, Inc., Trading Corporation, with main offices at 45 Milk street and sales rooms on Commonwealth avenue. It is distributor for Maine, New Hampshire, Vermont and Eastern Massachusetts of Clydesdale trucks, made by the Clydesdale Motor Truck Co., Clyde, O.; represents in Eastern Massachusetts the Atlas over-size ¾ ton truck built by the Martin-Parry Corporation, York, Pa., and has the New England agency for Perfection pneumatic tires manufactured by the Perfection Tire & Rubber Co., Fort Madison, Ia., and Overman cushion tires, made by the Overman Cushion Tire Co., Inc., New York City.

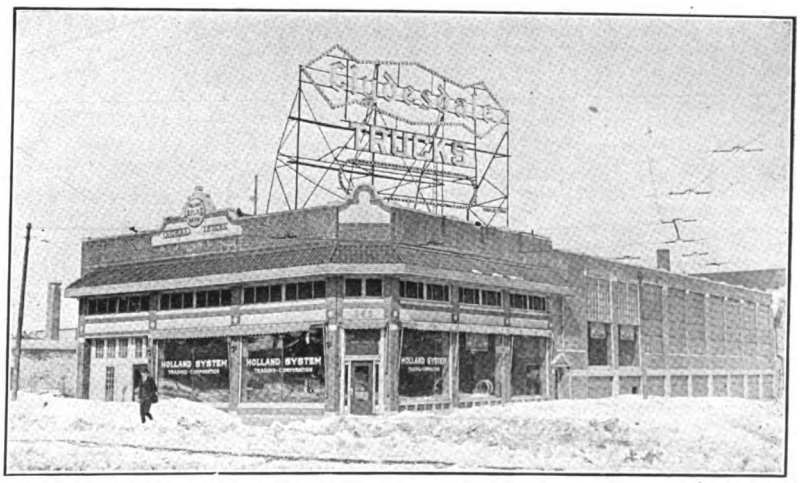
The Holland System has installed complete service stations for its trucks, and each department of the diversified business is under the direction of expert executives and a well organized and thoroughly trained sales force has been put into the field.

Daniel E. Holland is president and John F. Holland treasurer of the corporation, and their business aggressiveness and at the same time, strict adherence to high principles, are well recognized from their connection with other successful business enterprises.

This concern is also distributor for the Porter car, which was exhibited in Boston the week following the show at the Copley-Plaza hotel by Raymond Holland. The chassis is the one that attracted so much attention at the private salon show in New York. Mr. Holland also has a four-passenger model complete.

When the superior quality of the Porter was demonstrated, President D. E. Holland decided it would just suit the ultra taste of particular New Englanders who would care more about the quality of the car than the price.

The features of the Porter are the achievement of all the ideals striven for



The Salesroom and Service Station of the Holland System, Distributor for Clydesdale and Atlas Trucks, at Braves' Field, Commonwealth Avenue, Boston.

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Calender of Coming Events

March 13-20—Asbury Park, N. J., Car Show, Asbury Park Casino.

March 13-20—Boston, Mass.; Boston automobile and truck show, Mechanics' building; Chester I. Campbell, manager.

March 13-20—Atlantic City, N. J., Annual Automobile Show, Million Dollar Pier.

March 15—Little Rock, Ark., Annual Automobile Show, Liberty Hall.

March 15—Oklahoma City, Okla., Automobile Show, Oklahoma City Dealers' Association.

March 15-20—Wilkes-Barre, Pa., 10th Annual Showing of Passenger Cars, Automobile Dealers' Association of Wilkes-Barre, Inc.

March 15-20—Great Falls, Mont., Fifth Annual Automobile Show and Motor Style Show, Montana Distributors' Association.

March 15-20—Huntington, W. Va., Annual Automobile Show, Huntington Automobile Club and Dealers, Vanity Fair building.

March 15-21—Seattle, Wash., Show, Passenger Cars, Trucks and Accessories. William J. Cole, manager, 1321 Seneca street, Seattle, Wash.

March 17-18—Lake Charles, La., Semi-Annual Convention, Louisiana-Mississippi Automotive Trade Association.

March 19-20—Chicago, Ill., Convention, National Association Motor Truck Sales Managers, Congress Hotel.

March 20-27—Trenton, N. J., Annual Automobile Show, Trenton Automobile Dealers' Association, Armory. John L. Brock, manager.

March 20-27—Pittsburgh, Pa., Show for Passenger Cars and Equipment, Automotive Association, Inc., Motor Square Garden. John J. Bell, manager.

March 22-27—Torrington, Conn., Annual Automobile Show. James J. Callahan, manager.

March 22-27—Wilkes-Barre, Pa., Commercial Car Show, Armory, Automobile Dealers' Association of Wilkes-Barre, Inc.

March 22-27—Trenton, N. J., Car and Truck Show, Armory, Trenton Auto Trade Association.

March 22-27—Duluth, Minn., Annual Automobile Show, Duluth Auto Trades Association. W. F. Daly, director.

March 22-27—Utica, N. Y., Annual Automobile Show, Utica Motor Dealers' Association.

March 22-27—Oklahoma City, Okla., Annual Automobile Show, Oklahoma City Motor Car Dealers' Association. G. W. Woods, manager.

March 22-27—Columbia, S. C., Automobile Show.

March 22-27—Philadelphia, Pa., Aeronautic Show, First Regiment Armory, Board and Callowhill streets, auspices of Chamber of Commerce, Franklin Institute and Aero Club of Pennsylvania.

March 23—Buffalo, N. Y., meeting Buffalo Section, Society Automotive Engineers.

March 25-27—Dallas, Tex., Fourth Annual Convention, Texas Automobile Dealers' Association.

March 25-27—Newton, Kan., Automobile and Truck Show, Harvey County Automobile and Truck Dealers' Association.

March 25-27—Fort Worth, Tex., Fourth Annual Convention, Texas Automobile Dealers' Association.

March 27-April 3—Harrisburg, Pa., Annual Automobile Show, Harrisburg Motor Dealers' Association.

March 31-April 3—Goldsboro, N. C., Car and Truck Show, Goldsboro Automotive Trade Association.

March 31-April 3—Holdrege, Neb., Annual Car Show, Holdrege Automobile Dealers' Association, Auditorium. Charles Engstrom, Ralph Kiplinger, managers.

March 31-April 3—Lancaster, Pa., Annual Automobile Show, Lancaster Auto Dealers' Association, Eastern Market House.

March and April, 1920—Pretoria, South Africa; South African products exposition; overseas motor vehicles especially featured.

April—Topeka, Kan., Show, Passenger Cars, Trucks, Tractors and Accessories. L. W. Warner, secretary, 121 North Kansas avenue.

April—Halifax, N. S., Annual Meeting, Nova Scotia Motor League.

April 1-15—Milan, Italy, International Fair.

April 2-12—Barcelona, Spain, Exhibition, International Business Organization.

April 3-May 4—Buenos Aires, Argentine Republic; exposition of United States manufacturers.

April 4-21—Brussels, Belgium, Commercial Fair.

April 5-10—Gloversville, N. Y., First Annual Automobile Show, Gloversville State Armory. James J. Callahan, manager.

April 6-10—Albany, Ala., Automobile Show.

April 6-10—Wilmington, S. C., Annual Show of Passenger Cars and Commercial Vehicles, Chamber of Commerce. W. D. MacMillan, Jr., chairman.

April 7—Minneapolis, Minn., Meeting, Minneapolis Section, Society Automotive Engineers. Tractor Weights and Draw Bar Pulls.

April 12-17—Rittersville, Pa., Third Annual Car and Accessory Show, Lehigh Automobile Trade Association.

April 12-17—Hot Springs, Ark., Eighth Annual Convention, United States Good Roads Association; Fourth Annual Convention, Bankhead National Highway Association.

April 14-17—Waynesburg, Pa., Annual Automobile Show, Automobile Dealers' Association of Greene County, Armory. F. L. Hoover, Manager.

April 15-29—Basle, Switzerland, Fourth Annual Sample Fair.

April 19-24—Rittersville, Pa., Truck, Tractor and Trailer Show, Lehigh Automobile Trade Association.

April 21-28—San Francisco, Cal., First National Aeronautic Exposition, Exposition Auditorium.

April 29-May 1—Detroit, Mich., Fourth Annual Meeting and Convention, American Gear Manufacturers' Association.

April-May—London, England; commercial vehicle exhibition, Olympia.

May 6-8—Macon, Ga., Annual Automobile Show, Macon Automobile Dealers' Association.

May 9-12—Chicago, Ill., Independent American Petroleum Congress, Congress Hotel.

May 15-20—San Francisco, Cal.; Seventh Annual Foreign Trade Convention.

May 31—Indianapolis, Ind., Seventh International 500-Mile Race, Indianapolis Motor Speedway.

June—Omaha, Neb., Reliability Truck Tour.

June 6-10—Indianapolis, Ind., World Convention of Advertising. Felix M. McWhirter, chairman.

July—Lake Huron Tour.

July—London, England, International Aircraft Exhibition, Society of British Aircraft Construction, Olympia.

July 5—Tacoma, Wash., Tacoma Speedway events.

August—Paris, France, Grand Prix Race, Sporting Commission, Automobile Club of France.

September—New York-San Francisco Glidden Tour.

Sept. 3-12—Detroit, Mich., 71st Annual Exposition, Michigan State Fair Association.

October—Buenos Aires, Argentina, National Exposition of American Manufactures.

Oct. 6-8—Northampton, Mass., Annual Automobile Show, H. F. & H. Agricultural Society, Three County Fair Grounds. A. J. Morse, secretary.

Oct. 6-16—New York, N. Y., Electrical Show, Grand Central Palace. George F. Parker, manager.

HANDLEY-KNIGHT CO. LETS CONTRACT FOR PLANT.

One of the recent important transactions in the automotive industry was the signing of contracts between Henry L. Van der Horst of Kalamazoo and the Handley-Knight Co. for the erection of the big Handley-Knight factory on the 40-acre tract recently purchased on the north side, Kalamazoo, Mich., touching the lines of three of the leading railroads, namely, the Lake Shore, the G. R. & I. and the Grand Trunk.

The plans for the main building call for a fireproof structure, 80 feet wide by 800 feet long. The steel was purchased direct by the company some time ago and shipment from the mill was to be made by March 16. The plant is to be completed and ready for operation by June 1. The company will lay its own tracks into the plant.

J. I. Handley, President, Handley-Knight Company.

Mr. J. I. Handley, president, reports that rapid progress is also being made in the matter of purchasing materials, and everything points to the shipment of finished cars in July.

PEERLESS CO. TO MAKE PASSENGER CARS ONLY.

The Peerless Motor Car Co., Cleveland, O., is now devoting its entire factory facilities to the production of the Peerless two power range eight-cylinder passenger cars, confining its line to one chassis with which will be supplied bodies in the five approved open and enclosed types. The machinery and space formerly used for truck building are now taken up for the passenger car work.

The addition of four new buildings and the elimination of truck production has more than doubled the passenger car capacity of the Peerless plant, which will be adhered to through 1920.

2419 TRACTORS IN PENNSYLVANIA.

A recent report of the Pennsylvania State Agricultural Department shows that 2419 farm tractors are in operation on the farms in that state.

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Boston Sales Rooms of the Paige-Detroit Co. of New England, Distributor for Detroit and Paige Cars in Six States.

Paige-Detroit's Boston Quarters

The automobile products of the Paige-Detroit Motor Car Co., Detroit, Mich., is handled in the six New England states by the Paige-Detroit Co. of New England, whose headquarters in Boston are shown in the accompanying illustration. The reputation of Paige passenger and commercial cars bears out the slogan the company has adopted, "the most serviceable car in America." The officials of the New England branch state that a study of the details of any model produced by this company from any standpoint will leave an impression of endurance, efficiency, economy and performance which are the points every prospective purchaser of a motor car is looking for today.

The truck department is in charge of J. F. Hernberg and for the New England fields the model 52-19, a 1½-ton machine, is being specialized. This has a four-cylinder Continental engine, Brown-Lipe transmission and dry plate clutch, with a Stromberg carburetor and Bosch magneto. Its speed on pneumatic tires is governed at 25 miles an hour; on solids at 15 miles an hour. The cab is one of its features for comfort, it being closed in stormy weather so as to be proof against storms and cold.

COTTA ORGANIZES ADVERTISING DEPARTMENT.

The Cotta Transmission Co., Rockford, Ill., has organized and completely equipped an advertising department with F. W. Ramey, formerly of the sales department, at its head.

This development is in line with the recently announced expansion of the Cotta organization, which at the present time has more than three times the number of commercial trucks accounts, than they were supplying when the war ended.

BUDA CO. CREATES NEW OFFICE.

Realizing and appreciating the necessity and importance of efficient and prompt service for the disbursement of spare parts, the Buda Co., Harvey, Ill., recently appointed R. A. Kiken to the new office of service manager of the engine division.

Mr. Kiken's experience in this field dates back to February, 1910, when he first entered the employ of the Buda Co., since which time he has served in practically every branch of the factory, including the stores, cost, production, efficiency and sales departments He served two years overseas with U. S. army.

."Tractor Weights and Drawbar Pull" will be the subject for the meeting of the Minneapolis Section, S. A. E., at its meeting April 7.

Judd Specializes Commerce Trucks

John L. Judd, 685 Beacon street, is the distributor for New England for Allen automobiles, made by the Allen Motor Co., Columbus, O.; the Commerce truck, manufactured by the Commerce Motor Car Co., Detroit, Mich.; the Dearborn-Smith Form-a-Truck and a line of tires and other accessories, all of which are of recognized standard in the automotive field.

Mr. Judd is at present specializing to a considerable extent on the Commerce truck as best meeting the needs of the majority of truck users in his section. Pointing to the various units which go into its make-up, he says: "The perfect co-ordination of these units to produce maximum power at the lowest operating cost consistent with our standard of service is what makes the Commerce a good truck—better than others of the same tonnage capacity. The relation of the component units to each other is so well balanced that all strains are equally distributed throughout the working parts."

The number of types in bodies on the Commerce chassis has no limit, and one feature is the "Every Way Body," adapted to almost every form of usefulness. For the farmer there are bodies which are specially designed, even to the extent of carrying cows, horses or pigs.

For buyers who want a little more speed and ease of riding, the trucks are equipped with pneumatic cord tires; otherwise the solid type of equipment is used.

Other features are the Continental Red Seal motor, the Torbensen internal drive rear axle and a specially designed radiator which was the first of its kind in the field. The Commerce claims to be the only truck that comes to the user completely equipped with impulse starter, electric lights, a windshield and a bumper.

The Sales Rooms of John L. Judd, New England Distributor of Allen Cars and Commerce Trucks, at 683 Beacon Street, Boston.

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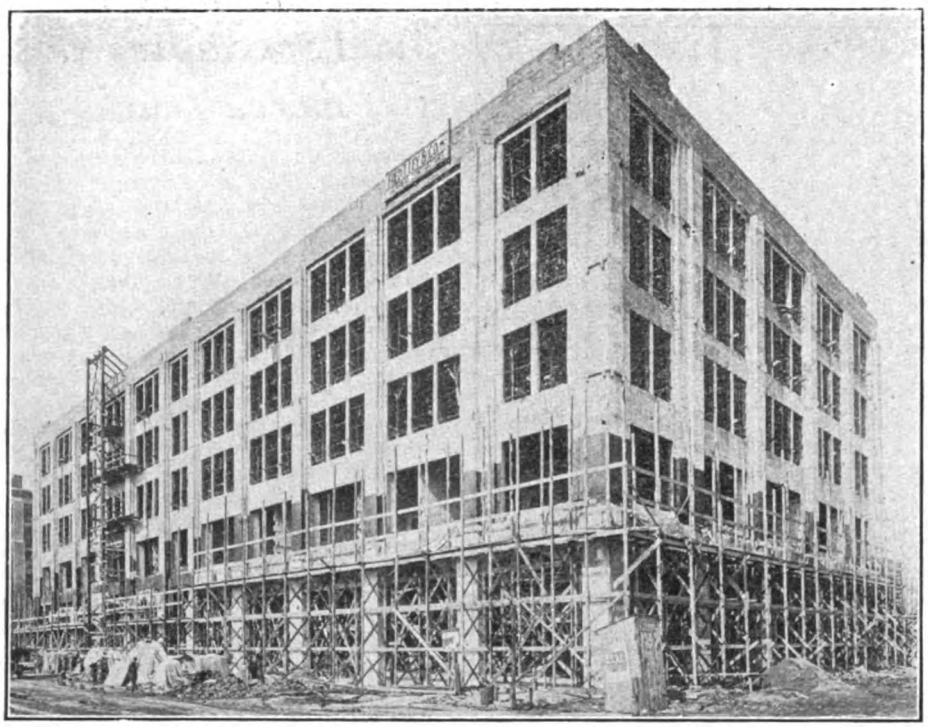


The Partly Constructed Service Station Now Being Erected in Commonwealth Avenue, Boston, for the Noyes-Buick Co., New England Distributor for GMC Trucks.

Weston Electrical Fault Finder

The Weston Electrical Instrument Co., Newark, N. J., is presenting to the garage and repair shop trade its Weston Model 441 Fault Finder. This consists of a voltmeter and ammeter, two independent instruments, mounted in a compact case with a carrying handle and hinged cover. In this all binding posts have been eliminated, connection between the apparatus being tested and the instrument being made by means of flexible rubber covered cables having plugs on one end which fit into receptacles in the instrument and spring clips on the other end. The voltmeter has ranges of .2-0-3 and 2-0-3 volts. With these ranges tests can be made to determine the voltage of the storage battery as a unit or of the individual cells; the cadmium test can be performed; open, shorts and grounds can be located; the generator voltage, as well as the voltage at any light or the horn, etc., can be measured; ignition condensers can be tested for opens and grounds and many other tests for troubles can be made.

The ammeter has a range of 30-0-30 amperes, which permits the rate of charge or discharge to be determined. It is also used in adjusting the relay, for locating shorts in the branch circuits, etc. The ammeter is protected against burn-out by an automobile type glass enclosed fuse which is accessible for replacement.

A very comprehensive and complete instruction book accompanies each instrument.

The Vulcan Implement Co., Evansville, Ind., has established a northwestern branch at Minneapolis, Minn., in charge of Harry Simpkins.

SERVICE PLANT OF GMC NEW ENGLAND DISTRIBUTOR.

The Noyes-Buick Co., 17 Lawton street, Boston, New England distributor for GMC trucks, manufactured by the General Motors Co., Pontiac, Mich., is erecting a new service station on Commonwealth avenue, Boston, which will be one of the largest buildings in that city devoted to the automobile business. The manager of the Noyes-Buick Co. is Harry E. Noyes and he is very enthusiastic over the present business prospect in New England in his line.

One of the new truck models shown by the Noyes-Buick Co. at the Boston show was the ¾ to one-ton GMC. It is called the "Standard All-Purpose" truck and is said to bear out its name to the letter.

SOWERS TAKES ENTIRE BUILDING.

Treasurer A. H. Sowers of the Lexington Automobile Co. has taken over the entire building on Washington street, Brighton, Mass., for a service station. Charles M. Bushart, an M. I. T. graduate, is in charge and he will be assisted by E. H. Jennings.

Stoughton Co. to Build Trucks

The Stoughton Wagon Co., Stoughton, Wis., which has been manufacturing freight carrying and farm wagons and farm implements since 1863, has just entered the power wagon industry and will manufacture worm drive trucks in three sizes under the trade name of "Stoughton." They will all be built to a standard design, the only variation being in the dimensions of the components, the engineering having been thoroughly studied and carefully developed.

The trucks are being produced in two buildings erected especially for this work and the progressive method of assembly has been adopted. The construction units include Waukesha engines, equipped with Eisemann magnetos and Stromberg carburetors; Waukesha governors, Brown-Lipe multiple disc clutches, Brown-Lipe selective sliding gear transmission gearsets, Smith frames, Sheldon springs, Sheldon axles, Goodyear tires, Thermoid flexible joints, specially designed radius rods and brake equalizers and Brown wick oilers. The equipment is very complete.

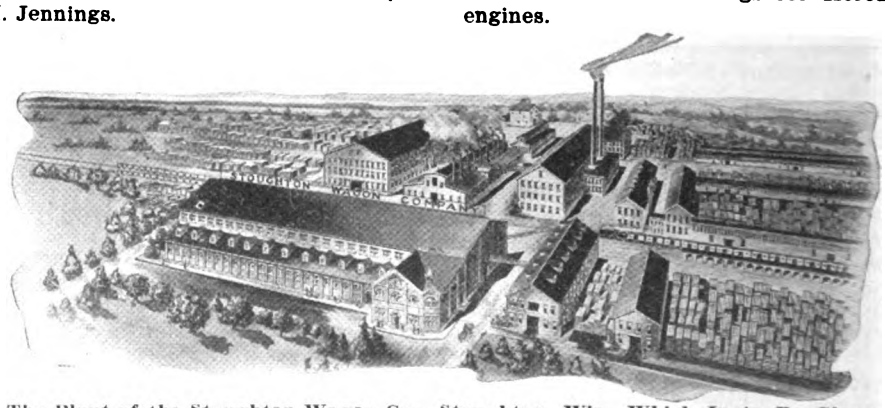
The officials of the company are: President, F. J. Vea; vice president, Henry Beattie; treasurer, M. M. J. Vea; secretary, W. C. Regelmeyer. The company is now developing a sales organization throughout the country.

The Stoughton trucks are specified as model B, 1½ tons; model D, two tons, and model E, three tons, which are listed at $2200, $2600 and $3000 in the order given.

EXPANSION PROGRAMME OF HERCULES MOTOR CO.

The Hercules Motor Manufacturing Co., Canton, O., has increased its capital from $800,000 to $1,500,000, all common stock, to permit the carrying out of plans for greatly increased production. The following officers were elected: President, J. C. Obermier; vice president, Gordon M. Mather; secretary, treasurer and general manager, Charles Belough; H. H. Timken, chairman board of directors; other directors, Rathburn Fuller, R. W. Gallagher, Austin Lynch.

A separate company, known as the Motor Castings Co., has recently been formed to furnish castings for Hercules engines.



The Plant of the Stoughton Wagon Co., Stoughton, Wis., Which Is to Be Given Over to the Production of a Series of Three Worm Drive Trucks.

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Equipping Ford Front Hubs with Timken Bearings

FORD closed models and one-ton trucks have for some time past been fitted with special Timken roller bearings, and the same bearings can also be installed in other models to replace the old cup and cone bearings, the two types of bearings being interchangeable in sets. The Ford Co. supplies the bearings in separate packages or cartons, a complete set of bearings for one wheel in each package. As the Ford spindles have right and left hand threads, it is, of course, necessary to supply adjusting cones for the outside bearings with corresponding threads. The packages containing the complete sets of bearings are plainly marked "right wheel" or "left wheel," according to the type of bearings they contain.

When installing Timken bearings in Ford front wheels in place of the old bearings, the first step is, of course, to remove all parts of the old bearings from the wheel hub, and clean out the hub thoroughly so that no grit or metal chips will be left to damage the new bearings. The shoulders of the recesses from which the ball cups were removed should be inspected carefully for high spots, which might cause the cups of the Timken bearings to set high on one side.

The stationary cone is also removed from the inner end of the spindle, as it is replaced by a special cone. Be careful to leave no rough or high spots on the part of the spindle on which the cone seats, as the Timken inner cone is not pressed on to the spindle, but is a floating slip fit. It has a clearance on the spindle of one-thousandth of an inch.

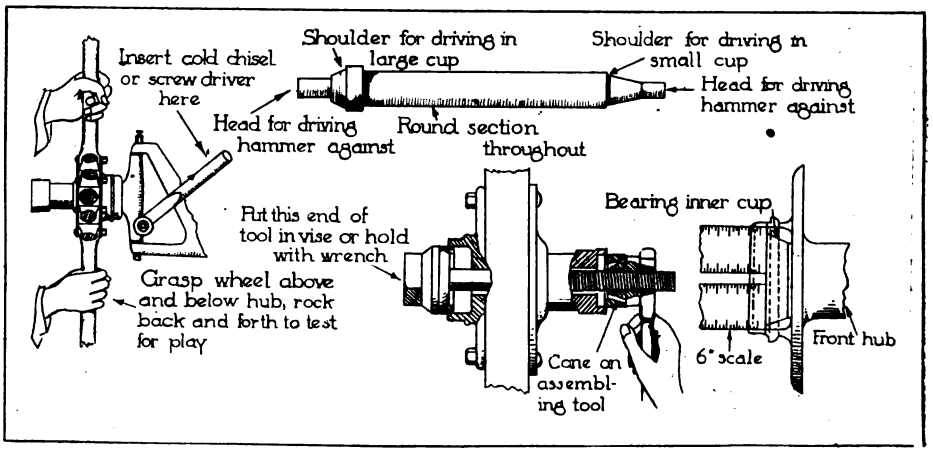
Both inner and outer cups of the Timken bearings, corresponding to the inner and outer ball races or cups of the old bearings, are press fits in the hub. The best way of installing them is to draw them both into place at once with a special puller, similar to that shown in the drawing. The large or square end of this device is held in a vise or with a wrench, while the special handle nut on the other end is turned. Tools of this type can be purchased from the Ford Motor Co. The stock number is 3-Z-2316.

If no special puller is available the cups can be driven into the hubs, but care must be exercised to drive them evenly all the way around their circumference. A special driver or arbor, such as shown in cut would be very useful for this purpose. One end of this driver is used on the large or inner cup and the other end on the small or outer one.

The inside cone faces of the cups must not be struck or marred in any way when pressing the cups into the hub.

As with the cup and cone bearings, the cups must be a press fit in the hub. It is advisable to try both cups by hand, to make sure they will not fit too loosely, before attempting to press either one into place. Sometimes a hub will be damaged and the recess for one of the cups expanded somewhat as a result of some of the balls breaking in the old bearing. If either cup of the Timken bearings is a loose fit in the hub it would be safest to install a new hub, as there is no safe method of making a bearing cup a tight fit in a hub which is too large for it. Some repairmen attempt to make a cup a tight fit by putting strips of paper or emery cloth between the cup and the hub recess. With either material there is grave danger of getting the cup out of true. If paper is used it soon becomes soaked with grease and pounds or works out of place, leaving the cup loose. Emery cloth, on the other hand, cannot be used at all unless the cup is entirely too loose and sloppy a fit in the hub recess. To put it another way, if the hub is so large that it is possible to use emery paper to make the cup a tight fit, it is not safe to use the hub.

The depth of the outer race recess in the latest front hubs is ¾ inch, but in older hubs it is 19/32 inch. Some variation may occur, therefore, in the depth to which the outer or small cups of the Timken bearing sets can be pressed in different hubs. The principal thing to look out for in connection with the outer cups is to see that they are pressed into place evenly, and are not high at any one spot. It is unimportant if some cups project slightly beyond the end of the hub, are flush with it or set in slightly, provided they have been pressed in all the way and run true.



Appliance Used in Installing Ford Front Hubs with Timken Roller Bearings and Methods of Application.

To test the fit of the inner or large cup, measure the distance from the outer face of the cup to the edge of the hub at several different points around the cup, as shown in cut. A fine scale should be used, preferably one divided by 64ths, as a very slight difference in the depth of the cup at any one point would cause it to run considerably out of true.

A plentiful supply of good cup grease should be packed into the hub, and both inner and outer cones and roller sets should also be packed with grease, the spaces around and between the individual rollers being filled. The large inner cone, with its rollers, is then placed in the inner cup, and the dust ring with the felt washer driven into the large end of the hub so that the dust cap is flush with the end of the hub.

It will be noted that the rollers of the Timken bearings are assembled with the cones, instead of with the cups or races, as the balls of the cup and cone bearings are. For this reason the large inner cone must be a floating slip fit on the inner end of the spindle body, as previously explained.

The wheel with the inner bearing complete and the dust ring in place is next mounted on the spindle. It is never necessary to force the large cone on to the spindle. The outer or threaded cone for that side, with its rollers assembled, properly packed with grease, is then screwed on to the outer end of the spindle. A right hand threaded cone is used on the left spindle, and a left hand thread on the right side, as with the old cup and cone bearings.

The adjusting cone should be run up on the spindle until the wheel seems to bind slightly. The wheel should then be turned a few times to make sure that all working parts are in good contact, then the adjusting cone should be backed off about ¼ to ½ turn. This will be sufficient to allow the wheel to revolve freely but without end play.

Sometimes looseness in the spindle body bushings may be mistaken for end play in the wheel bearings. To avoid any such mistake, insert a cold chisel or a screw driver between the jaw of the axle and the spindle to take up any play that may exist in the spindle bushings, then test the wheel for end play by working the wheel back and forth.

When the proper adjustment has been reached the spindle washer and nut should be replaced, the nut being drawn up tight and cotter keyed the same as with the cup and cone bearings. Make sure that tightening the nut to the proper notch for the cotter key does not cause the bearings to bind. Turning the wheel a few times just before the cotter key is inserted will determine this. The hub cap can then be filled with grease and replaced.

Every three or four months the hub bearings should be cleaned out, repacked with fresh grease and readjusted. The old grease should be washed out thoroughly with kerosene or gasoline to make sure no grit or metal particles remain in the hub to damage the bearings later. The rollers, cones and cups should be examined carefully for pitting or other signs of wear.

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Mechanical Specifications of Passenger Cars—1920

REVISED EACH MONTH

KEY OF ABBREVIATIONS: *Against name, first time listed. **PRICE**—⊙ chassis; □ runabout; △ 4-passenger. **ENGINE**—Colon., Colonial; Cont., Continental; Duesen., Duesenberg; H-Spill., Herschell-Spillman; G. B. S., Golden, Belknap & Swartz; Lycmg., Lycoming; Masnk., Massnick; North., Northway; Ruten., Rutenber; Ster., Sterling; Tter., Teeter; Wisc., Wisconsin. **TYPE OF CYLINDER**—L, valves on one side of cylinder; T., valves on opposite sides of cylinder; I., valves in head; F., valves on side and in head; S. sleeve valve. **CAMSHAFT DRIVE**—Hel., Helical; Chn., Chain; Spr., Spur; G., Gear. **ENGINE COOLING SYSTEM**—P., Pump circulation; T-S, Thermo-Syphon circulation; Thermostatic control of circulation; A., Air Cooling. **OILING SYSTEM**—F., Force Feed; S., Splash. **IGNITION SYSTEM**—Eisen., Eisemann; West., Westinghouse; Conn., Connecticut; G & D, Gray & Davis; Al-Ch., Allis-Chalmers; At-K., Atwater Kent; Auto., Autolite; Split., Splitdorf; U. S. L., U. S. Lighting & Heating; Wd. Leon., Ward Leonard; N. E., Northeast; S., Single; D., Double; H., Manual Spark Advance; A., Automatic Spark Advance; Dup., Duplex. **CARBURETOR**—Stmb., Stromberg; Schb., Schebler; Rayf., Rayfield; Till., Tillotson; Cart., Carter; Newc., Newcomb; John., Johnson; Marv., Marvel; Holl., Holley; Zeni., Zenith; Buic., Buick; Mill., Miller; Shakes., Shakespeare; Mon., Monarch; Stew., Stewart; Dupl., Duplex. **CLUTCH**—D., Disc.; D-D., Dry Disc; P., Plate; D-P., Dry Plate; C., Cone; O-C., Oil Cone; C-U., Control Unit; F-D., Friction Drive. **GEARSET LOCATION**—U P P., Unit with Power Plant; To T., on Forward End of Torque Arm; R-Ex, Unit with Rear Axle; Sep., Gearset Independent of Engine or Axle. **TIRES**—C., Clincher; Q., Quick Detachable; S., Straight Side. **REAR AXLE**—F., Floating; S-F., Semi-Floating; D., Dead. **GEARS**—Sp. B., Spiral Bevel; C-U., Control Unit. **DRIVES THROUGH**—S., Springs; T., Torque Tube; R., Radius Rods. **REAR SPRINGS**—Semi., Semi-Elliptic; ¾-El., Three-Quarters Elliptic; F-El., Full Elliptic; Cant., Cantilever; D. Cant., Double Cantilever; 3P. Cant., Three Point Cantilever; Plat., Platform. **BEARINGS**—B., Ball; R., Roller; P., Plain.

TRADE NAME AND MODEL	Price Touring Car	Weight of Car Ready for Road	TIRES AND RIMS: Wheelbase in Inches	Size	Make of Rims	ENGINE: Make of Engine	Number Cylinders	Bore and Stroke in Inches	Piston Displacement	Rated H. P., S. A. E.	Max. Brake H. P.	R. P. M. at Max. H. P.	Cylinder Type	Cylinders Cast	With P. Ring Groove Diam. Inlet Valve (Clear)	Lift of Valve	Cam Shaft Drive	Type of Cooling System	Type of Oiling System	IGNITION SYSTEM: Make and Type	Make of Starting-Lighting System	Carburetor: Make	Carburetor: Fed by	Clutch Type	Gearset Location and Forward Speeds	REAR AXLE: Make	Type	Type of Gears	Gear Ratio	Car Driven Through	Torque Taken By	Type of Rear Springs	BEARINGS: No. Crankshaft Bgs.	Gearset	Rear Axle	Front Wheel
*Allen, 43	1395	2508	110	32x4	Firestone	Own	4	3½x5	192	19.60	37	2200	L	Blk	1/16	1⅝	1/16	Hel	T-S	F & S	Conn S-H	Auto	Stmb	V	D D	U P 3	Columbia	F	Sp B	4.60	S	S	Semi	3	B-R	R	R
*Alsace	1485	2600	116	32x4		H-Spill	4	3½x5	192	19.60									T-S	F	Bosch	Dyneto-2	Zeni	V	D D	3	Standard				S	S	Semi				
American Beauty	2000	2900	121	34x4¼	Firestone	Cont	6	3¼x4½	224	25.35	48	2400	L	Blk	¼	1.39	3/8	Hel	P	F & S	At-K	West	Rayf	V	D D	U P 3	Timken	S-F	Sp B	4.45	S	S	Semi	3	B-R	R	R
*American	1865	2900	122	32x4s	Firestone	Ruten		3⅛x5	230	23.44	45	2400	L	Blk	1/16	1⅛	1/16	Hel	P	F & S	At-K S-H	West	Stmb	V	D D	U P 3	Salisbury	F-F	Sp B	4.42	S	S	Semi	3	B-P	B-R	R
Anderson 400-C	1675	2750	120	33x4s	Firestone	Cont	6	3¼x4½	224	25.35	44	2800	L	Blk	1/16	1½	1/16	Hel	P	F & S	Conn	West-2	Zeni	G	D D	U P 3	Columbia	F F	Bev	4.42	S	S	Semi	3	B	B	B
Anderson De Lux	1775	2750	120	33x4s	Firestone	Cont	6	3¼x4½	224	25.35	44	2800	L	Blk	1/16	1½	1/16	Hel	P	F & S	Conn	West-2	Zeni	G	D D	U P 3	Columbia	F-F	Bev	4.42	S	S	Semi	3	R	B	B
Apperson Anniver	4000	3600	130	34x4½	Firestone	Own	8	3¼x5	332	33.80	65	2500	L	4	1/16	1⅜	1/16	Hel	T-S	F	Remy D-H	Bijur-2	John	V	D D	Sep 3	Own	F	Sp B	4.25	S	S	¾ El	3	R	R	R
Apperson, 8-20	2950	3600	130	34x4½	Firestone	Own	8	3¼x5	332	33.80	65	2500	L	4	1/16	1⅜	1/16	Hel	T-S	F	Remy D-H	Bijur-2	John	V	D D	Sep 3	Own	F	Sp B	4.25	S	S	¾ El	3	R	R	R
Argonne	4000		119	32x4			4	3¾x5½	226	22.50			L	Blk								West		V	D D	4							Semi				
Auburn, 6-39H	1695	2800	120	33x4s	Firestone	Cont	6	3¼x4½	224	25.35	42	2200	L	Blk	1/16	1⅛	1/16	Hel	P	F & S	Remy S-H	Remy-2	Rayf	V	D D	U P 3	Columbia	F-F	Sp B	4.42	S	A	Semi	3	B	R	B
Austin, 12	4250		142	34x4½	Firestone	Weidely	12	2⅞x5	389	39.68			I	3	1/16			Hel	P	F	Delco S-H	Delco-2	Stmb	V	D D	U P 6	Spec. Austin		2-sp	Axle	S	S	D Cant	3	B	B & R	R
*Beggs Six	1630	2840	120	33x4	Firestone	Cont	6	3¼x4½	224	25.35	42	2200	L	3	3/16	1.39	.28	Hel	P	F & S	Conn	Auto	Stmb	V	D D	U P 3	Timken	¾ F			S	S	Semi	3		R	R
*Bell, '18	1395		114	31x4s	Firestone	GB&S	4	3¾x4¼	188	22.50	32	2800	L	Blk	¼			Hel	T-S	F & S	At-K S-H	Auto	Stmb	V	D D	U P 3	Peru	F	Bev	4.25	S	S	Cant	3	R	R	B
Biddle, '18	2985	3250	121	32x4s	Firestone	Buda	4	3¾x5⅛	226	22.50	48	2200	L	Blk	1/16	1⅝	3/8	Hel	T-S	F & S	Bosch	G & D-2	Zeni	V	D D	U P 4	Standard	¾ F	Sp B	4.00	S	S	Semi	3	B	R	R
Birch Light Six, 40	1495	2680	115	34x4	Stanweld	Beaver	6	3½x5	230	23.44	45	2200	L	Blk	1/16	1½	1/16	Hel	P	F & S	Conn	Remy	Stmb	V	D D	U P 3	Timken	¾ F	Bev	4.15	S	S	¾ El	3	B	R	B
Birch Super-Four	1085	2200	115	32x3½	Stanweld	Lycmg	4	3½x5	192	19.60	36	1800	L	Blk	1/16	1⅛	1/16	Hel	T-S		At-K	Dyneto-2	Cart	G	D D	U P 3	Peru		Sp B	4.25	S	S	¾ El	2	B	R	
*Bour-Davis	1850	2900	118	32x4	Perlman	Cont	6	3¼x4½	224	25.35	42	2100	L	Blk	1/16	1⅛		Hel	P	F & S	Remy	Remy	Stmb	V	D D	U P 3	Salisbury	¾ F	Sp B	4.75	S	S	Semi	3	B-R	R	B
Brewster	7200		125	34x4½s	Firestone	Own	44	x5½	276	25.26		2200	S	Blk				Ch	P	F	Bosch S-H	U S L-1	Zeni	V	C	To-T 3	Own	F	Sp B	4.25	T	T	Cant	3	B	B	R
Briscoe, 4-24	985	2100	104	30x3½q	Cleveland	Own	4	3 1/16x5⅛	163	16.25	30	2000	L	Blk	1/16	1 1/16	3/32	Hel	T-S	F & S	Conn S-H	Auto-2	Buic	G	C	R Ax 3	Own	S-F	Bev	4.23	S	A	F-El	2	Brf	B & R	B
Buick, H-45	1495		118	33x4s	Baker	Own	6	3⅜x4½	241	27.34	60		I	Blk	1/16	1⅝	3/32	Hel	P	S	Delco S-H	Delco-1	Marv	V	D P	U P 3	W. Mott	F	Sp B	4.07	T	T	Cant	4	B	B & R	R
Buick, H-49	1785		124	34x4½s	Baker	Own	6	3⅜x4½	241	27.34	60		I	Blk	1/16	1⅝	3/32	Hel	P	S	Delco S-H	Delco-1	Marv	V	D P	U P 3	W. Mott	F	Sp B	4.61	T	T	Cant	4	B	B & R	R
Bush	1395	2450	116	32x3½	Firestone	Lycmg	4	3½x5	192	19.60	35	2500	L	Blk	1/16	1⅛	1/16	Hel	T-S	S	At-K	Dyneto-2	Cart	V	D	U P 3	Salisbury	F-F	Bev	4.00	T	T	¾ El	2	B	R	B
*Cadillac, 57	3490		125	35x5s	Kelsey	Own	8	3 1/16x5⅛	314	31.25		2650	L	4	1/16	1 1/16	3/32	Ch	P†	F	Delco S-A	Delco-1	Own	P	D D	U P 3	Timken	F	Sp B	4.43	S	A	Plat	3	B-R	R	R
*Cameron, 55	1400		108	32x4		Own		2 1/16x4½						Blk					A	F	Conn		Rayf	V		Sep	Own		Sp B								
*Cameron, 45	1700		123	32x4		Own		3¼x4½		33.75				Blk					P	F	Conn		Rayf	V		Sep	Own		Sp B								
Campbell	835	2000	110	30x3½c	U. S.	Own	4	3⅞x4	189	24.00			L	Blk				Spur	T	F & S	At S-H	Auto	Amer	V	D	U P 3	Salisbury	F-F	Sp B	4.25	S	S	Semi	3	B	B	B-R
Case	2200	3300	126	34x4½	Firestone	Cont	6	3 1/32x5¼	303	29.40	55	2000	L	Blk	1/16	1 1/16	1/16	Hel	P	F & S	Delco	West	Rayf	V	D D	U P 3	Columbia	¾ F	Sp B	4.45	S	S	Semi	3	B	R	R
Chalmers, 6-30	1685	2800	117	32x4s	Kelsey	Own	6	3¼x4½	224	25.35	45	2650	L	Blk	1/16	1½	1/16	Ch	T-S	F & S	Remy S-H	Auto	Stmb	V	D D	U P 3	Timken	S-F	Sp B	4.75	S	S	Semi	3	R	R	R
Chalmers, 6-30	1765	2950	122	34x4s	Kelsey	Own	6	3¼x4½		25.35	45		L	Blk	1/16	1½	1/16	Ch	T-S	F & S	Remy S-H	Auto	Stmb	V	D D	U P 3	Timken	S-F	Sp B	5.18	S	S	Semi	3	R	R	R
Champion	1150		116	32x3¼			4																													
Champion	1295		116	32x3¼			6																													
Chandler	1795	2985	123	33x4s	Fire&Clev	Own	6	3½x5	289	29.40			L	3	1/16	1 1/16	3/32	Ch	P	F & S	Bosch S-H	West-2	Rayf	V	D D	U P 3	Own	F	Sp B	4.40	S	A	Semi	3	B	B	R
Chevrolet, 490	735	1890	102	30x3½q	Demount	Own	4	3 1/16x4	171	21.75			I	Blk	1/16	1 1/16	3/32	Hel	P	F & S	Remy S-H	Auto-2	Zeni	G	C	U P 3	Own	¾ F	Bev	3.63	S	S	¼ Cant	3	B	R	B
*Chevrolet, F B	1235	3200	110	33x4s	Demount	Own	4	3 1/16x5¼	224	21.75			I	Blk	1/16	1 1/16	¼	Hel	P	F & S	Remy S-H	Auto-2	Zeni	V	C	U P 3	Own	¾ F	Sp B	4.25	S	S	¼ Cant	3	B-P	R	B
*Cleveland	1385		112	32x4	Firestone	Own	6	3 x4½	191	21.60			I	Blk				Ch	P	F & S		G & D	Stmb		D	U P 3	Own		Sp B				Semi	3		R	R
*Climber Six	2395		127	32x4½		Cont		3½x5¼	303	29.40			L								Delco	Delco	Stmb		D P	3		¾ F				Semi				
*Climber Four	1500		112	32x3½		H. Spill		3¼x5	166	16.96			L								Delco	West	Stmb		D	3						Semi				
Cole, 870	2750	3590	127	33x5q	Firestone	North	8	3½x4½	346	39.22	80	2800	L	4	1/16	1½	1/16	Hel	P	F & S	Delco S-H	Delco-2	Stmb	V	C	U P 3	Columbia	F	Sp B	4.46	S	S	Semi	3	B	R	R
Colonial, 35	1095	2775	116	32x3½	Goodyear	Falls	6	3 x4½	191	21.60				Blk				Hel	T-S	F & S	Remy S-H	Al-Ch-1	Stew	V	C	U P 3	Lewis	F	Beb	4.41			Cant	3	B	B	B
Columbia Six JC	1695	2800	115	32x4	Firestone	Cont	6	3¼x4½	224	25.35	38	2000	L	Blk	1/16	1.39	.31	Hel	P†	F & S	A-K	Auto	Stmb	V	D D	U P 3	Timken	¾ F	Sp B	4.75	S	A	Cant	3	B	R	R
Comet, 6-C-53	2150	3200	125	33x4s	Firestone	Cont	6	3 1/32x5¼	303	29.40	55	2600	L	Blk	1/16	1¼		Hel	P	F & S	Wagner	Wagner	Stmb	V	D D	U P 3	Columbia	F-F	Sp B	4.50	S	A	Cant	3	B	R	R
Commonwealth □	1395	2500	117	32x4	Stanweld	Lycmg	4	3½x5	192	19.60	40	2200	L	Blk	1/16	1 1/16	1/16	Hel	T-S	F & S	At-K	Dyneto-2	Cart	V	D D	U P 3	Peru	F-F	Sp B	4.25	S	S	Semi	2	B	R	R
Crawford	2750		122½	32x4c		Cont	6	3 1/32x5¼	303	20.40			L	Blk	1/16			Hel	P	F & S	Bosch	West	Stmb	V	D	U P 3	Timken	¾ F	Sp B	4.50		S	Semi	3	R	R	R
Crow-Elkhart, L-55	1295	2370	117	32x3 1/2s	Firestone	Lycmg	4	3½x5	192	19.60	35	1800	L	Blk	1/16	1⅛	1/16	Hel	T-S	F & S	Conn S-H	Dyneto-2	Zeni	V	D D	U P 3	Peru	F-F	Bev	4.25	S	S	Semi	2	B	R	R
Crow-Elkhart, K-55	1545	2470	117	33x4s	Firestone	Ruten	6	3⅛x5	230	23.14	45	2400	L	Blk	1/16	1⅛	1/16	Hel	P	F & S	Conn S-H	Dyneto-2	Zeni	V	D D	U P 3	Peru	F-F	Bev	4.25	S	S	Semi	3	B	R	R
Cunningham, V	on ap	4350	132	35x5	Goodrich	Own	8	3¾x5	445	45.00	90	2200	L	4	1/16	1¾	1/16	Hel	P	F	Delco S-H	West	Stmb	V	D D	U P 3	Timken	F	Sp B	4.08	S	A	¾ El	3	B-R		R
*Daniels, D	4500	3800	132¼	34x4 1/2s	Firestone	Own	8	3 1/16x5¼	404	39.20	70	2000	L	4	1/16	1 1/16	3/32	Hel	P	F	Delco S-H	Delco-2	Zeni	V	D D	U P 3	Timken	F-F	Sp B	4.42	S	A	Semi	3	B	R	R
*Davis, 51	1985	2750	120	33x4s	Firestone	Cont	6	3¼x4½	224	25.35	58	2650	L	Blk	1/16	1⅛	1/4	Hel	P	F & S	Delco D-H	Delco-2	Stmb	V	D D	U P 3	Timken	S-F	Sp B	5.09	S	S	Semi	3	R	R	R
Disbrow, A □	2950		116	33x4½	Wire W	Wisc	4	5Mx5½	446	41.60			T					Hel	P	F	KW S-H	Leece-N	Mill	P	D	U P 3	American	F	Bev				Semi	3	B	P	B
Dispatch	1290	2300	120	34x4	Stand	Wisc	4	3¾x5	221	22.50	35	2000	L	Blk	1/4	1¾	3/8	Hel	T-S	F & S	Bosch	U S L	Ray	V	C U		Own		C U	4.12	R	S	El	3	B		
*Dixie Flyer, H-850	1465	2450	112	32x4s	Fick	H-Spill	4	3¾x5	166	16.90	42	2200	L	Blk	1/16			Hel	T-S	F & S	Conn S-H	Dyneto-2	Stmb	V	D D	U P 3	Peru	F F	Sp B	4.70	T	T	¾ El	2	B-P	B & R	B

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TRADE NAME AND MODEL	Price Touring Car	Weight of Car Ready for Road	TIRES AND RIMS: Wheelbase in Inches	TIRES AND RIMS: Size	TIRES AND RIMS: Make of Rims	ENGINE: Make of Engine	ENGINE: Number Cylinders	ENGINE: Bore and Stroke in Inches	ENGINE: Piston Displacement	ENGINE: Rated H. P., S. A. E.	ENGINE: Max. Brake H. P.	ENGINE: R. P. M. at Max. H. P.	ENGINE: Cylinder Type	ENGINE: Cylinders Cast	ENGINE: Wth. P. Ring Groove Diam. Inlet Valve (Clear)	ENGINE: Lift of Valve	ENGINE: Cam Shaft Drive	ENGINE: Type of Cooling System	ENGINE: Type of Oiling System	IGNITION SYSTEM: Make and Type	IGNITION SYSTEM: Make of Starting-Lighting System	Carburetor: Make	Carburetor: Fed by	Clutch Type	Gearset Location and Forward Speeds	REAR AXLE: Make	REAR AXLE: Type	REAR AXLE: Type of Gears	REAR AXLE: Gear Ratio	Car Driven Through	Torque Taken By	Type of Rear Springs	BEARINGS: No. Crankshaft Brgs.	BEARINGS: Gearset	BEARINGS: Rear Axle	BEARINGS: Front Wheel
*Dodge Brothers	1050	2350	114	32x3½s	Own	Own	4	37/8x41/2	212	24.03	35	2200	L	Blk	1/16	1 3/16	1/16	Hel	P	F & S	N-E A-H	N. East-1	Stew	V	D D	U P 3	Own	F-F	Sp B	4 1/3	S	T	3/4 El	3	B	R	R
Dorris, 6-80	4350	3750	132	35x5	Firestone	Own	6	4x5	377	38.40	80	2400	I	3	1/4	1 7/8	11/32	Hel	P	F	Bosch S-H	West-2	Stmb	V	D D	U P 3	Timken	F-F	Sp B	4.08	S	S	Semi	7	R	R	R
*Dort	985	2300	105½	30x3½s	Cleveland	Own	4	3½x5	192	19.60	35	2000	L	Blk	1/8	1 5/8	11/32	Hel	T-S	S	Conn S-H	West-2	Cart	V	D D	U P 3	Walker W	3/4 F	Bev	4.07	S	T	Cant	2	B	B R & P	B
Douglas	2000	2350	122	34x4	Firestone	H-Spill	8	3¼x5	332	33.80	75	2400	L	4	1/8	1 3/8	3/8	Hel	P	F	West S-H	West-1	Zeni	V	D D	U P 3	Columbia	F-F	Sp B	4.42	S	A	Cant	3	B	R	R
*Du Pont, A	4000	3200	124	32x4½s	Firestone	Own	4	3 1/8x5½	247	24.80	55	2000	L	Blk	1/8	1 3/4	3/8	Hel	T-S	F	.....	.....	.....	V	P	U P	Columbia	.....	Sp B	4.45	S	S	Semi	3	R	R	R
Duryea Gem	2400	515	100	28x3	Standard	Spacke	2	3½x3 5/8	71	9.80	13	2500	L	Sing	1/16	1¼	1/4	Hel	A	F	Mag	Own	Schb	G	None	3	Own	D	.....	5.00	S	...	Torsion	2	P	B	B
*Economy, 6-46	1795	2750	115	33x4	Firestone	Cont	6	3¼x4½	224	25.35	42	2200	L	Blk	1/8	1 5/16	1/8	Hel	P	F-S	Conn	Auto	Zeni	V	D P	U P 3	Salisbury	F-F	Sp B	4.50	S	S	Semi	3	B	R	R
*Elcar, D-4	1395	2740	116	33x4s	Firestone	Lycmg	4	3½x5	192	19.60	38	2100	....	Blk	1/8	1½	1/8	Hel	T-S	F & S	Delco	Delco	Stmb	V	D P	U P 3	Salisbury	F-F	Sp B	4.50	S	S	Semi	2	B	B	R
Elcar, D-6	1595	2850	116	33x4s	Firestone	Cont	6	3¼x4½	224	25.35	.....	.....	Blk	Blk	1/8	1 1/2	1/8	Hel	P	F & S	Delco	Delco	Stmb	V	D P	U P 3	Salisbury	F-F	Sp B	4.50	S	S	Semi	3	B	B	R
Elcin	1485	2650	118	33x4s	Firestone	Falls	6	3½x4¼	196	23.44	40	2000	I	Blk	1/8	1¼	3/8	Hel	T-S	F & S	Wagner	Wagner	Stmb	V	D D	U P 3	Columbia	¾ F	Sp B	5.00	S	A	Cant	3	B	B	R
Erie	850	2300	118	33x4s	Stanweld	GB&S	4	3¾x4¼	188	22.50	.....	.....	L	Blk	1/8	.....	.....	Chn	T	F & S	Split	Dyneto	Scheb	G	D D	U P 3	Salisbury	F	Sp B	4.00	T	T	Semi	3	R	B	R
*Essex	1495	2580	108½	32x4	Kelsey	Own	4	3⅝x5	179	18.22	55	2800	F	Blk	1/16	1 7/8	....	Hel	T	S	Delco	Delco	Own	V	O D	U P 3	Timken	S-F	Sp B	4.67	S	S	Semi	3	R	R	R
Fiat, 55	6000	4335	140	35x5c	Firestone	Own	4	5½x6¾	557	42.03	.....	.....	L	Blk	.....	.....	.....	Hel	P	F	Bosch D-H	West-2	Zeni	P	O D	Sep 4	Own	S-F	Sp B	2.75	T	T	Semi	3	B	B	B
Ford, T	575	1480	100	30x3½c	Clincher	Own	4	3¾x4	177	22.50	20	1400	L	Blk	1/4	1 1/16	1/2	Hel	T-S	S & G	Own S-H	.....	Holl	G	O D	U P 2	Own	S-F	Bev	3.63	T	T	Trans	3	P	B	B
F. R. P. 45 (16 valve)	7000	3500	140	36x5	D Wheels	Own	4	4 5/8x6 3/4	448	34.28	.....	.....	I	Blk	1/4	.....	.....	Wm	P	F & S	Bosch 2-Pt	Bosch-2	Long	P	C	Sep 4	Own	F	Bev	3.00	S	T	Semi	3	B	B	B
Franklin, 9-B	2750	2445	115	32x4s	Goodyear	Own	6	3¼x4	199	25.35	.....	.....	I	Sing	1/16	1 1/16	1/16	Hel	A	F	At K S-A	Dyneto-1	Own	V	D P	Sep 3	Own	S-F	Sp B	4.33	S	S	F-El	7	B	B	B
*Gardner G	1125	2400	112	32x3½s	Jaxon	Lycmg	4	3½x5	192	19.60	35	2000	L	Blk	1/8	1½	11/64	.....	T-S	F	West	West	Cart	V	D D	U P	Flint	F-F	Bev	4.42	S	S	Semi	2	B	R	B
Geneva	2500	.....	139	34x4½	D Wheels	H-Spill	6	4x5½	415	13.40	.....	.....	T	3	1/8	.....	.....	Hel	P	F & S	Eise'n S-H	West-2	Rayf	V	D D	U P 4	Timken	F	Sp B	3.76	S	S	Semi	3	R	R	R
Geronimo	1550	2700	122	32x4s	Firestone	Ruten	6	3½x5	230	23.44	45	2400	L	Blk	1/8	.....	.....	Hel	P	F & S	Delco	Dyneto	Stmb	V	D D	U P 3	W-Weiss	¾-F	Sp B	4.50	S	S	Semi	3	B	.....	B
Glide, 40	1655	2850	119	34x4s	Goodyear	Ruten	6	3½x5	230	23.44	45	2400	L	Blk	1/8	1 1/8	11/64	Hel	P	F & S	West S-H	West-2	Rayf	V	D D	U P 3	American	¾-F	Sp B	4.64	S	S	¾-E	3	B-P	B	B
*Grant H	1495	2500	116	32x4s	Goodyear	Own	6	3½x4¼	196	23.44	40	2500	I	Blk	1/16	1¼	1/8	Hel	T-S	F & S	At-K S-A	Wagner-2	Stmb	V	D D	U P 3	Columbia	¾-F	Bev	4.50	T	T	Semi	3	B-P	B & R	R
Hackett	.....	.....	114	32x4	.....	H-Spill	4	3½x5	192	19.60	.....	.....	L	.....	.....	.....	.....	Hel	T	S-P	W.S.L.-S-H	West	John	V	P	U M 3	Stanpar	S F	Sp	4.75	S	S	¾ El	2	B	R	R
Halladay, 22	1985	2750	118	33x4	Firestone	Ruten	6	3½x5	230	23.44	46	2400	L	Blk	1/8	1 1/16	1/8	Hel	P	F & S	At-K	West	Stmb	V	D D	U P 3	Spacke	F	Sp B	4.75	S	S	¾ El	3	B-P	R	R
Hamlin-Holmes	550	1200	100	30x3½	.....	.....	4	3x4	113	14.40	.....	.....	L	Blk	.....	.....	.....	.....	T-S	F & S	At-K	Wagner	.....	.....	D D	U P 3	.....	¾	.....	.....	.....	.....	¼ El	.....	.....	.....	.....
Hanson	1685	.....	119	32x4	.....	Cont	6	3¼x4½	224	25.35	.....	.....	I	.....	.....	.....	.....	.....	P	F & S	.....	.....	Stmb	V	D P	U P 3	Timken	¾-F	.....	.....	.....	.....	Semi	.....	.....	.....	.....
Harroun, A	995	2000	106	30x3½q	Stanweld	Own	4	3¼x5¼	174	16.90	43	2400	I	Blk	1/4	1 1/16	1/8	Hel	T-S	F & S	Remy	Remy-2	Stmb	V	O C	U P 3	Adams	F	Bev	4.00	S	T	Cant	3	B	B & R	R
Harvard, 4-20	850	.....	100	28x3	Baker	Sterl	4	3x4¼	120	14.40	28	....	L	Blk	1/8	.....	.....	Hel	T-S	S & F	At-K S-H	Wagner-2	Zeni	G	C	U P 3	.....	S-F	Bev	4.00	S	S	Cant	2	B-P	B & R	B
*Hatfield, A-42	1695	.....	115	32x4	Firestone	.....	4	3¼x5	...	16.90	42	.....	.....	.....	.....	1 1/16	1/8	.....	T-S	F & S	Conn	Dyneto	.....	V	D D	3	.....	F-F	Sp B	.....	S	S	Semi	.....	.....	.....	.....
Haynes, 45	2685	3225	127	34x4½s	Firestone	Own	6	3½x5	289	29.40	50	2000	L	Blk	1/4	1 5/16	.31	Hel	P	S	Kings	Leece N-2	Rayf	V	D D	U P 3	Own	¾-F	Sp B	4.42	S	S	Semi	3	B	B	B
Haynes, 46	3450	3700	127	34x4½s	.....	Own	12	2¾x5	356	36.30	70	2200	I	6	1/4	1.19	.31	Chn	P	F	Delco SHA	Leece N-2	Rayf	V	D D	U P 3	Own	¾-F	Sp B	4.07	S	S	Semi	3	B	B	B
Holmes	2900	2800	126	34x4½	Goodyear	Own	6	3½x4¼	245	29.40	40	1650	I	Sing	1/8	1 5/8	1/8	Hel	A	F	Eise'n S-A	Dyneto	Newc	V	D P	U P 3	Timken	S-F	Sp B	4.90	S	S	F-El	7	B-R	R	B
Hollier, 206	1985	2800	120	32x4s	Firestone	Cont	6	3¼x4½	224	25.35	42	2200	L	Blk	1/8	1 1/8	1/8	Hel	P	F & S	Remy	West	Zeni	V	D D	U P 3	Own	F-F	Sp B	4.41	T	T	Cant	3	B	B	B
*Hudson-Super 6	2200	3200	125½	34x4½s	Kelsey	Own	6	3½x5	288	29.40	76	2450	L	Blk	1/8	1 11/32	.31	Hel	P	S	Delco SHA	Delco-1	Own	V	O D	U P 3	Timken	S-F	Sp B	4.46	S	...	Semi	4	R-P	R	B
Hupmobile, R. O	1450	2450	112	32x4s	Kelsey	Own	4	3¼x5½	183	16.90	.....	.....	L	Blk	1/8	1 5/8	1/8	Chn	T-S	F	At-K-S-H	West 2	Stmb	V	D D	U P 3	Own	¾-F	Sp B	4.87	S	S	Semi	3	B-P	R	B
Jones, B-28	2250	3000	126	34x4s	Firestone	Cont	6	3½x5¼	303	29.40	60	2600	L	Blk	1/8	1 11/16	1/8	Hel	P	F & S	Remy D-H	Auto	Rayf	V	D D	U P 3	Stan-Par	S-F	Sp B	4.50	S	S	Semi	3	R	R	R
*Jordan, M	2550	2900	120	32x4s	Goodyear	Cont	6	3¼x4½	...	25.35	55	2750	L	Blk	1/8	1 5/8	1/8	Hel	P	F & S	Delco	Delco	Stmb	V	D D	U P 3	Timken	S-F	Sp B	....	S	S	Semi	4	B	R	R
*Jordan	2975	3200	127	32x4½s	Goodyear	Cont	6	3½x5¼	303	29.40	60	2275	L	Blk	1/8	1 11/32	1/8	Hel	P	F & S	Delco SHA	Delco	Stmb	V	D D	U P 3	Timken	S-F	Sp B	4.08	S	S	Semi	3	B	R	R
*King, G	2585	3150	120	32x4½s	Stanweld	Own	8	3x5	283	28.80	60	2400	L	4	1/8	1½	1/8	Chn	T-S	F	At-K S-H	West	Ball	V	D D	U P 3	Columbia	F	Sp B	4.87	S	T	Cant	3	R-B	R	R
*Kissel, C. B., 6	2975	3400	124	32x4½	Firestone	Own	6	3 1/8x5½	284	25.75	60	2200	L	Blk	1/8	1 11/32	1/8	Hel	P	F & S	Remy S-H	Remy	Stmb	V	C	U P 3	Own	F-F	Sp B	4.58	S	S	¾-El	3	B	R	R
*Kline, 6-55, J	1965	2800	121	33x4s	Firestone	Cont	6	3¼x4½	224	25.35	55	2500	L	Blk	1/4	1 1/16	11/32	Hel	P	F	Conn	Wagner-2	Rayf	V	D D	U P 3	Hess	F	Sp B	4.58	S	S	¾-El	4	B	R	R
La Marne	1485	2900	128	33x4s	Stanweld	Own	8	3½x5½	365	33.80	85	2200	I	Blk	1/4	1 5/8	1/8	Hel	....	F & S	West	West	Own	V	D D	U P 3	.....	F-F	Sp B	4.00	...	...	Semi	5	B	B	.....
Laurel, 35	895	.....	112	32x3½s	Goodyear	G-B- & S	4	3¾x4¼	188	22.50	.....	.....	L	Blk	1/8	.....	.....	Chn	T-S	F & S	Split S-H	Disco-2	Schb	G	O D	U P 3	Peru	F	Bev	4.25	S	T	Cant	..	B	R	B
Lenox, O	2850	.....	130	34x4½	Firestone	Buda	6	3 3/8x5½	364	33.50	.....	.....	Blk	Blk	1/4	.....	.....	Spur	P	S	Eise'n S-H	Bijur-2	Cart	V	D D	U P 3	Timken	F	Sp B	4.10	...	...	Semi-El	3	.....	.....	.....
Lexington, 6-R	1885	2875	122	34x4s	Goodyear	Cont	6	3¼x4½	224	25.39	40	2250	L	Blk	1/8	1 3/8	3/8	Hel	P	F & S	Conn S-H	West-2	Rayf	V	D D	U P 3	Hess	F	Sp B	5.00	S	S	Semi	3	B-P	B & R	B
Liberty Six, 10-B	1695	2680	115	32x4s	Firestone	Cont	6	3¼x4½	224	25.40	40	2200	L	Blk	1/8	1 7/16	3/8	Hel	T-S	F & S	At-K S-H	Wagner	Stmb	V	D D	U P 3	Timken	S-F	Sp B	4.75	S	S	Semi	3	B	R	R
Locomobile, 48-4	8100	.....	142	35x5q	Firestone	Own	6	4½x5½	525	48.60	.....	.....	T	2	1/4	2 5/8	5/8	Hel	P	F & S	Berling D	West-2	Ball	P	D D	Sep 4	Own	F-F	Sp B	3.85	R	A	¾-El	7	B	B	R
*Lorraine	1425	2450	114	32x4s	Stanweld	H. Spill	4	3¼x5	288	19.60	43	2500	L	Blk	.....	.....	.....	Hel	T-S	F & S	West	West	John	V	D P	U P 3	Hess	S-F	Sp B	4.50	S	S	¾-El	2	B-P	R	R
Lozier, 84 Made to order	1695	.....	120	36x4½s	Stanweld	Own	4	4¼x6½	369	28.90	.....	.....	L	Blk	¼	.....	.....	Chn	P	F & S	Bosch D-H	G & D-2	Stew	P	O D	U P 3	Timken	F	Bev	3.91	...	...	Plat	3	.....	.....	.....
Lozier, 82 only	2775	.....	132	36x4½s	Stanweld	Own	6	3¼x6	424	36.04	.....	.....	L	3	¼	.....	.....	Chn	P	F & S	Eise'n S-H	G & D-2	Rayf	P	O D	U P 3	American	F	Sp B	3.27	...	...	Plat	3	.....	.....	.....
Madison	1550	2950	115	33x4s	Goodyear	Ruten	6	3½x5	230	23.44	45	2400	L	Blk	1/8	1 1/8	1/8	Hel	P	F	At-K	West	Rayf	V	D D	U P 3	Salisbury	¾-F	Sp B	4.58	S	S	¾-El	3	B	B	B
Maibohm, B	1395	2350	116	32x3½s	Stanweld	Falls	6	3½x4¼	196	23.44	46	2290	I	Blk	1/8	1 5/16	11/32	Hel	T-S	F & S	At-K S-H	Wagner 2	Stmb	V	D D	U P 3	Peru	F-F	Bev	4.50	S	S	Semi	3	B	R	R
Marion-Handley, B	1850	3060	125	35x4½s	Firestone	Cont	6	3½x5¼	303	29.40	55	2100	L	Blk	1/8	1.31	.31	Hel	P	F & S	West S-H	West-2	Stmb	V	D D	U P 3	Salisbury	F	Sp B	4.07	S	S	Semi	3	B	B & R	B
*Marmon, 34	4650	3450	136	32x4½s	D Wheels	Own	6	3 3/8x5 1/8	340	33.75	80	2450	I	Blk	1/8	1 3/4	.37	Hel	P	F	Delco	Delco	Stmb	G	D D	To-T 3	Own	¾-F	Sp B	3.74	T	T	C Trans	3	B-R	B R	R
Marshall	1275	.....	118	32x3½	.....	.....	4	3½x5	192	19.60	.....	.....	.....	.....	.....	.....	.....	.....	T	.....	Delco	Dyneto 2	Cart	.....	D	.....	.....	¾-F	.....	.....	.....	.....	Semi	.....	.....	.....	.....
*Maxwell, 25	985	2100	109	30x3½c	Jackson	Own	4	3 5/8x4½	186	21.03	25	1700	L	Blk	1/8	1 11/32	.31	Hel	T-S	F & S	At-K S-H	Simms-1	John	V	O C	U P 3	Own	¾-F	Bev	3.58	S	S	Semi	2	R-P	R	B
*McFarlan, 127	4800	4465	136	35x5s	Firestone	Ttor	6	4½x6	573	48.60	100	1850	T	Blk	1/4	2	.34	Hel	P	F & S	Bosch	West-2	Stmb	V	D D	Sep 3	Timken	F	Sp B	3.50	S	S	Semi	4	R	R	R
Mercer, Series 5	4500	3900	132	32x4½s	Howard	Own	4	3¾x6¾	298	22.50	72	2800	L	Blk	1/8	2 1/16	3/16	Chn	P	F	Berling S-H	West	Ball	V	D D	Sep 4	Own	F	Sp B	3.62	S	S	Semi	3	B	B-R	R
Mercury, 19-50	2750	2500	114	31x4	Firestone	Weidely	4	3 1/16x5½	212	19.60	50	2400	I	Blk	1/8	1 5/8	1/8	Hel	P	F	Delco	Delco-2	Stmb	V	D D	U P	.....	¾-F	Sp B	4.83	S	S	Semi	3	B	-R	B
Meteor	.....	.....	129	32x4½	.....	Dues	4	4x6	301	25.60	.....	.....	F	.....	.....	.....	.....	Ch	P	S P	Simms S-H	Bijur	Zeni	V	P	Amid -4	Stanpar	.....	Sp B	4.41	S	S	Semi	..	B	R	R
*Metz	1695	2750	120	32x4s	Firestone	Ruten	6	3½x5	230	.....	45	2344	.....	Blk	.....	.....	.....	.....	P	.....	Conn S-H	West-2	Stmb	.....	.....	U P 3	Timken	Semi	.....	.....	S	S	Semi	.....	R	R	R
*Mitchell, E-40	1690	2860	120	33x4s	Stanweld	Own	6	3½x5	249	25.35	40	2200	L	Blk	1/8	1 1/16	1/8	Hel	P	F & S	Remy	Remy	Ray	V	D D	To-T 3	Own	F F	Sp B	4.41	S	T	Cant	3	B-R	R	R
*Mitchell, F-42	1875	3200	127	34x4	.....	Own	6	3½x5	288	29.70	48	2200	L	Blk	1/8	1 1/8	.27	Hel	P	F & S	Remy	Remy	Rayf	V	D D	Sep 3	Own	F-F	Bev	4.71	S	T	Cant	3	B-R	B R	R
Monitor, M	1575	2500	117	33x4s	Stanweld	Cont	6	3¼x4½	224	25.35	.....	.....	L	Blk	1/4	.....	.....	Hel	P	S	Conn	Dyneto	Stmb	V	D D	U P 3	Stanpar	F	Sp B	4.25	S	S	¾-El	3	B-R	R	B

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TRADE NAME AND MODEL	Price Touring Car	Weight of Car Ready for Road	TIRES AND RIMS: Wheelbase in Inches	Size	Make of Rims	ENGINE: Make of Engine	Number Cylinders	Bore and Stroke in Inches	Piston Displacement	Rated H. P., S. A. E.	Max. Brake H. P.	R. P. M. at Max. H. P.	Cylinder Type	Cylinders Cast	Wth. P. Ring Groove	Diam. Inlet Valve (Clear)	Lift of Valve	Cam Shaft Drive	Type of Cooling System	Type of Oiling System	IGNITION SYSTEM: Make and Type	Make of Starting-Lighting System	Carburetor: Make	Fed by	Clutch Type	Gearset Location and Forward Speeds	REAR AXLE: Make	Type	Type of Gears	Gear Ratio	Car Driven Through	Torque Taken By	Type of Rear Springs	No. Crankshaft Brgs.	BEARINGS: Gearset	Rear Axle	Front Wheel
Monroe, S-9	1295	2375	115	32x3½	Firestone	Own	4	3¼x4½	149	16.90	44	2600	I	Blk	3/16	1⅝	⅜	Hel	T-S	F	Conn S-H	Auto-2	Zeni	V	D D	U P 3	Hess	S-F	Sp B	4.75	S	A	C Cant	2	Bj	R	R
Moon	1685	2680	118	32x4s	Firestone	Cont	6	3¼x4½	224	25.35	45	2200	L	Blk	3/16	1⅜	11/32	Hel	P	F & S	Delco	Wagner	Tell	G	D D	U P 3	Timken	S-F	Sp B	4.60	S	S	Semi	3	B	R	R
Moore, 30-SF	1095	2000	106	30x3½q	Firestone	G-B & S	4	3¾x4¼	188	22.50	36	2800	....	Blk	3/16	1⅜	11/32	Gr	T-S	F & S	Conn S-H	Auto	Marv	G	D	U P 3	Peru	F-F	Sp B	4.25	S	S	Semi	3	R-B	B & R	B
Murray, 30-F	2800	3750	128	34x4½s	Firestone	H-Splm	8	3¼x5	332	33.80	80	2700	L	4	3/16	....	....	Hel	P	F	Split D-H	West	Zeni	V	D D	U P 3	Timken	F	Sp B	4.46	S	S	¾-El	3	R	R	R
*Nash, 681	1490	2850	121	33x4	Firestone	Own	6	3¼x5	249	25.35	67	2600	I	Blk	3/16	1⅜	.35	Hel	P	S	WagnerSHA	Wagner 2	Marv	V	D D	U P 3	Own	S-F	Sp B	4.50	S	S	Semi	3	....	R	R
*National Sextett	3290	3600	130	32x4½	Firestone	Own	6	3½x5¼	303	29.40	71	2600	I	Blk	3/16	1 11/32	⅜	Chn	P	F	Delco S-H	West-2	Rayf	V	D D	U P 3	Columbia	F	Sp B	4.83	S	A	Semi	3	B	R	R
Nelson, Four-29	1500	2084	104	32x4s	Kelsey....	Own	4	3⅛x4¾	146	15.60	29	2200	I	Blk	3/16	1⅛	5/16	Bev	T-S	F-F	Bosch -SH	U-S-L-1	Zeni	V	D D	R Ax 3	Own	F-F	Sp B	4.25			Semi	2	B-R	B & R	B
*Noma, A	△2900	2550	128	32x4½s	....	Cont	6	3¼x4½	224	25.35	55	2600	L	Blk	¼	1⅜	5/16	Hel	P	F	Delco	Delco	Zeni	V	D D	U P	Timken	¾ F	Sp B	4.50	S	S	Semi	3	B	B & R	B & R
Norwalk	....	2900	116	32x3½c	Firestone	Lycmg	4	3½x5	192	19.60	....	2500	L	Blk	3/16	1⅝	5/16	Hel	T-S	S	Delco	Dyneto	Cart	V	D	U P 3	Adams	¾ F	Sp B	4.00	T	S	Semi	2	B	R	.....
*Oakland, 34-B	1075	2170	112	32x4s	Perlman	Own	6	2 13/16x4¾	177	18.97	44	2600	I	Blk	3/16	1⅛	5/16	Hel	P	F	Remy	Remy	Marv	V	C	U P 3	Mott	F	Bev	4.50	S	S	Semi	3	B	R & B	B
*Oldsmobile, 37-A	1395	2452	112	32x4s	Jaxon	Own	6	2⅞x4¾	177	18.90	41	2600	I	Blk	3/16	1⅛	5/16	Hel	P	F	Remy	Remy	John	V	C	U P 3	W. Mott	F	Sp B	4.60	S	S	Semi	3	B-R	B R	R
*Oldsmobile, 45-B	1895	3150	122	34x4½s	Jaxon	Own	8	2 13/16x4¾	248	26.55	58	2600	L	4	3/16	1⅛	5/16	Hel	P	F	Delco S-A	Delco-2	B & B	V	C	U P 3	W. Mott	F	Sp B	4.91	S	S	Semi	2	B-R	B & R	R
*Olympian	1240	....	112	32x3½s	Goodrich	Own	4	3¼x4½	149	16.90	40	2600	I	Blk	3/16	1¾	⅜	Hel	T-S	F	Conn	Auto	Stmb	V	O D	U P 3	Own	F F	Sp B	4.75		R	Trans	2	B-R	B-R	B
*Overland, 4	845	1940	100	30x3½	Stanweld	Own	4	3⅜x4	143	18.23	27	....	L	Blk	....	....	....	Hel	T-S	S	Conn S	Auto 2	Tilt	G	P	U P 3	Own	¾-F	Sp B	4.50	S	T	3 P Cant	3	B	B	R
*Owen Magnetic, W42	6500	5200	142	35x5q	Firestone	Own	6	4x5½	414	38.40	78	....	I	3	¼	1⅞	⅜	Hel	P	F	Bosch	Owen Sys	Zeni	V	Ow. M	ag. T R	American	F	Sp B	4.00	S	S	Semi	3	....	R	R
Packard, 3-25	5200	4435	128	35x5c	Firestone	Own	12	3x5	424	43.20	95	2600	L	6	3/16	1½	.344	Chn	P	F	DelcoS-HA	Bijur-2	Own	P	D D	U P 3	Own	S-F	Sp B	4.36	S	A	Semi	3	B-R	B	R
Packard, 3-35	5550	4490	136	35x5c	Firestone	Own	12	3x5	424	43.20	95	2600	L	6	3/16	1½	.344	Chn	P	F	Delco S-HA	Bijur-2	Own	P	D D	U P 3	Own	S-F	Sp B	4.36	S	A	Semi	3	B-R	B	R
Paige-Linwood, 6-40	1595	2802	117	33x4s	Cleveland	Ruten	6	3⅛x5	230	23.44	45	2700	L	Blk	3/16	1 3/16	.312	Hel	P*	F & S	Remy S-H	G & D	Stmb	G	D P	U P 3	Salisbury	¾-F	Sp B	4.42	T	T	Cant	3	B-R	B & R	R
Paige, Essex, 6-55	2150	3373	127	34x4½s	Kelsey	Cont	6	3½x5¼	303	29.40	55	1900	L	Blk	3/16	1.54	.305	Hel	P	F & S	Remy S-H	Remy	Rayf	V	D P	U P 3	Salisbury	¾-F	Sp B	4.33	T	T	Cant	3	B-R	B & R	B
Pann, A	....	2300	108	33x4q	Firestone	Own	..	3¼x5	166	16.00	50	3000	L	Blk	3/16	1⅜	5/16	Chn	T-S	F & S	Auto	Auto	Stmb	G	D P	U P 3	Own	Semi	Sp B	4.90	S	S	Semi	2	B	R	R
Paterson, 6-46	1695	2900	120	33x4	Detroit	Cont	6	3¼x4½	224	25.35	38	1600	L	Blk	¼	1¼	5/16	Hel	P	F & S	Delco D-H	Delco-2	Stmb	V	D P	U P 3	Hess	S-F	Sp B	4.50	S	S	Semi	3	B	R	R
Peerless, 56	2900	3500	125	34x4½s	Firestone	Own	8	3¼x5	332	33.80	80	2800	L	4	3/16	1 3/16	⅜	Hel	P	F	At-K S-H	Auto 2	Ball	V	D D	U P 3	Timken	S-F	Sp B	4.90	S	S	Platt	3	B-R	R	R
Pennsy, 18	1085	2600	115	32x4s	Goodyear	G-B & S	4	3¾x4¼	188	22.50	37	2800	....	Blk	3/16	1⅝	11/32	Hel	T-S	F & S	Conn S-H	Dyneto-2	Cart	V	D D	U P 3	Weiss	S-F	Bev	4.00	S	S	Semi	3	R	R	B
Pennsy, 6-18	1585	....	120	33x4s	....	Cont	6	3¼x4½	224	25.35	....	....	L	Blk	....	....	....	Hel	P	F & S	S-H	Heinze	Rayf	V	P	U P 3	Columbia	F	Sp B	4.58	..	S	¾ El	3	B	R	B
Phianna	6000	....	128	32x4½	Firestone	Own	4	3 11/16x6	287	24.90	....	....	L	Blk	3/16	1 11/16	⅜	Chn	P	F	Bosch S-H	Ward L	Stmb	P	D D	Sep-4	American	F	Sp B	4.00	R	R	Cant	3	B	R	B-R
*Piedmont, N-30	1095	....	116	32x3½	Firestone	Lycmg	..	3½x5	192	19.60	40	2200	I	Blk	3/16	1⅝	....	Hel	T-S	S	....	Dyneto	Cart	V	D P	U P 3	Peru	F	......	4.45	..	..	Semi	....	....	....	....
*Piedmont, S-40	1545	....	122	32x4	Firestone	Cont	..	3¼x4½	224	25.35	44	2800	I	Blk	3/16	1 3/16	....	Hel	T-S	S	Remy	Remy	Zeni	V	D P	U P 3	Timken	S-F	......	4.45	..	..	Semi	....	....	....	....
Pierce-Arrow, 38	7250	4370	134	34x4½	Goodrich	Own	6	4x5½	415	38.40	....	....	T	2	¼	1½	5/16	Hel	P	F	Delco	West	Own	P	C	Sep 4	Own	S-F	Sp B	3.78	S	A	¾ El	7	B	B & R	R
Pierce-Arrow, 48	7750	5103	142	35x5q	Goodrich	Own	6	4½x5½	525	48.60	....	....	T	2	¼	1½	5/16	Hel	P	F	Delco	West-2	Own	P	C	Sep 4	Own	S-F	Sp B	Opt	S	A	¾ El	7	B	B & R	R
Pilgrim	895	2350	114	32x3½s	Perlman	G-B & S	4	3¾x4¼	188	22.50	37	2800	L	Blk	3/16	1⅝	½	Chn	T-S	F & S	Elsman	West-2	Zeni	V	O D	U P 3	Hess	¾ F	Sp B	4.08	S	S	Semi	3	B	R	B
*Pilot, 6-45	....	2890	120	32x4s	Perlman	Teetor	6	3⅛x5	230	23.44	45	2100	L	Blk	3/16	137	.31	Hel	P	F & S	Delco S-H	Delco-2	Tilt	V	D D	U P 3	Spacke	F	Sp B	4.90	S	T	Cant	3	B	B & R	R
Premier, 6-C	2585	3400	125½	32x4½s	Firestone	Own	6	3⅜x5½	295	27.30	60	2600	I	Blk	3/16	1 11/16	5/16	Hel	P	F & S	Delco S-A	Delco-2	John	V	D D	U P 3	Timken	S-F	Sp B	4.46	S	S	Semi	3	B-P	R	R
*Reo, T-6	1650	2935	120	33x4s	Firestone	Own	6	3 9/16x5	...	24.30	50	2000	F	2	3/16	2 33	.26	Hel	P	S	N. E	N. E	Ray	V	D D	Sep 3	Own	S-F	Sp B	4.30	S	S	Semi	4	R	R	R
Ri-Chard	8000	4500	137	34x6	Firestone	Own	8	3¾x6¾	600	.....	120	1800	I	4	¼	2¾	5/16	Hel	P	F-S	2 Bosch M	West	Own	V	D D	Sep 3	Own	F-F	Bev	2.00	T	T	Semi	5	B	B	B
Revere, B	3850	3850	131	32x4½q	Goodyear	Own	4	4⅝x6	361	30.63	105	2600	....	Blk	½	2¼	⅜	Spr	P	F-S	Bosch	West	Mill	P	D D	U P 4	American	F-F	Bev	3.50	..	A	Semi	2	B	B	B
*Roamer, C-6-54	....	3000	128	32x4s	Wire W	Cont	6	3½x5¼	303	29.40	54	2450	L	Blk	3/16	1.54	.30	Hel	P	F & S	Bosch D-H	Bijur-2	Stmb	V	D P	U P 3	Stanpar	¾ F	Sp B	4.50	S	S	Cant	3	B-R	B	B
*Roamer, D-4-75	....	3150	128	32x4½s	Wire W	Duesen	4	3 11/16x6	299	25.40	75	1800	I	Blk	¼	2	⅜	Chn	P	F & S	Bosch	Bijur-2	Stmb	V	D P	U P 4	Stanpar	¾ F	Sp B	3.55	S	S	Cant	2	B	B	B
Rock Falls, 10	....	2800	136	35x5	Firestone	Buda	6	3½x5¼	303	29.40	....	....	I	Blk	....	....	....	....	P	F & S	Bosch	West	Rayf	V	D P	U P 3	Columbia	F-F	......	4.50	..	..	¾ El	....	....	....	....
*R. & V. Knight, J	3150	3550	127	32x4½	Firestone	Own	6	3½x4½	260	29.40	....	....	K	Blk	3/16	....	....	Chn	T-S	F	Wagner	Wagner	Scheb	V	D D	U P 3	Timken	S-F	Sp B	4.90	S	S	Semi	3	R	R	R
*R. & V. Knight, R	2150	2900	115	32x4	Firestone	Own	4	3¾x5	221	22.50	....	....	K	Blk	3/16	....	....	Chn	T-S	F	Wagner	Wagner	W	...	D D	U P 3	Salisbury	F	Sp B	4.75	O	S	Semi	3	B	R & B	R
Saxon, Six	1295	2376	112	32x3½s	Firestone	Cont	6	2⅞x4½	175	19.84	36	2600	L	Blk	3/16	1 11/16	9/32	Hel	T-S	F & S	Remy S-H	Wagner-2	Stmb	G	D D	R Ax 3	Timken	S-F	Sp B	4.75	T	T	Cant	3	R-P	R	R
*Sayers	1745	2600	118	32x4s	Firestone	Cont	6	3¼x4½	224	25.40	42	2200	I	Blk	¼	1⅜	¼	Hel	P	F & S	Delco	Delco-2	Zeni	V	D D	U P 3	Stanpar	¾ F	Sp B	4.75	S	S	Semi	3	B	R	R
Scripps-Booth, G	□1065	2100	110	30x3½c	D Wheels	Mason	4	3 11/16x4	171	21.70	32	2100	I	Blk	3/16	1¼	9/32	Hel	P	....	Remy	Remy	Zeni	...	C	U P 3	W. Weiss	¾ F	Bev	4.07	S	A	Cant	3	B-R	R	B
Scripps-Booth, 6-39	1295	.....	112	32x4	Perlman	North	6	2 13/16x4¾	177	18.99	44	2600	I	Blk	3/16	....	....	Hel	P	F-S	Remy	Remy-2	Marv	V	C	U P 3	W-Mott	¾ F	Bev	4.50	S	S	Semi	3	B-P	B-R	B
Seneca, 4-27	1085	2100	108	30x3½	Jackson	LeRoi	4	3⅛x4½	138	15.63	27	2200	I	Blk	3/16	....	¼	Hel	T-S	F & S	Conn	Al-Ch	Scheb	...	D-D	U P 3	Peru	F F	Sp B	4.50	..	T	Cant	2	B	R	R
Simplex-Crane	7000	....	143½	35x5q	....	Own	6	4⅜x6¼	564	45.94	....	....	L	3	3/16	....	....	Chn	P	F	Eisen	Bosch-2	Newc	P	D	U P 4	Own	F	Sp B	Opt	S	S	Semi	3	B	B	R
Singer, 19	5000	4400	139	35x5	D Wheels	H-Splm	6	4x5½	415	38.40	100	1950	T	3	3/16	1⅞	3/16	Hel	P	F	Bosch S-H	West-1	Rayf	V	D D	U P 4	Timken	F	Sp B	3.70	S	A	Cant	3	B	R	R
Spacke, S-20	....	....	90	28x3	....	Own	2	3½x3 11/16	69	9.80	....	....	F	....	....	....	....	Hel	Air	Non C	S-H	....	Carter	G	F D	Amid-2	Own	Live	B	5.09	S	S	Cont	2	B	B	B
Standard, 1	3000	3500	127	34x4½s	Firestone	Own	8	3¼x5	332	33.80	70	2200	L	4	3/16	1 1/16	⅜	Hel	P	F	Split	West	Zeni	V	D D	U P 3	Timken	S-F	Sp B	4.46	S	S	Semi	3	B-R	B R & P	R
Stearns-Knight, 4	2350	3400	125	34x4½s	Firestone	Own	4	3¾x5⅝	248	22.50	50	2000	S	Blk	3/16	....	....	Chn	P	F & S	At-K S-H	West-2	Schb	V	D D	U P 3	Own	S-F	Sp B	4.50	S	A	Cant	3	B-R	B & R	R
Stephens, 84	1975	3100	122	32x4s	Stanweld	Own	6	3¼x4½	225	25.35	57	2600	I	Blk	3/16	1⅝	⅜	Hel	T-S	F	Auto	Auto	Till	V	D D	U P 3	Stanpar	S-F	Sp B	4.75	S	S	Semi	3	B	R	R
S-S-E, A-F	7000	1800	122	33x4½	D Wheels	Own	6	....	300	30.24	77	2700	....	Blk	3/16	2	⅜	Chn	P	F & S	Delco D	Delco-2	Zeni	P	D D	R Ax 3	Own	S-F	Sp B	3.40	T	T	Cant	7	....	....	....
Studebaker, E-H	1685	2950	119	32x4q	Kelsey	Own	6	3½x5	289	29.40	51	2000	L	Blk	..	1 11/16	5/16	Hel	P	F & S	Wagner	Wagner	Stmb	V	C	Sep-3	Own	S-F	Sp B	4.00	S	S	Semi	4	R	R	R
Studebaker, E-G	2135	3125	126	33x4½q	Kelsey	Own	6	3⅞x5	354	36.04	62	2000	L	Blk	..	1 11/16	5/16	Hel	P	F & S	Wagner	Wagner-2	Ball	V	C	Sep-3	Own	S-F	Sp B	3.70	S	S	Semi	4	R	R	R
Studebaker, E. J	....	....	112	32x4	....	Own	6	3⅛x4½	207	23.40	....	....	L	....	3/16	....	....	Ch	P	S P	Wag. S	Wag	Stmb	V	P	Amid-3	Own	S-F	Sp-B	4.55	S	S	Semi	4	R	R	R
*Stutz 16-valve	3350	....	130	32x4½s	D Wheels	Own	4	4⅜x6	361	30.63	....	....	T	Blk	½	....	....	Hel	P	F & S	Delco D-H	Remy-2	Stmb	P	C	R Ax 3	Own	¾ F	Sp B	3.75	T	T	Semi	3	B	B-R	R
*Templar, 4-45	2685	2750	118	32x4	Firestone	Own	4	3⅜x5½	197	18.23	45	2100	I	Blk	3/16	1⅝	⅜	Chn	P	F	Magneto	Bijur-2	Stmb	V	D D	U P 3	American	S-F	Sp B	4.41	S	S	Semi	3	B	B & R	R
*Texan	1250	2400	115	33x4s	Firestone	Lycmg	4	3½x5	192	19.60	35	2000	L	Blk	3/16	....	....	....	T	F & S	Delco	Auto	Cart	V	P	U P 3	Peru	F F	Sp B	4.25	S	A	Cant	3	B	R	R
*Tulsa, D-1	1335	2400	117½	33x4s	Stanweld	Lycmg	4	3½x5	192	19.60	35	1800	L	Blk	3/16	....	....	Hel	T	F & S	Delco	Dyneto	Mill	V	D D	U P 3	Salisbury	F F	Sp B	4.50	S	S	Semi	2	B	R	B
Velie, 38	1525	2716	115	32x4s	Goodyear	Cont	6	3¼x4½	224	25.35	35	2050	L	Blk	3/16	1.39	.33	Hel	P	F & S	Remy S-A	Remy-2	Rayf	V	D D	U P 3	Timken	S-F	Sp B	4.33	S	S	¾ El	3	B-P	R	R
Velie, 39	1910	6316	124	33x4½s	Firestone	Cont	6	3½x5¼	303	29.40	50	2000	L	Blk	3/16	1¼	.28	Hel	P	F & S	Remy S-A	Remy-2	Rayf	V	D D	U P 4	Timken	S-F	Sp B	4.08	S	S	¾ El	3	B-R	R	R
Vernon, 419	....	1500	108	30x3½c	Baker	Own	4	3⅛x4	123	15.62	45	2800	T	Blk	3/16	1⅜	3/16	Hel	T	F & S	At-K S-A	Wd. Leon	Own	G	D	U P 3	Own	F-F	Sp B	4.63	S	S	Cant	2	B	R	R
Vernon, 819	....	2100	115	31x4s	Baker	Own	8	2⅝x4	173	22.05	62	2800	T	4	3/16	1½	3/16	Hel	T	F & S	At-K S-A	Wd. Leon	Own	V	D	U P 3	Own	F-F	Sp B	4.25	S	S	Cant	2	R	R	R

TRADE NAME AND MODEL	Price Touring Car	Weight of Car Ready for Road	TIRES AND RIMS: Wheelbase, in Inches	Size	Make of Rims	ENGINE: Make of Engine	Number Cylinders	Bore and Stroke in Inches	Piston Displacement	Rated H. P., S. A. E.	Max. Brake H. P. R. P. M. at Max. H. P.	Cylinder Type	Cylinders Cast	With. P. Ring Groove Diam. Inlet Valve (Clear)	Lift of Valve	Cam Shaft Drive	Type of Cooling System	Type of Oiling System	IGNITION SYSTEM: Make and Type	Make of Starting-Lighting System	Carburetor: Make	Fed by	Clutch Type	Gearset Location and Forward Speeds	REAR AXLE: Make	Type	Type of Gears	Gear Ratio	Car Driven Through	Torque Taken By	Type of Rear Springs	BEARINGS: No. Crankshaft Bgs.	Gearset	Rear Axle	Front Wheel
*Waco, T-37	950	2350	112	32x3½q			4	3¾x4¼	188	22.50	37	I	Blk				T	F & S	Split		Schb	V	D	U P 3		F-F					¾ El		B	
*Westcott, B-38	2390	3100	118	33x4s	Firestone	Cont	6	3¼x4½	223	25.35	56	2690 L	Blk	1½		Hel	P	F & S	Delco	Delco	Rayf	V	D D	U P 3	Timken	S-F	Sp B	5.09	S S	Semi	4	R	R	R
Westcott, A-48	2890	3200	125	32x4½s	Firestone	Cont	6	3½x5¼	303	29.40	50	1900 L	Blk	1.54	.30	Hel	P	F & S	Delco	Delco-3	Rayf	V	D D	U P 3	Timken	S-F	Sp B	4.50	S A	Semi	3	B-R	R	R
Willys-Knight, 88-4	1725	3695	121	34x4½s	Stanweld	Own	4	4½x4½	240	27.23	55	2200 S	Blk			Hel	T-S	F & S	Conn S	Auto-2	Tilt	V	C	R Ax 3	Own	F	Sp B	4.30	T T	Cant	3	B R	PR	R
Winton, 33	3950	3870	132	35x5	Firestone	Own	6	3¾x5½	348	33.75	70	2200 L	2			Chn	P	F	Bosch S-H	Bijur-2	Stmb	V	D D	U P 4	Own	F	Sp B	4.93	S T	Semi	4	B-R	R	R
Winton, 48	4350	4440	138	35x5	Firestone	Own	6	4½x5½	525	48.60	80	1800 L	2			Chn	P	F	Bosch S-H	Bijur-2	Stmb	V	D D	U P 4	Own	F	Sp B	4.08	S T	¾ El	4	B-R	R	R
Wolverine	3500	2340	117	32x4½		Duesen	4	3½x6	299	25.00	90	2600	Blk			Gear	P	F & S	Bosch	Bijur	Mill	V	D D	U P 4	American	F-F	Sp B	2.94	S	Semi	3	B	R	R

SPECIFICATIONS OF STEAM PASSENGER CARS

Name and Model	Price	Wheel-Base	Type of Boiler	Boiler Location	Fuel Used	Burner Type	Condensing or Non-Conden.	Type of Engine	Type of Valve Gear	Type of Valves	No. Cyl.	Bore and Stroke	Engine Location	Final Drive	Gear Ratio	Tire Size	Type of Rear Spring	Car Drives Through	Torque Taken by	M M M
Doble Detroit	5000	135	Semi Flash	Hood	Kero	Atomising	Condensing	Simp D Act	Own	Slide	2	5x4	Rear Axle	Spur Gr	1.28	35x5	Semi	Springs	Eng. Frame	M
Stanley, 735	3740	130	Fire Tube	Hood	Kero	Vaporising	Condensing	Simp D Act	Steve Link	Slide	2	4x5	Rear Axle	Spur Gr	1.50	35x4½	Elliptic	Springs	Eng. Frame	M
Super-Steamer	3000	125	Fire Tube	Hood	Kero	Bunson	Condensing	Simp D Act	Steve Link	Slide	4	3¼x5	Rear Axle	No Gr		33x4	Semi	Springs	Eng. Frame	M

Brief Facts and Features of the Automobile Industry in 1919

By Alfred Reeves, General Manager, National Automobile Chamber of Commerce.

Motor Car Manufacturers.

Motor truck manufacturers in production	170
Passenger vehicle manufacturers in production	90
States in which factories are located	32
Employees in automobile factories	580,000
Passenger cars produced in 1919	1,586,787
Motor trucks produced in 1919	305,142
Total motor vehicles produced in 1919	1,891,929
Wholesale value of passenger cars produced in 1919	$1,399,282,995
Wholesale value of motor trucks produced in 1919	$408,311,585
Wholesale value of all vehicles produced in 1919	$1,807,594,580
Average wholesale price of passenger cars produced in 1919	$882
Average wholesale price of motor trucks produced in 1919	$1,338
Automobile tires manufactured in 1919	30,000,000

Dealers, Garages, Etc.

Total dealers, garages, repair shops, etc., in United States	62,036
Passenger car dealers	32,317
Motor truck dealers	18,943
Garages	36,247
Automobile repair shops	43,281

Automobile Exports.

Value of motor vehicles and parts exported in 1919	$146,334,516
Number of passenger automobiles exported in 1919	62,624
Value of passenger cars exported in 1919	$68,945,740
Countries to which automobiles were exported	81
Number of commercial cars exported in 1919	14,748
Value of commercial cars exported in 1919	$35,372,419

Motor Vehicles in Use.

Motor vehicles registered in United States, approximately	7,100,000
Motor vehicles in New York state	570,000
Motor trucks in use in United States	700,000
Tons of goods hauled yearly by trucks (estimated)	2,200,000,000
Cost of haulage by motor trucks at 18 cents per ton mile	$1,980,000,000
Cost of haulage on basis of 24 cents per ton mile by horse and wagon	$2,640,000,000
Value of passenger service at railroad rate of 3 cents per mile	$2,525,000,000
Number of persons in United States to one motor car	15.96
Automobiles in United States for each square mile	2.1
Horses displaced by motor trucks in use (estimated)	3,600,000
Acreage released by trucks for production of human foods	15,000,000
Greatest percentage of increase in car registrations, Tennessee	29
Greatest number of cars per capita, Iowa and Nebraska	1 for every 6½ persons
Revenue to states from license fees	$65,000,000

Farmers are largest users of trucks, owning 10 per cent. more than manufacturers and 15 per cent. more than retailers.

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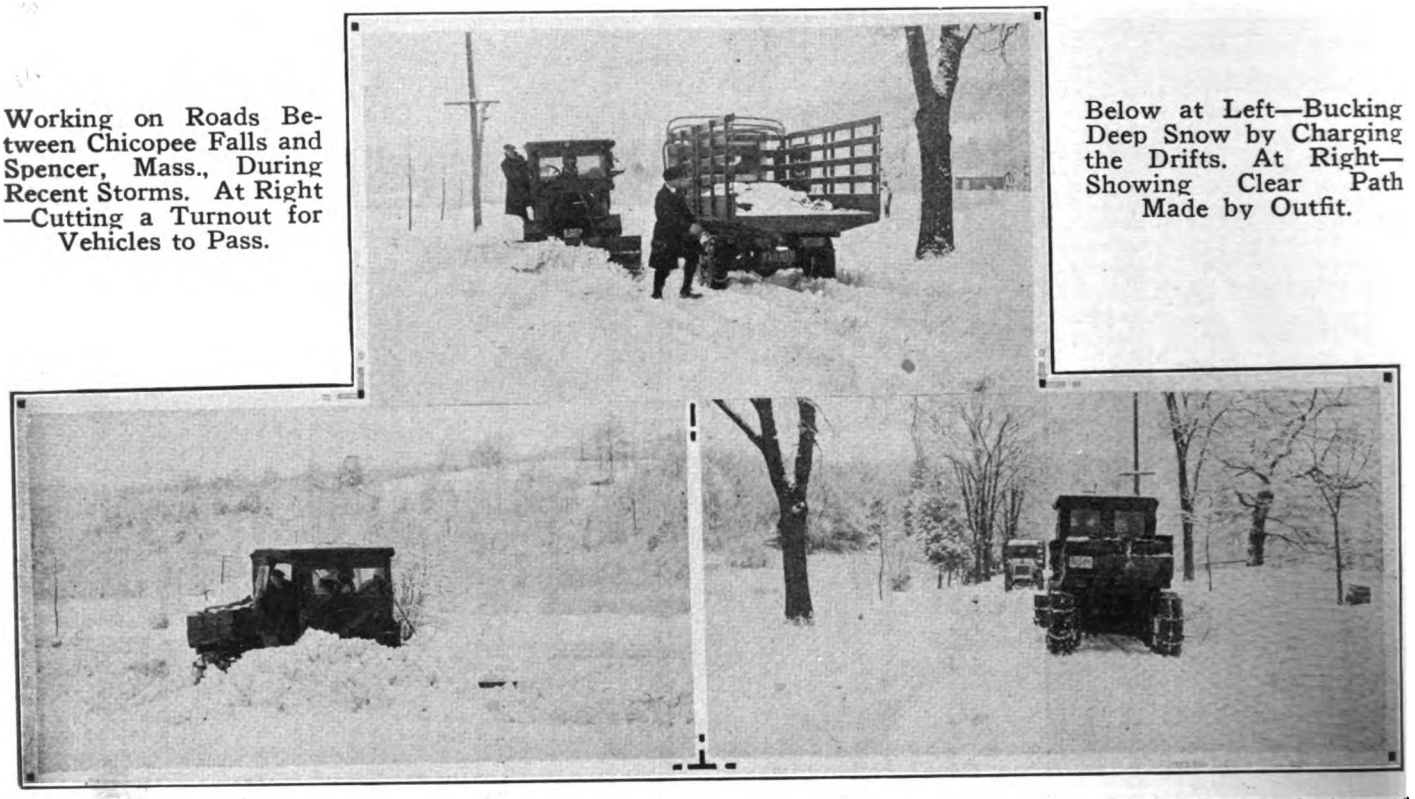
Fisk Rubber Company's Tractor Cleared Highways

Working on Roads Between Chicopee Falls and Spencer, Mass., During Recent Storms. At Right —Cutting a Turnout for Vehicles to Pass.

Below at Left—Bucking Deep Snow by Charging the Drifts. At Right—Showing Clear Path Made by Outfit.



MURPHY WINS LOS ANGELES SPEEDWAY EVENT.

The dedication of the new Los Angeles motor speedway, Feb. 27, was signalized by the winning of the 250-mile classic by Jimmy Murphy, a new participant in speed contests, driving a Duesenburg racing car. The time made was 2:26:0.59, an average speed of 103.2 miles an hour. The other leading contestants in the order in which they finished were as follows:

Second, Joe Thomas, Frontenac; third, Ira Vail, Philgrin; fourth, Roscoe Sarles, relief driver for Goodson, Frontenac; fifth, Eddie O'Donnell, Hudson; sixth, Eddie Hearne, Chevrolet; seventh, Ralph Mulford, Meteor; eighth, Ralph De Palma, Boillot; ninth, John De Palma, Mercedes.

Murphy, the winner made the nonstop run on Goodyear cord tires, while Vail, O'Donnell, Hearne and the De Palmas all used Goodyears.

The race was full of thrills from the start. Milton, Pullen, Klein, Durant, Boyer and Searles set a terrific pace, each leading the field at different times. The mad pace soon caused the retirement of Milton because of valve trouble, Pullen, Boyer and Searles went out from broken connecting rods, a broken wheel sent Klein to the pits, while Durant was forced out by a broken piston.

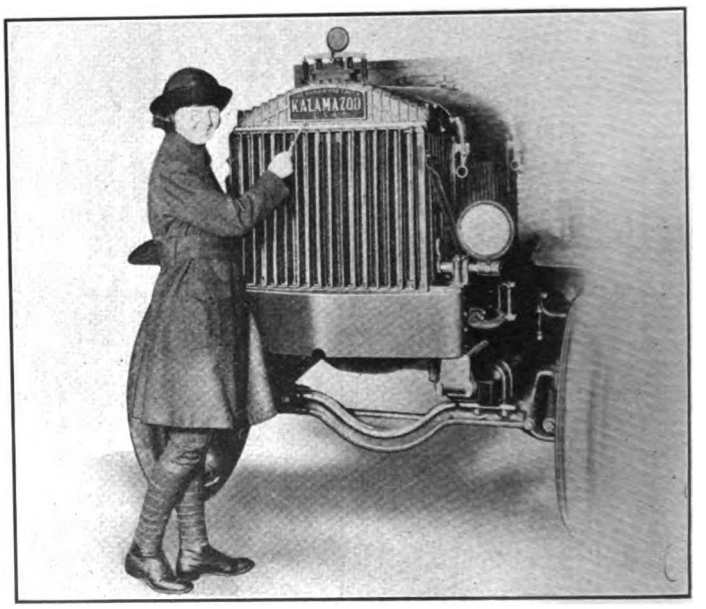
Hearne, Klein and Durant shared honors with Murphy in having no tire trouble until forced out of the contest by mechanical break downs. Pullen, Vail and O'Donnell made one tire change each.

The Los Angeles race proved a success from every standpoint and opened the 1920 racing season auspiciously.

"MISS KALAMAZOO" DEMONSTRATES AT CHICAGO SHOW.

During the truck show at Chicago visitors at the Kalamazoo exhibit were surprised to meet with an interesting young woman who, garbed in the conventional costume of a male driver, was a particularly active member of the sales organization of the Kalamazoo Motors Corporation. She was known as "Miss Kalamazoo" and besides being a clever driver she is said to be extremely well informed mechanically and technically. Those who first met her were not inclined to take her selling advances seriously, but they frequently learned that her knowledge was decidedly superior, and she was qualified to sell either trucks or transportation.

General Sales Manager H. G. Stiles of the company was decidedly impressed by the prospects developed by the show, which he believed to be extremely satisfactory, and much interest was evidenced in the Kalamazoo machines, which are built in 1½, 2½ and 3½-ton sizes. These are constructed of high grade units, with unusual factors of safety. The trucks are sold completely equipped, with electric lamps, starter and horn, all-steel enclosed cab, motometer, hub odometer, radiator guard and towing hooks in addition to the standard equipment.



"Miss Kalamazoo," a Girl Whose Mechanical and Technical Knowledge Surprised Visitors at the Kalamazoo Truck Exhibit at the Chicago Show.

The Sparks-Withington Co., Jackson, Mich., maker of Sparton automotive products, is still continuing its policy of expansion. A second-story added to plant No. 2 gives a floor space 320 by 50 feet, and a four-story building, 100 by 30 feet, is being erected for storage purposes.

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Fisk Red-Top
Fisk Non-Skid

THE tire that makes the sure-fire hit with the dealer is, of course, the tire that is firmly established in popular favor. So great is the demand for Fisk Cords that any dealer who orders a supply for the first time will be more than satisfied by the rapidity with which that supply is sold. Fisk Cords sell strictly on their superlative workmanship; and the re-orders come in because Fisk Cords embody the Fisk Ideal—

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FISK CORD TIRES

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The above letter from the repair shop owner is evidence of the actual money value of the AMBU books. A man drove up to his shop and said his starter wouldn't work and that three shops had failed to fix it. One look at it and a recollection of a point in the "Ford Standard Electrical Equipment" enabled this repair man to immediately diagnose the trouble. That gave him the job and a new customer.

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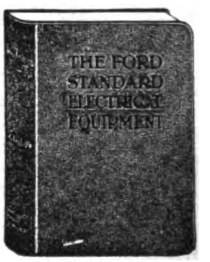

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(Continued from Page 30.)

been displayed for a considerable period.

The chassis as a rule attract attention because of the general excellence of workmanship and finish, and the complete cars are generally distinctive with reference to body designs and finish. Without exception unusual care has been directed to equipment, much attention being paid to detail of appointment and luxuriance of upholstery, and every practical provision has been paid to the comfort and convenience of the passengers.

While the stock bodies of the cars are better designed better built and better finished, and they evidence an extremely gratifying progress in coach work generally, there has been even greater development in the special bodies, that are intended to appeal to those who keenly discriminat and are willing to pay the price for whatever will please or satisfy. Never before has much care been directed to thoroughly equipping cars, and the importance of meeting every practically possible requirement has been realized by manufacturers and body specialists.

The mechanical work of the chassis has been given equal care and not only is the workmanship better and the finish superior as compared with previous productions, but the assembling details have been refined with the object of obtaining more satisfactory construction.

The increasing number of truck exhibits portends the growth of this branch of the automotive industry, and the development of the machines mechanically has been given close attention. The truck division is limited in numbers by the comparatively small spaces obtainable, for the management desired to have as large a number of exhibitors as possible, and many exhibits consist of a standard type chassis, or a complete truck, very few showing a full series of machines of varying load capacities.

In all approximately 200 chassis and trucks were shown, of which 48 were in the main building and 21 in the Armory, and the greater part of the new machines are seen in the latter division. Of the 69 makes, five are electric, three of which, the C-T, the Oneida and the R & L are shown for the first time in Boston. The Oneida truck is new in the sense that it is the only make constructed with the Oneida patent line drive, which is built under the Krohn patents. The machine is driven by a single motor that is enclosed with the transmission unit in the rear axle housing.

Other new trucks are the Northway, built by the Northway Motors Corporation, Natick, Mass., which is two sizes, two and 3½ tons load capcaities, known as B-2 and B-3½; the Capitol Motors Corporation, Fall River, Mass, is another new make, and this concern shows one and 2½-ton machines. A third New England made truck is the Walker-Johnson, built by the Walker-Johnson Truck Co., Woburn, Mass., which is rated at 2½ tons capacity.

The Reynolds Motor Truck Co., Mt. Clemens, Mich., shows a truck of 2½ tons rating, which is one of four sizes built by this concern, and the Ultimate truck, produced by the Vreeland Motor Co., Newark, N. J., is shown in two sizes. The Traylor truck, the product of the Traylor Engineering & Manufacturing Co., Cornwells, Pa., is exhibited in a 2½-ton size, and the Huffman truck, 2¾ tons capacity, and the Jackson 3½-ton four-wheel driven truck are other vehicles seen for the first time. The Walter suspended drive, so-called, is a new design by an old manufacturer. This machine is driven by the rear wheels by internal gears by a countershaft having universal joints, suspended on the chassis frame over the dead rear axle.

Good Showing of Tractors.

There was a very good showing of tractors, these including the Cletrac, the Fordson and the Traylor. The latter is entirely new and was first shown at Kansas City. It is rated at three-plow capacity and it is convertible into a cultivator, the claim being that it will serve every purpose for which a tractor or a cultivator could be used. The small manually guided tractors include the Do-It-All, the Beeman, the Tillermobile, the Merry Garden, the New Britain and the Utilitor. These are different sizes and some of them can be utilized with implements that can be ridden.

They are in a general sense built for use on estates or small farms and claim is made that with them approximately the same work can be done for which a horse would be utilized. The Do-It-All is a larger size than the others and has

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more power. The New Britain tractors are built in two sizes, the larger being comparable with the Do-It-All. Special types of small implements are constructed with these machines and some of these are exhibited. Much interest is manifested in the tractors. With the Fordson tractor an Oliver plow outfit is shown that is produced for use with this particular unit.

The truck department included a number of displays of engines and axles and other construction units, the endeavor of the exhibitors being to educate the visitors to the special qualities that are claimed for them, and there were also several exhibits of service station equipment designed to meet the requirements of truck maintenance.

The accessories and equipment is decidedly the most complete and comprehensive ever seen at a Boston show. Not only is the number of exhibits larger, but they are of practical use and are not of the general type made by supply houses or dealers. This is probably due to the fact that the Motor & Accessory Manufacturers' Association sanctioned the show and its members are participating in it very generally.

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Storage Battery model. Price, **$25.00.**
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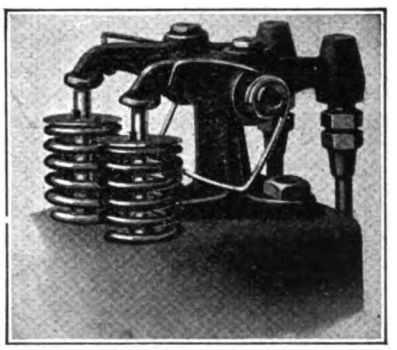

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Home-Made Aluminum Rectifier Which Obviates Battery Charging Troubles

IT IS doubtless the case that many more owners of automobiles would equip their cars with storage batteries for lighting purposes if it were not for the expense and trouble necessary in taking the battery out of the car and having it recharged at the service station. This is particularly true of Ford cars not provided with a storage battery for lighting, and the following method of making a device that may be used in the cellar of the house, or garage, will help solve this trouble for many owners.

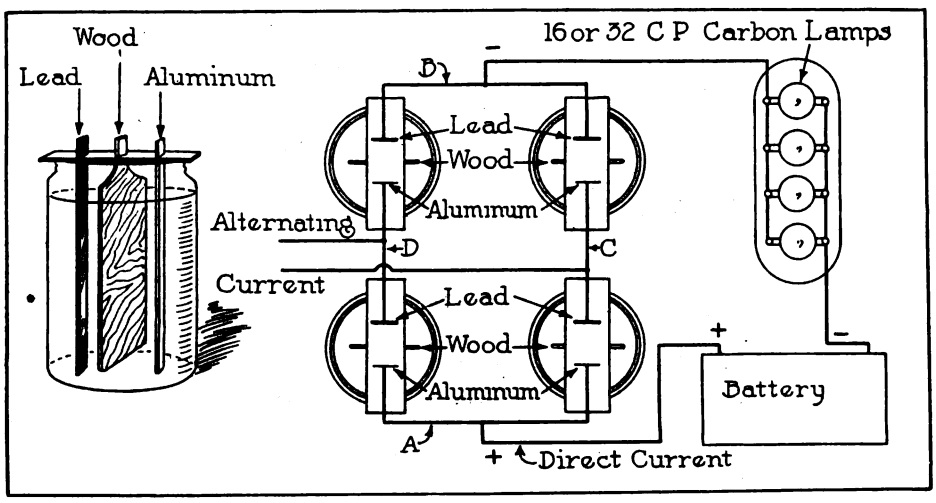

Diagram of Home Made Aluminum Rectifier and Jar Container.

Of the many components on the market for recharging batteries, there may be mentioned the magnetic rectifier, the mercury arc and the motor generator. The cost of any one of these outfits is prohibitive to many motorists when the service rendered is considered. The lowest priced outfit would probably cost $35, while the motor generator set would be in excess of $100.

The aluminum rectifier, which may be made and used at home, would not cost near these figures. and its operating expense would be very small compared to the cost of having a battery recharged at a station. Rectifiers of this type have been made and used in various parts of the country with good results. The materials needed are four jars made of glass or other insoluble non-conducting material, six inches in diameter by 10 inches high, costing probably about $1. Quart Mason fruit jars would be all right and would cost less. Four strips of aluminum, about 1½ inches wide and as long as the jars, are needed, and also four lead or carbon strips as wide as will conveniently go into the jars and of the same length as the jar. A strip of wood or some other non-conducting material is placed between the plates at the top of each jar to prevent the aluminum plates from coming in contact with the lead or carbon plates. One aluminum and one lead or carbon plate is used in each jar and should be an inch or two apart. The jars are then filled nearly to the top with a concentrated solution of common baking soda in pure water, although it need not be distilled water. Each plate is supplied with a binding post at the top to which the connecting wires may be attached.

There may be a tendency for the liquid in the jars to get warm and it may become even hot enough to boil. Trouble of this kind can be prevented by having the four jars set in a vat of water so arranged that cold water may enter slowly and the warm be carried away. A wooden box lined with galvanized iron or painted with a water proof paint would serve the purpose nicely. If the current taken from the rectifier is not excessive this cooling vat may not be needed at all.

To Set Up the Rectifier.

To set up the rectifier, place the four jars in rectangular form as near each other as convenient. Place two of the aluminum plates towards the outside of each of two jars and connect by wire; call this wire "A" as shown in the illustration. Place two of the lead or carbon plates towards the outside of each of the two remaining jars and connect by wire, as at "B." Connect the remaining lead plates, which should be toward the inner edges of each of the two jars, by wires across to the remaining aluminum plates, which are toward the inside of the other two jars. Call one of these wires "C" and the other "D." Attach a wire to the center of "A" and another to the center of "D." These two wires form the circuit taken by the direct current from the rectifier to the lamp bank and storage battery. Connect the alternating lighting circuit wires at "C" and "D," providing a switch in this circuit so that the lighting circuit may be shut off when the rectifier is not in use.

As the voltage of the alternating current used will probably be 110, in most cases it will be necessary to introduce resistance in one of the circuits. It may be better to provide this in the charging circuit as shown, but it might be used in the alternating circuit as well. Sixteen or 32 candlepower electric incandescent carbon globes are about as cheap and convenient for this resistance as anything that can be used. They should be connected in parallel and not in series, as shown; thus enabling the variance of the strength of the direct current by screwing the globes either in or out of the sockets. The number of lamps used will depend upon the capacity of the battery that is being charged. From four to six should be enough for a storage battery of 10 ampere-hour capacity. One can figure that a half ampere will pass through each 16 candlepower lamp that is screwed into the socket, so that when four lights are burning, two amperes will be passing.

At Beginning of Charge.

In the beginning of the charge let all the lights be used for two or three hours, then later one globe may be screwed out of the socket, and so on until on the last hour of the charge perhaps one light will be enough. In general, storage batteries should be charged more rapidly for the first hours than later. If the rectifier is kept cool the battery may be charged at night and thus require but little of the motorist's time and the battery will always be ready for service on the car. There should be a switch in the alternating current circuit to cut off the rectifier, when not in use.

Rectifiers of this type are not of very high efficiency, that is, more current goes in on the alternating side than can possibly be taken from the direct side, but even then the cost of charging at home, if it is rightly done, will be less than the price paid at a service station, to say nothing of the convenience afforded by always having the battery ready for service.

Cost of Apparatus.

When it is seen that the total cost of this apparatus is less than $5, even if all parts have to be bought new, it appears that it will yield a big interest on the investment.

It should be noted that the wire which leads from the two aluminum plates that are connected, is the positive wire on the direct current side and should be connected to the pole of the storage battery marked "X." It is also important that pure aluminum be used for the plates. Some on the market is too impure for good results. The aluminum plates should be at least 1/16 of an inch thick and it might be advisable to have them heavier.

This home rectifying device for charging storage batteries is designed to give satisfaction on a 110-volt alternating current circuit.

SOLDERING OF ALUMINUM BRONZE.

To solder aluminum bronze with ordinary (pewter) solder, thoroughly cleanse from dirt and grease the parts to be joined. Then put the parts to be soldered in a strong solution of sulphate of copper and place in the bath a rod of soft iron touching the parts to be joined. After a while a copper like surface will be seen on the metal. Remove from bath, rinse clean and brighten the surface. These surfaces can then be tinned by using a fluid consisting of zinc dissolved in hydrochloric acid in the ordinary way with common soft solder.

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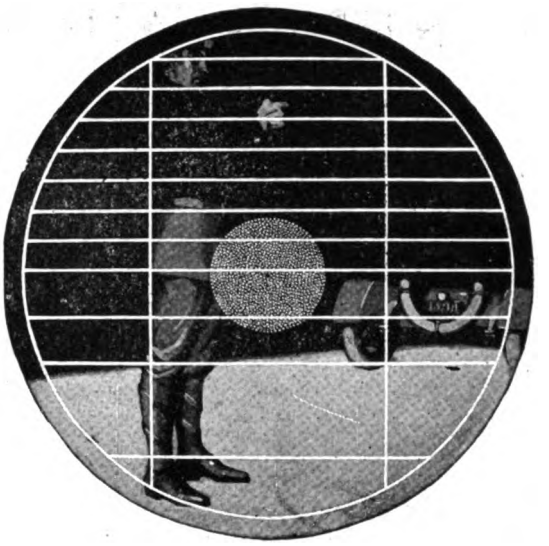

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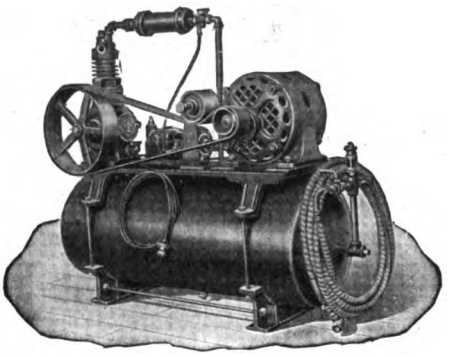

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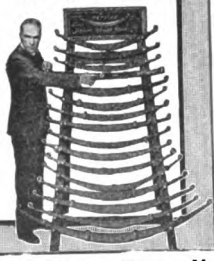

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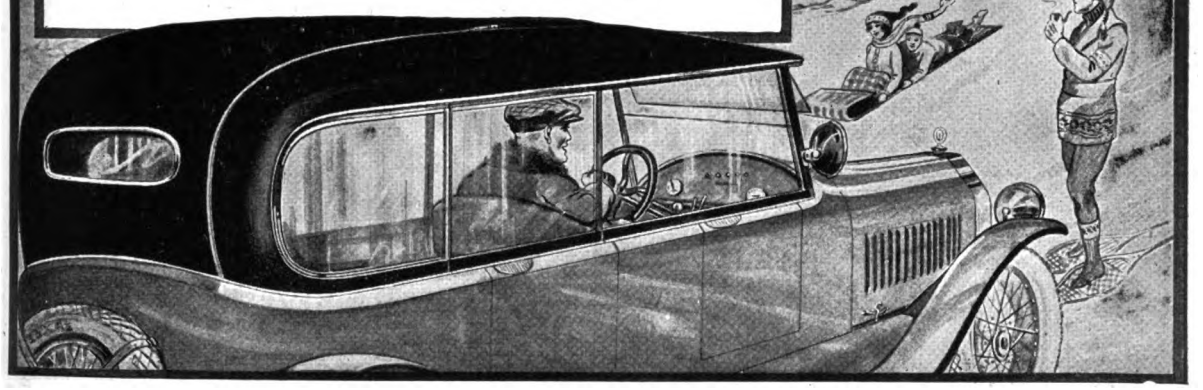
The Most Remarkable Automobile Top Material

LIGHT IN WEIGHT
DEPENDABLE IN QUALITY
NON-CRACKING—NON-BLISTERING

Dridek Is Made to Satisfy
Send to Dept. S for Samples and Prices.

TRADE DRIDEK MARK REG

L. J. MUTTY CO., Boston, Mass., U. S. A.



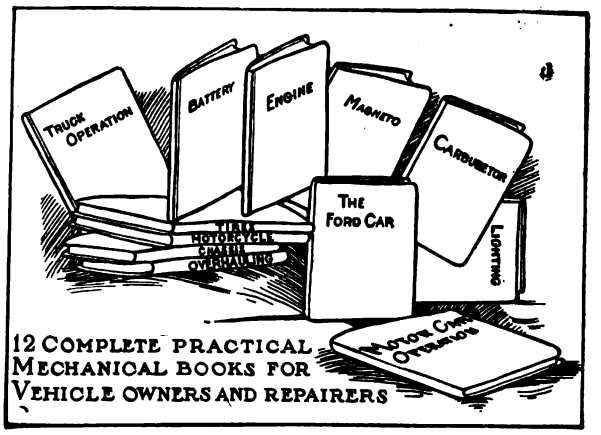
Your Prospective Customers

are listed in our Catalog of 99% guaranteed Mailing Lists. It also contains vital suggestions how to advertise and sell profitably by mail. Counts and prices given on 9000 different national Lists, covering all classes; for instance, Farmers, Noodle Mfrs., Hardware Dlrs., Zinc Mines, etc. *This valuable reference book free.* Write for it.

Send Them Sales Letters

You can produce sales or inquiries with personal letters. Many concerns all over U. S. are profitably using Sales Letters we write. Send for *free* instructive booklet, "*Value of Sales Letters.*"

Ross-Gould Mailing Lists St. Louis



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Engine	35c	Chassis	25c
Magneto	35c	Lighting	50c
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Tires	25c	Motorcycle	35c

Home and Shop Care and Repair Model T Ford Car

Price $1.00

Automobile Journal Publishing Co.

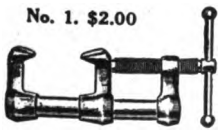
Times Building, Pawtucket, R. I.

Keep Springs Greased

Knowlson Spring Spreaders

Squeaking Stopped and 100% Easier Riding

No. 1. $2.00



Nickel-plated and polished.

No. 3. $1.50

Gun metal yoke, screw and handle nickel.

Spring Breakages Eliminated.
Both Guaranteed. Either or Both Delivered. Your Money Back if You Want It.
Don't Ruin Your Springs by Neglecting Them! They Fit Any Spring. Easy to Operate. Both Drop Forged. Use a Heavy Grease (not oil) for Real Results.
At your Dealers, or Sent Direct.
SPRING LEAF LUBRICATOR CO., Dept. 4, Ann Arbor, Mich.

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A WONDER LUBRICANT FOR CAR AND TRUCK SPRINGS

"Napco" Graph-Oil

Simply apply "Napco" to the sides of the springs with an oil can—

It will make springs work properly.

It will protect springs against breakage.

It will save in repair costs and replacements.

It will stop all spring noises.

It will make the vehicle ride easily.

It will save tires.

It keeps the springs from becoming rusty.

It adds to car service and comfort.

It will penetrate in between the leaves, cover and absolutely lubricate the surfaces of the leaves.

"Napco" used only on one side of a spring will come out the opposite side in from 30 seconds to three minutes without spreading.

A few drops of "Napco" will make easy starting of rusty nuts, bolts and connections, as it penetrates around the threads and loosens the rust.

With "Napco" there is no need to spread the leaves to lubricate them. It makes quick and easy work of a dirty job. Because it is easy to apply, operators and repairers will use it.

Jobbers and Dealers.

"Napco" Graph-Oil is a guaranteed product. It saves in time and labor. There is nothing like it and it is 100% efficient. It is a wonder worker, something essential in the tool kit, garage, repair and service station. It sells in a big way at a good profit to the trade.

"Napco" is sold in 16-oz. cans—List price, **75 cents.**

A special price when ordered in gallon cans or 50-gallon steel drums.

Send your order today. If demonstration is desired, write for sample can.

National Automotive Products Co.
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CLEVELAND, OHIO

TANKS

The tightest, safest, strongest tank it is possible to construct by any known method. Process originated by us over twenty-five years ago.

We also make a special portable emergency tank for filling tires. Throw it in your emergency car and take it with you.

Gasoline and Oil Storage Tanks and Pumps

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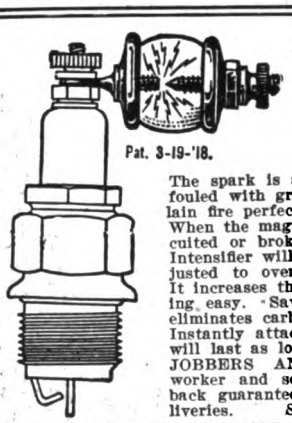
Main Office and Works
PITTSBURGH, PA.

"OHIO CARBON PRODUCTS"

"OHIO"

BRUSHES

GARAGEMEN TAKE NOTICE
Write for Our No. 6 Car List for Information on New Cars
FOR AUTOMOBILE
STARTING MOTORS AND LIGHTING GENERATORS
THE OHIO CARBON COMPANY
1900 FULTON PLACE, CLEVELAND, O.



Pat. 3-19-'18.

It Finds Ignition Troubles

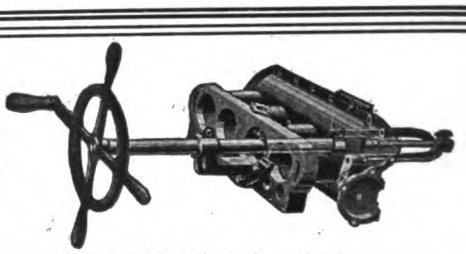
Attached to Any Plug
Stops All Spark Plug Trouble

Universal and Marvel Spark Plug Intensifiers

The spark is always visible. It will make a plug fouled with grease or carbon or with broken porcelain fire perfectly.
When the magneto is not working, a wire short circuited or broken, or the battery out of order, the Intensifier will prove it at a glance. It can be adjusted to overcome almost any ignition weakness. It increases the voltage and spark and makes starting easy. Saves in oil and gas. Adds to power, eliminates carbon and preserves plugs.
Instantly attached to any screw terminal plug and will last as long as the car.
JOBBERS AND DEALERS—This is a wonder worker and sells at a glance. Sold on a money back guarantee. Liberal discounts and prompt deliveries. *Send for full information.*

UNIVERSAL MFG. and SALES COMPANY
554 West Harrison St. Chicago, Illinois

Repairmen, Listen!



Patented May 19, 1914; Dec. 15, 1914; June 20, 1916; June 26.
The Heiser Improved Cylinder Reboring Tool for **FORD** MOTORS is the only reboring Tool in the world that is self-sharpening. It is the only tool that rebores between centers—this insures a finished cylinder, square with the crankshaft, round, straight, true and free from taper. It is adjustable and the only tool that will rebore different sizes without losing the adjustment. **The best mechanic in the world can't build reputation without proper TOOLS and EQUIPMENT. THE HEISER IMPROVED CYLINDER REBORING TOOL makes good shops out of poor ones and better shops out of good ones. Write today for full particulars.**
HEISER SPECIAL TOOL CO., 2001 Washington Street, Kansas City, Mo.

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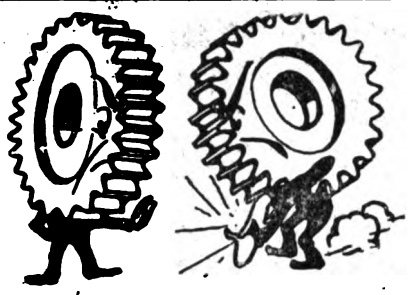


WHEN GEAR MEETS GEAR

When gear meets gear there is bound to be more or less friction. But that friction can be held down to a negligible minimum by proper lubrication.

DIXON'S GRAPHITE Transmission and Differential LUBRICANT

is specially compounded for gear work.

It stands the terrific pressure that is set up when gear meets gear—pressure that "squeezes out" ordinary oil or grease and allows a ruinous metal-to-metal contact—and it sticks to the gears when they are idle, which is just as important.

It lubricates efficiently under all temperatures—without "bunching up," congealing or "breaking down" as is the case with ordinary lubricants.

Stock this Dixon Lubricant and sell it to your customers. You'll be surprised at the sales results.

Write for prices and Booklet No. 49-G.

Also ask about Dixon's famous Cup Grease.

Made in Jersey City, N. J., by the

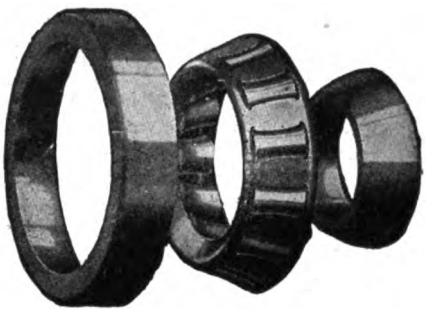
Joseph Dixon Crucible Company

D X N Trade Mark — Established 1827. — D X N Trade Mark

INSTALL SHAFERS!

as front wheel replacements for

FORD, All models	CHEVROLET, F, FA, BG, 490	MAXWELL, 1914 to 1920
OVERLAND, 81,83,83B,90,4	VIM TRUCK, 20, 21	ROAMER, All models ex. 1920
OAKLAND, 34, 34B	ALLEN, 37	DODGE, All models
DORT, 5A,6, 9,29, 8, 11, 15	SCRIPPS-BOOTH, 39	AUBURN, 1916-17-18-19



Up-to-date garages and repair shops carry Shafer replacements for front wheels in the above cars in stock. They know that Shafer Concave Roller Bearing is the only bearing on the market with 100% load capacity from all angles. They also know that Shafer bearings are being nationally advertised in leading publications, that there is a demand for them and that the repair man gets a liberal profit on each sale.

Send for details.

GEO. D. BAILEY CO.

4508 Ravenswood Ave., Chicago, Ill.

Self Aligning **SHAFER** Roller Bearing

100% Load Capacity From Any Angle

EQUIP YOUR GARAGE with PARO SHOP EQUIPMENT

OUR

EKERN'S PORTABLE WORK BENCH AND ENGINE STAND

EKERN'S MOTOR STAND (Portable)

EKERN'S SHOP BENCH MOTOR SUPPORT (attachable to a shop bench)

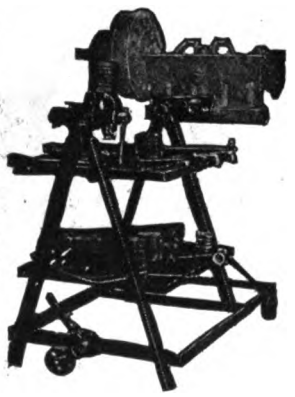
Are all specially designed for Ford Motors.

The Ford engine block is secured to either one of the above devices, by two cap screws that hold the water inlet connection. The engine can then be held in any desired position.

By using an Ekern Axle Attachment with either of the above devices, you can convert them into axle repairing stands for any make of automobile axle.

We have other devices.

Send for catalog.



List Prices	Without Axle Attachment	With Axle Attachment
Shop Bench Motor Support	$10.00	$16.00
Motor Stand	$20.00	$26.00
Work Bench	$40.00	$46.00

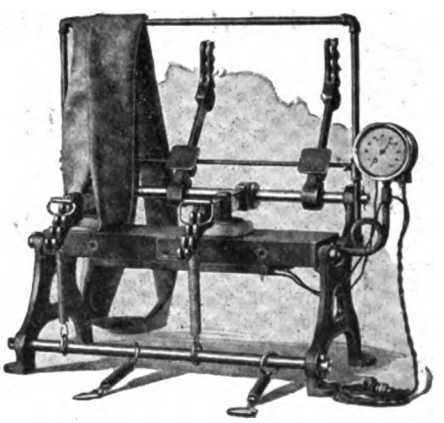
The Paro Co.

1412-14 South Michigan Boulevard, Chicago, Ill.

Heintz Automatic Electric-Steam Vulcanizer

Generates steam by electricity, eliminating all fire and flame. When the desired amount of steam is generated the current is automatically turned off, then on again when the pressure falls a pound or two, in this way maintaining a perfect uniform working temperature.

ALWAYS SURE OF A PERFECT CURE.



USED AND RECOMMENDED BY THE LEADING TIRE MANUFACTURERS AND TIRE REPAIR SCHOOLS.

Write us for descriptive data.

JAMES C. HEINTZ and COMPANY

2069 East 9th St., Cleveland, Ohio.

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NEW YORK
AUTOMOBILE REPLACEMENT
IGNITION COILS

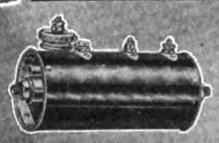
are the ORIGINAL Replacement Coils

that have successfully made Coil Replacements possible. Every sale is permanent, profitable and satisfactory. They are the most treasured line of the smallest and largest Service Stations throughout the U. S.

A special New York Coil engineered to suit the exact requirements of each car manufactured that will fire the poorest gas that positively will not "miss" at highest engine speeds and rival magneto ignition, is available.

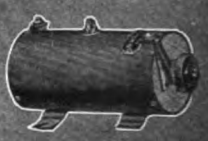
They are installed with no trouble in ten minutes, as they positively fit each car. Fifteen years of successful coil building experienced by an organization of Ignition Specialists, is the reason a car owner always agrees when told he needs a New York Coil.

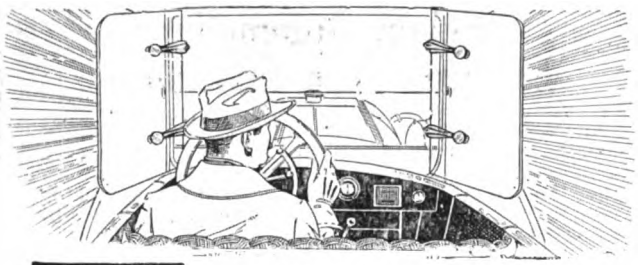
MORE REAL PROFIT, LESS COME BACKS AND EASIER MADE SALES THAN ANY ARTICLE YOU EVER HANDLED.

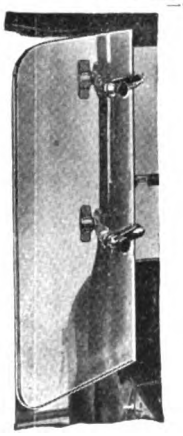


NEW YORK COIL COMPANY

338-340 Pearl Street New York, N.Y.







STAR *GLASS* WINGS

We Have an

ATTRACTIVE

PROPOSITION FOR

DEALERS

If you are in a locality where you can get your glass cut and ground we will sell you the fittings and send patterns for glass. No holes in glass.

PRICE, Complete with Glass, $20.00 Pair

Reg. sizes of glass 8x18 in., 8x20 in., and 8x22 in. Other lengths furnished as required.

Write for price of fittings

STAR WING CO.

170 W. Randolph St., CHICAGO

Your attention is called to the extensive Advertising Campaign being carried on in National Media—

Covering

VAN BRIGGLE
CARBURETORS
And SHOCK ABSORBERS

which are

sold to Dealers through bona fide automotive accessory jobbers. Write us for the name of the distributor nearest you.

Van Briggle Motor Device Co.

INDIANAPOLIS, U. S. A.

(When Writing to Advertisers, Please Mention the Accessory and Garage Journal.)

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GOGGLES FOR WELDERS.

Fitted with "Essentialite" Lenses.

THE FIBRE WELD.

Frame: Vulcanized fibre, non-conductor of heat and electricity, non-inflammable and infusible not affected by moisture, leather center, ventilated side pieces, adjustable elastic head band. We have demonstrated conclusively that with these lenses we vanquish the so-called "fatigue-weariness" and headaches caused by Ultra Violet and Infra Red rays. Circulars and prices at request. Price each, prepaid, **$3 pr.**

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CHICAGO EYE-SHIELD COMPANY

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SCAIFE COPPER-BRAZED AIR TANKS

are positively guaranteed to hold air indefinitely without loss of pressure.

(117 years old. Founded 1802)

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SCAIFE GASOLINE STORAGE OUTFITS

ARE IDEAL FOR PRIVATE GARAGES.

Send for catalogue.

FOR THE REPAIR SHOP

Here's a Job That Never Left the Crank Case

Are you among those who are still attempting to scrape a bearing to crank pins which have been pounded out of round? Or do you pay the machine shop 15 to 25 dollars for a lathe job? With an

ATLAS ABRASIVE TOOL

Price of Tool, complete, $10.00 net. Prepaid. Extra Cutters 30 cents each.

you can do the job yourself by hand in your own shop without machinery of any kind. One hour completes the entire shaft and it's accurate to the thousandth. It is not even necessary to remove the shaft from the crank case. If you believe in better profits and quicker service to your customers send along your order today.

WIRE YOUR ORDER TODAY.

ATLAS MANUFACTURING COMPANY

904 North Canal Street. Pittsburgh, Pa.

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1894 Est'd. 26 years 1920

REPEAT TIRE SA

are made by real perform
A strong oversize tire
real saving to the distrib
as well as the user, who
dom calls for an adjustn
Delivery at once.

EXCLUSIVE JOBBI

are cashing in with Mil
Improved Tires by **"DIRE**
FROM FACTORY" met
which eliminates high
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prices, which makes tire
ing more profitable.

Miller's of Anderson T
Built up to a mileage lea
ship and not down to a p
All straight sides, ½
oversize. All Ford sizes,
inch oversize.

CHAS. E. MILLE

Anderson Rubber Works
1402 Meridian St.,
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Dyneto

Single and Two Unit for all Requirements

STARTING and LIGHTING Systems

DYNETO ELECTRIC CORPORATION

Syracuse, N. Y.

Dyneto

NEW DEPARTURE BALL BEARINGS

Strength
Stamina
Service

The New Departure Manufacturing Co., Bristol, Conn.

Conrad Patent Licensee

TEST SOD-TOR-LITE IN YOUR REPAIR SHOP 10 DAYS - WITHOUT CHARGE!

See for yourself the time and money that SOD-TOR-LITE saves. It combines three tools in one,—soldering iron, brazing torch and light. Attach to Prest-O-Lite or Searchlight tank and have a hot point for soldering in a minute or a brazing torch of over 3650 degrees F. or a brilliant illuminating light. Special tips furnished. Write for literature. Satisfaction Guaranteed, or money refunded. Sent on trial. Priced low. Sold on its merits. *Write Box H.*

B. E. HICKEN SOD-TOR-LITE CO., Prairie Hill, Mo.

THREE TOOLS IN ONE

SAVES TIME COSTS LESS THAN THREE TOOLS IT REPLACES

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Is the oldest Automobile magazine published in America devoted wholly to owners of passenger cars.

A quality magazine, with prestige and circulation that brings results to advertisers.

TIMES BUILDING
PAWTUCKET, R. I.

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Gardner "Thermostat" Carburetors

New Model - $12.50 for Fords

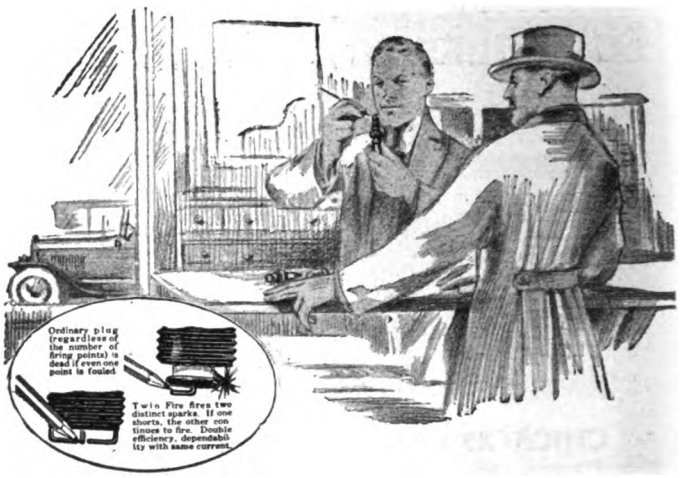
More Power—

Correct Carburetion

Dealers write for special agency proposition

Gardner Auto Products

23-25 WEST HANCOCK, DETROIT, U. S. A.



This Test Always Convinces

Demonstrating the Famous "Lead Pencil" Test

Take any lead pencil and you can convincingly prove to even the most skeptical motorist that the Twin Fire, by giving two independent sparks, will banish forever all motoring troubles due to spark plugs.
This quick and simple test easily demonstrates just how the Twin Fire always gives two distinct, hot and instant sparks. Also, it proves that if dirt, oil or carbon should clog one point and cause it to short—the other point will continue to fire.

The Handy Twin Fire Demonstrator for Dealers

This neat and compact counter display enables the dealers of Twin Fire to quickly prove how the plug is immune to oil and carbon. It is a quick sales-maker for The Dealers.

Attractive Dealer Plan Sent to You on Request.

Twin Fire Spark Plug Co. 722 Grand River Avenue, Detroit, Michigan

TWIN FIRE

BUNTING BEARING BRONZE — B.B.B. CO. No. 1

Same quality as our finished bronze bushings and bearings used by manufacturers the country over.
Your repair stock is not complete without it.

All leading jobbers
Ask for catalog N

The Bunting Brass & Bronze Co.

727 SPENCER STREET
TOLEDO, OHIO

CORED BARS

STOCK SIZES

PIECE NO.	Outside Diameter	Inside Diameter	Length	Approx Weight
A	1	⅛	12	2
B	1¼	⅛	12	3½
C	1½	¼	12	5
D	1¾	¼	12	7
E	2	1	12	8½
F	2¼	1¼	12	10
G	2½	1½	12	11½
H	2¾	1¾	12	12¾
I	3	2	12	13¾
J	3¼	2¼	12	15½
K	3½	2½	12	17
L	4	3	12	21
M	4¼	3¼	12	20

UNIVERSAL BATTERY CLIPS

Offer a quick and ready means of connecting storage batteries for charging. Simply fit your connecting cords with these clips and snap them over the battery terminals.

No. 21-A—lead coated—1½" spread of jaws.
Sample mailed postpaid for 15c in stamps.
Single Lots, Each, 20c. Lots of 10, Each, 16c.
Lots of 100, Each, 13½c.

MUELLER ELECTRIC CO., 431 High Ave., Cleveland, O.

WELDERS!

There's economy in using the best fluxes you can find for particular welding jobs. Insure better and stronger welds, more easily and more rapidly made, by using

ANTI-BORAX COMPOUNDS

For Acetylene, Gas and Electric Welding

Anti-Borax WELDING FLUX

Best on the market for all grades of iron and steel. Weld at lower heat. Leave no scale. They cleanse the molten metal, assist fusion and improve the quality and appearance of your work. Guaranteed to give perfect satisfaction or your money refunded.

Write for sample and price list.

ANTI-BORAX COMPOUND CO.
FORT WAYNE, INDIANA

Make Money Equipping old Fords with classy Club Roadsters, Speedsters, Torpedo & Touring Models.

"FIDELITY" BODIES

For Fords **$35** and up

Dealers! Send for "The Little Salesman"

Our Dealers' Confidential Wholesale Net Price List of

AUTOMOBILE ACCESSORIES

NEW ENGLAND MILLS CO. 1027-1033 W. Van Buren St., CHICAGO

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THIS Year,
Sell Reflex
Spark Plugs
because of what they
HAVE done.

—because of the business and profit they meant for Reflex dealers throughout 1919.

BUSINESS, due to such service as the above illustrated plugs delivered in a rough-road-going truck. And "without attention," writes the user—a mid-west trucking establishment.

PROFITS, because prices, discounts and guarantees to you are right.

Simply drop a card for complete information, such as prices, the Reflex advertising campaign, dealer helps, etc.

The Reflex Ignition Co.
1352 West 106th St.,
Cleveland, U. S. A.

REFLEX SPARK PLUGS
KEEP THE CAR ON THE GO!

SERVICE STATIONS

GARAGES and REPAIR SHOPS, everywhere are building large and profitable coil replacement business with JEFFERSON IGNITION COILS, the 100% line — a few standard coils which fit all cars and bear this

TRADE MARK

Jefferson Electric Mfg. Co.
429 S. Green St. Chicago, Ill.

Electric Auto-Lite Generators model GD-1001 with cutout. Will fit Overland model 83 car and other cars. Price, each.....$25.00

Electric Auto-Lite Starting Motors, model MC-1070 with Bendix drive. Fits models 83 and 85 Overland. Can be installed on other cars. Price, each....$22.50

Remy model 231-B Lighting Generators, 6 volt, with model 264-A relay regulator, model 284-B coil, model 219-D, 6 cylinder distributor, complete. Price, each.....$37.00

Remy model 303-B starting motor, 6 volt. with Bendix drive. Price, each.....$30.00

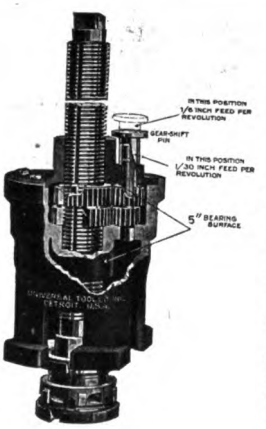
U. S. L. 6 volt 90 amperes Starting and Lighting Batteries, model AD-313-DF. Height, 9 inches; width, 4¼ inches; length, 20⅜ inches. Will fit many Overland models. Price, each.....$22.00

No. 202 Seubert single row Bearings, Norma type. Price, each.....$1.00

No. 288 Roller Bearings for rear wheels of all Dodge cars. Price, each.....$1.65

Better prices in quantities.
We sell to the trade only.
Send for complete list.

S. BREAKSTONE
1326 Michigan Ave., Chicago, Ill.



Tests Have Proved It

The Universal Cylinder Reboring Tool has been tested by the manufacturers of America's leading cars.

Today, knowing that it is a perfected machine, they endorse, recommend and use it.

See current issue Auto Trade Directory and Chilton's Directory for list of jobbers carrying stock. Write for Catalog.

TRADE MARK UTCQ REGISTER PENDING
UTCQ PRODUCTS

The Universal Tool Company, Inc.
435 Woodward Avenue Detroit, U. S. A.

Manufacturers Universal Cylinder Reboring Tools for all Automobile Motors and Main Bearing Replacement Equipment for Fords and Fordsons

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STORM
MOTOR REPAIR EQUIPMENT

Makes Your Garage an All 'Round Repair Shop

Equips you to handle the most profitable class of work—overhauling and rebuilding. Storm Tools are practical and can be operated by inexperienced men. They soon pay for their cost in doubling the efficiency and output of your shop. Write us for complete information.

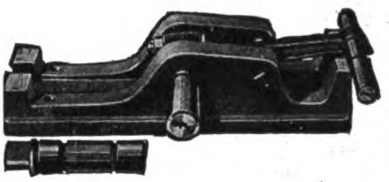
STORM MFG. CO. Dept. P **Minneapolis, Minn.**

STORM Standard Reboring Machines are built in various capacities to suit your requirements.

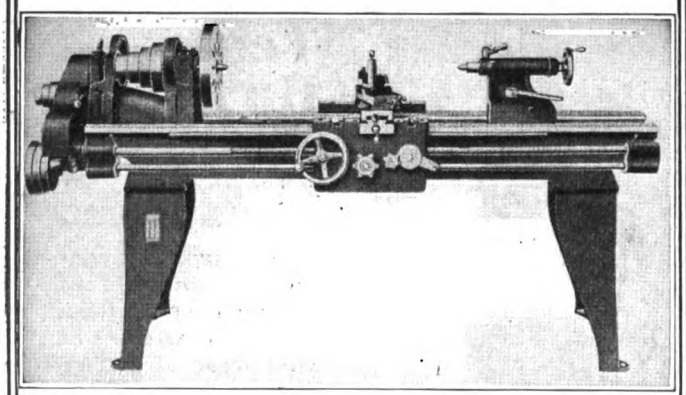
For hand or power operation.

Get These Bigger Profits

STORM Main Bearing Babbitting and Boring Tool makes a new, perfect bearing exactly the same as the original and in the exact original position. Two sizes—Ford and Fordson Motor.



STORM Connecting Rod Bearing Reamer, Jig and Straightening Gauge accurately and quickly fits and cleans connecting rod bearings. Solves labor problem—no experience necessary to operate.



UNION LATHES

MANUFACTURED BY

UNION LATHE WORKS, York, Pa., U. S. A.

This lathe is especially designed for garage and machine shop work. It is well constructed and can be obtained at a moderate price.

Obtainable in various sizes with equipment of large and small face plate, follow rest, tool post, center, double friction counter shaft (see cut) rod and screw feed and all necessary change gears, wrenches, etc.

Write for complete descriptive literature and prices.

THE UNION LATHE WORKS

York, Pa., U. S. A.

ALUMINUM SOLDER

For filling defective aluminum castings, mending crank cases, engine bases, aluminum pattern work, or soldering aluminum parts.

Requires no flux or acid, and is used with an ordinary soldering iron or blow-torch.

Flows at a low melting point and machines up perfectly.

Hundreds of the largest manufacturers all over the country are our regular customers of many years standing.

With our ten years experience in manufacturing Aluminum Solder, our facilities for immediate shipments of your orders; and our reasonable prices; coupled with a record of having never received a single complaint against our material, we can assure you of satisfactory service.

Write us for quotations on your requirements.

(Sample 1-lb. package, $1.00)

NATIONAL PRODUCTS COMPANY.

Care P. O. Box-3. KOKOMO, INDIANA.

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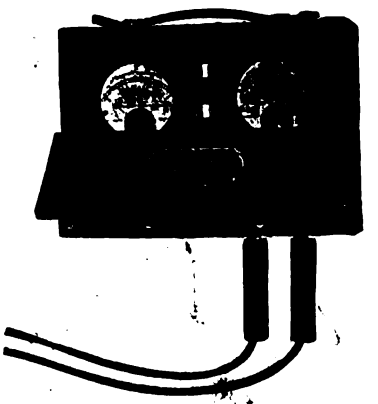
The Instrument for the Average Garage

Stop Guessing—Know The Truth

Equip your Garage with the

Weston **Model 441**

"Fault Finder"



and give your customers the kind of service they demand. It means business for you.

The "Fault-Finder" is a Voltmeter and an Ammeter mounted in a durable, compact and convenient carrying case. The Voltmeter ranges of 0.2-0-8 and 2-0-30 volts enable the user to test out every part of the electrical equipment for practically every trouble. The Ammeter range of 30-0-30 amperes is right for determining charge and discharge rates for adjusting relays, etc. The Ammeter is protected against burn-out by a standard automobile type fuse accessibly located. Long rubber-covered flexible cables with spring clip terminals are used for making connection between the instrument and the apparatus under test. A complete Instruction Book accompanies each instrument.

Get Ahead of Your Competitor! Write at Once for Information.

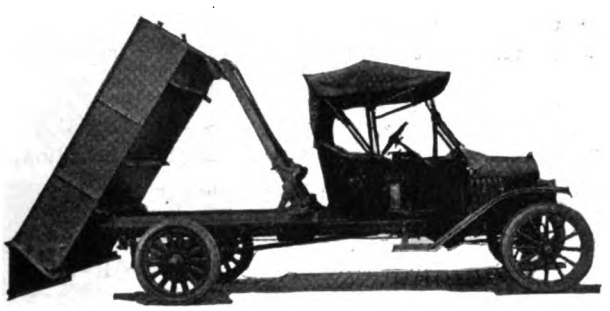
Weston Electrical Instrument Co., 103 Weston Ave., Newark, N. J.

Branch Offices in All Principal Cities.

THE PEERLESS HAND HOIST

Single Cable Quadruple Worm Gear Drive

For Any Make or Type of Truck.



A wonder in efficiency and speed. It will fit any chassis and body. Weighs but 200 pounds. Simple, fool-proof, wholly dependable and will last for years in the hardest service.

Any one that can drive a truck can hoist the heaviest load to 30 or 50 degrees in the longest body in less than two minutes. The smaller the body and load the quicker the action.

But two gears are used, quadruple worm and gear (both machine cut) and housed to protect from dirt and dust. The single cable makes an even pull. Compact and can be installed without drilling holes in chassis frame. The body hitch is also furnished.

We specialize in building all-steel bodies for any need.

Write for complete information.

THE AUGLAIZE MOTOR CAR CO.

NEW BREMEN **OHIO**

BE-BE-CO. Motor Specialties

Made to a quality that affords superior results.

Leather Top Dressing	**Tire Paint**
Mohair Top Dressing	**Rim Paint**
Cushion Dressing	**Patching Cement**
Top Lining Dye	**Gasket Cement**
Seat and Slip Cover Cleaner	**Carbon Remover**
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Body Polish	**Nickel Polish**
"Red Fox" Motor Car Soap	**Brass Polish**
O-So Easy Hand Soap	**Vulcanizing Cement**

Sold in varying sized container or bulk with unconditional guarantee of replacement if in any way defective.

Catalogue and discount sheets at request.

BOSTON BLACKING CO.

EAST CAMBRIDGE **Third Street** **MASS.**

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Monthly **20c the Copy** **$2 the Year**

A Tractor Journal devoted to the tractor industry and trade

Published by

The Automobile Journal Publishing Company

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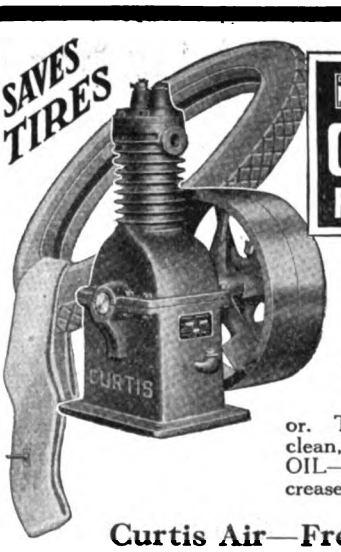


FREE
CURTIS AIR
FREE FROM OIL

Business-Building Service

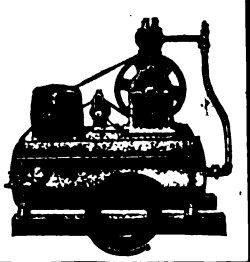
Drivers of cars appreciate the superior free-air service you can render with the Curtis Air Compressor. They know Curtis Air—clean, pure and FREE FROM OIL—preserves tubes and increases tire mileage.

Curtis Air—Free From Oil

The number of Curtis Compressors in use today is unquestionable evidence of their distinct superiority. The Curtis, with its exclusive, patented, controlled splash-oiling system, is the only compressor so designed to prevent oil from being forced into the air line.

Ask Your Jobber

There is a style Curtis Outfit to meet your particular needs. Ask your jobber for full information, or write us.



Curtis Pneumatic Machinery Co.

1621 Kienlen Ave. **St. Louis, Mo.**

Branch Office:

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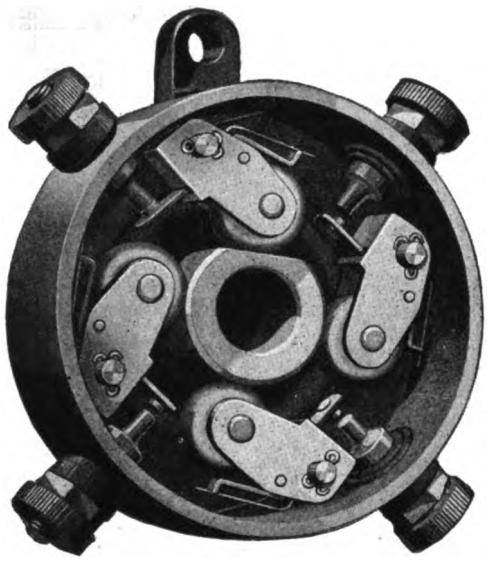
DUNTLEY *MAGNETO BREAK* TIMER



Everlastingly
Guaranteed to Always Make Good.

FACTS ABOUT TIMERS

Your timer is the heart of your ignition system. In all the simplicity of its operation, it is many times the unsuspected cause of much motor trouble and is the continual source of wasted gas if not perfectly timed.

In the most cases timer trouble is due to one or more of the following causes:

Imperfect timing. Uneven and badly worn contacts. Dirty contacts. Contacts becoming insulated with oil. Inferior contacts constructed of poor material.

ELIMINATES ALL TIMER TROUBLE

The new Duntley Magneto Break Timer eliminates all these trouble makers and insures an easy starting and an ever smoothly running motor at all times, because

It is self-cleaning.

It has no whirling contacts to skip over a metal segment to wear out or become insulated with oil.

It is equipped with genuine tungsten points that will not corrode, pit or burn out.

It is friction proof and requires no lubrication.

It is so designed and constructed that it is always perfectly timed.

DEALERS: Write us today. Our proposition is mighty interesting.

J. W. DUNTLEY

1003 Michigan Ave. **Chicago, Ill.**

REPEAT SALES—*Where the Profits Lie*

THE succession of re-orders from Pep Spark Plug dealers check off rapid turnovers—repeat business—the kind that piles up profits.

Self-cleaning—can't foul from carbon or oil—Pep's trouble free performance wins friends that stick.

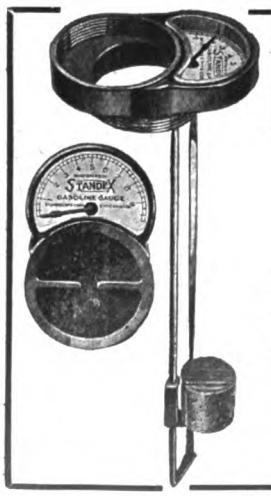
Our guarantee—"Your Money Back If You'll Take It."

Go-ahead dealers should write for proposition.

PEP SPARK PLUG COMPANY

234 So. 6th St., **Minneapolis, Minn**

Retails for $1.00.



STANDEX

GASOLINE GAUGE
FOR
FORDS and CHEVROLET

ACCURATE TO THE DOT

Installed in a minute, need never be removed.

Exceeds the sale of all other gauges combined.

$1.75

At Dealers and Jobbers.

STANDEX, INC.
339 E. Ohio Street, Chicago.
Makers of Precision Gauges.

GUARANTY Spark Intensifire

Stops ALL Spark Plug Troubles

Saves 25% Gasoline

Increases power and mileage. Positive firing on all cylinders, regardless of condition of spark plugs. One intensifire for each cylinder. For any make of car.

75c each.

GUARANTY MOTORS COMPANY

CAMBRIDGE 39, **MASSACHUSETTS**

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ETERNAL SATISFACTION

Name .....
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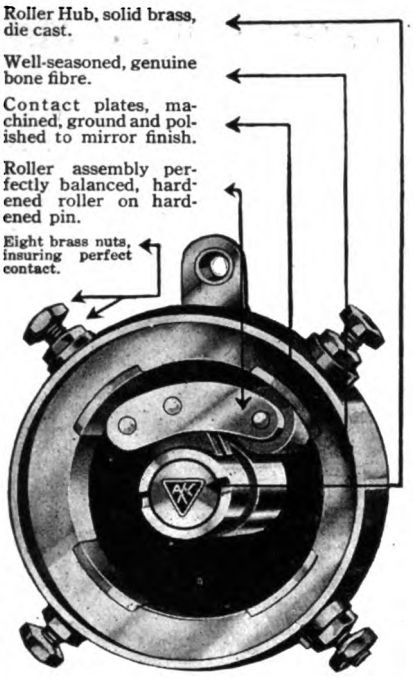
Angsten-Kox Co.
Room 1305
110 So. Dearborn
Street, Chicago
Send facts about A-K Timers and other A-K products

Send This



A-K TIMERS have a die-cast Hub of *brass*, instead of white metal; eight brass nuts instead of four iron nuts. They are *double-tested* for short circuit. Their appearance alone radiates in every detail greater refinement and better quality. These things make a significant difference and are some of the reasons why A-K TIMERS are recognized in the trade as *outstandingly superior.*

In every detail this is a *better* timer, built with painstaking precision to render satisfactory service indefinitely.

A-K products have the reputation of being *better.* Buyers the world over are giving A-K Timers, A-K Horns, A-K Spring Hangers and other A-K accessories *first call.*

Our large resources, efficient factory organization and heavy production enable us to *be* the high standard toward which others aspire, yet maintaining prices so low that they monopolize your consideration.

Send the coupon (in the upper corner) for detailed facts about A-K Timers and other A-K products. Let's do it NOW.

Angsten-Kox Company
Room 1305 110 South Dearborn Street *CHICAGO*

A-K Timers for Fords

Security Auto Lock

Affords every protection to Ford car owners that a perfectly designed and extremely well made lock can give. While neat and attractive it is built very strong. In operation it is positive and the car can be left with a feeling of confidence that no one but the owner can use it.

It is the original loose wheel lock for Fords.

It is approved by underwriters.

It will reduce insurance premiums 15%.

When locked the car cannot be towed.

List Price, $6.00

It makes the Ford thief-proof

Anyone can easily install the Security in ten minutes. No drilling, filing, sawing or chiseling necessary. It is made of solid brass. Nickel plated finish.

TO DISTRIBUTORS

When this lock is shown no other will satisfy Ford car owners. It sells at sight. Our trade discounts are liberal and our proposition will interest any one that can sell high grade car protection at a moderate price. *Write for details today.*

Security Auto Lock Co.
414 N. PAULINA ST., CHICAGO, ILL.

"that darned hose is three years old"

Service records on TRIPLEXD gasoline pump hose run up to three and four years ~ ~ every length is guaranteed for a year

Most pump manufacturers furnish it on the pumps you buy—Any one will get it for you if you ask for it.

METAL HOSE & TUBING CO. INCORPORATED BROOKLYN, N. Y.

TRIPLEXD

XXX GASOLINE HOSE XXX

TRADE MARK REG. U.S. PAT. OFF.

Every Length of Pump Hose Guaranteed for One Year's Service

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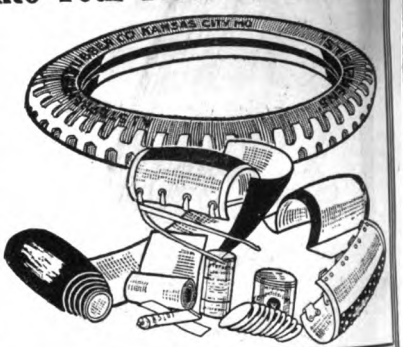
A. J. STEPHENS
President
A. J. STEPHENS RUBBER CO.
Capitalized $1,5000,000.00

DEALERS—My New Selling Plan
Will Increase Your Daily Profits $50 or More

No matter where you are located, nor how much competition you have, I can show you a most extraordinary selling plan that will actually add from $1,000 to $1,500 monthly profits to your business. This is no experiment. Hundreds of enthusiastic dealers throughout the country are using my selling plan and enjoying big profits. *J. W. Neal of Sedalia, Mo., sold over $6,000 worth of Stephens Products in less than a month. F. F. Swinson, Pratt, Kans., made $400 profit in 5 days. Reinhart Motor Co., Ottawa, Kans., sold over $2,000 worth of Stephens Tires in 10 days. McDavid Bros., Excelsior Springs, Mo., made over $300 profit in 4 days.* I can refer you to hundreds of other dealers who have done as well. This is the best proposition ever presented to you.

I Will Bring a Steady Stream of Customers Into Your Place of Business

By using big advertisements in your local paper, showing your name as distributor for STEPHENS TIRES and accessories, I will bring you business that you never hoped to get. My plan is to do this advertising without cost to you. My plan is to increase your business without increasing your overhead, in other words, to *positively guarantee* the sale of our products. Not a cent is required until I prove my claims to you. Write me today for all information. Learn the facts, then judge for yourself as to the money-making possibilities.

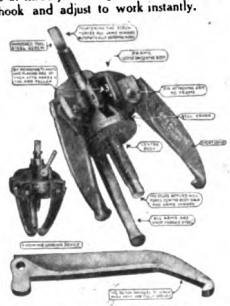


A. J. STEPHENS RUBBER COMPANY

1405 Chestnut Street **Kansas City, Missouri**

GREB AUTOMATIC GRIP PULLER
BEACH PATENT

"The One Best Bet" in Wheel, Gear and Bearing Pullers. Combinations of two or three jaws. Quick, Strong, Durable, Efficient and Simple. Positive Grip, cannot unhook and adjust to work instantly.



Greb Automatic Grip Puller

East of Rockies

Greb Arbor Press Base—designed to be used with the three long jaws of No. 1 Puller. Comes complete with two V Blocks and one V cap. Makes desirable equipment for pressing off gears, bushings, bending pipe, straightening shafts, etc. It is a good Bench Plate. Width 14 in., Depth 2 in., Diameter of Center Opening 3 1/4 in. Weight approx. 60 lbs. **Price complete $12.50**

Greb Bearing and Race Attachment for No. 2 Puller has a Knife edge and can be forced behind magneto, electrical generator and self-starter bearings and races where it is impossible for the jaws of any Puller to be attached. This attachment when used back of small gears and bearings not only saves them but the ends of the Puller jaws as well. Capacity—Bearings and Races up to and including 2 in.
Price complete $4.00

Greb Gear Attachment for all sizes of Greb Pullers has a 1/8 in. edge and can be forced behind gears where there is little or no room. This attachment when used back of small gears furnishes something for the jaws to get hold of and as it lays flat against the back of the gear it permits an even pull. Made in two sizes. Small size has capacity to take gears up to 3 in. on its front and 4½ in. on its back.
Price complete $5.00

Large size has capacity to take gears up to 4 in. on its front and 6 in. on its back.
Price complete $6.00

No. 1 Senior Size—designed for heavy work—a one man Puller with a locking device. Capacity 1 to 13 in. Complete with two sets of jaws, 7 in. jaws open to 10 in., and 12 in. jaws to 18 in. Screw of hardened steel, 1 in. diameter, 14 in. long. (See Arbor Press Base Attachment.) Shipping weight 20 lbs.
Price complete $25.00

No. 2 Junior Size—designed for all types of motors. Will remove magneto and pump shaft gears, couplings, etc. An efficient tool for all small work. Capacity 1 to 7 in. Complete with two sets of jaws 2¾ in. jaws open to 4 in. and 6 in. jaws to 7 in. Screw of hardened steel, 9/16 in. diameter, 7¾ in. long. (See Bearing and Race Attachment.) Shipping weight 4 lbs.
Price complete $12.00

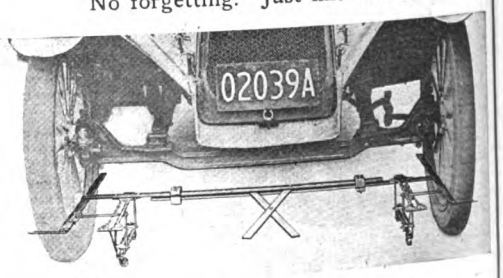
No. 3 Intermediate Size—designed to pull the average motor gears such as timing, pinion, transmission, differential, and crank shaft gears, sprockets, universal joints, pulleys and for general work. Capacity 1 to 12 in. Complete with two sets of jaws, 5 in. jaws open to 8 in., and 9¾ in. jaws to 12 in. Screw of hardened steel, 7/8 in. diameter, 10 in. long. (See Gear Attachments.) Shipping weight 15 lbs.
Price complete $18.00

Ask your Jobber or write us.
THE GREB COMPANY, 202 State St., Boston (9), Mass.

Duby's Wheel Gage

Tells instantly if wheels are out of line. Can be used on either front or rear wheels, fits any car regardless of the size of wheels or tires.

No measuring. No calculating. No forgetting. Just like looking



at your watch and done almost as quickly.

With this device 10 cars can be tested by one man in less time than two men could test one car by the old method.

Price to Garages and Service Stations $16.00

J. F. DUBY

13 River St., Mattapan, Mass.

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The BENZER LENS

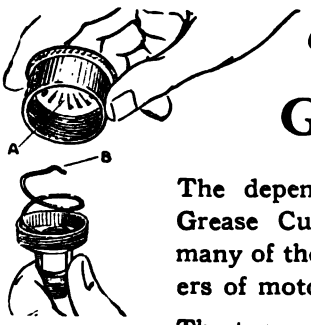
No Glare! Legal Everywhere!

Scientifically constructed to produce amazing results—Benzer Lenses are the outcome of years of research and experimenting. No tilting, no adjustment, yet the Benzer Lens projects three lights in one—a ditch light, a prominent light and a distance light below the line of vision.

Assuring safety for motorists means securing sales for dealers—satisfy that insistent demand for efficient lenses—stock up with Benzer Lenses. Write today for information and special discounts.

THE BENZER CORPORATION.
141-143 Roebling St.,
BROOKLYN, N. Y.

CAN'T RATTLE OFF



The pawl "B" in the illustration engaging in the corrugations "A" prevents the tops from getting loose.

"M. & E." Grease Cups
(Patented)

The dependability of "M & E" Grease Cups is recognized by many of the leading manufacturers of motor vehicles.

The tops will not rattle off from vibration or jars. This keeps the grease clean and free from grit that causes wear even in well lubricated cars.

Owners and manufacturers can insure against waste by installing the "M & E" Ratchet Top Grease Cup.

Made of Steel and Brass.

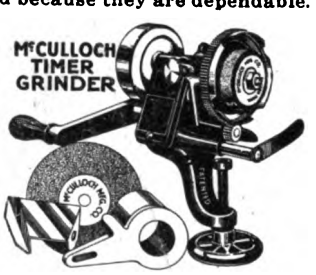
MERCHANT & EVANS Co
NEW YORK PHILADELPHIA WHEELING
BALTIMORE CHICAGO
ATLANTA ST. LOUIS
CLEVELAND KANSAS CITY
DETROIT

You will appreciate McCulloch Products

The name "McCulloch" on automobile ignition parts signifies products made by engineers in a machine and tool shop. Once used always used because they are dependable.

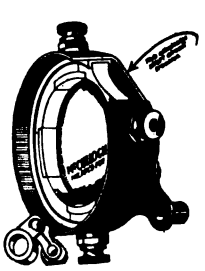
Replaces the old style roller. It slides instead of rolling, eliminating the extraordinary wear on the rotor pin.

List 60c.



Will grind the worn out timers back to usefulness. Driven by hand or power. A necessity in any private or public garage.

List $21.



And the McCulloch Timer

A well made, accurate and simple timing device made right and perfect in every detail. The arrow points to the real feature.

Territory is open for McCulloch Timer Grinder. Dealers and Jobbers write for prospectus.

McCULLOCH MANUFACTURING CO.,
Specialists in Ford Ignition.
216 High Street, Boston, Mass.

SCOE CARBURETOR

For Ford, Maxwell, Briscoe and Dort Cars

MAKES A FORD RUN LIKE A SIX

SAVES ITS COST IN 60 DAYS

Any dealer can send to us for a Scoe Carburetor, assured in advance that his customer will not ask his money back. Scoe Carburetors don't come back. Their owners are satisfied users.

More than that, they are actual boosters and send new customers to the dealer.

It would be worse than folly for us to say these things to you if they were not true.

This carburetor embodies no new or untried principles.

Its makers simply recognize the fact that speed and power and smoothness are all dependent upon a correct mixture, and have devised simple means to provide a correct mixture—not sometimes, but ALL the time.

Let us send you a Scoe on 30 days' trial. Pay half the net—$4.25—on receipt of Carburetor. Put it on a customer's machine and check its performance for 30 days.

Then pay the balance or ask for refund and we will make it without question.

BRISCOE DEVICES CO.
PONTIAC, MICH.

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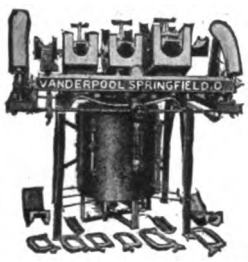
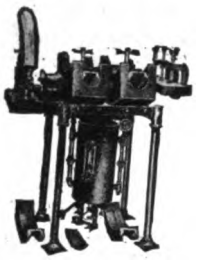
VANDERPOOLS LATEST IMPROVED PATENT APPLIED FOR RETREAD MOULDS

(Exit old methods.) RETREAD Our Way With Sand Bags, Better Than Air Bags.

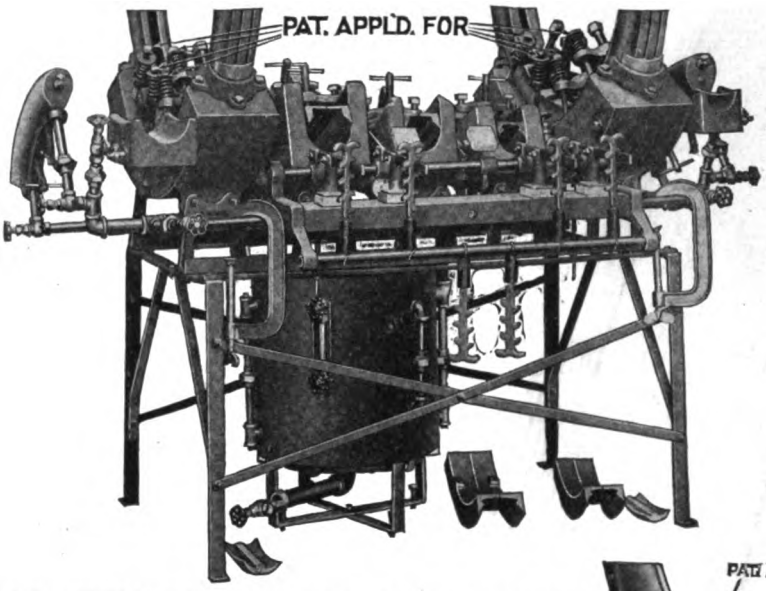


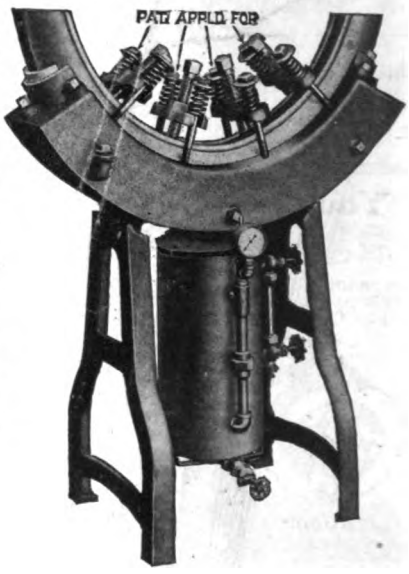
3 Cavity



2 Cavity

Single Cavity





VANDERPOOL FIVE CAVITY is the most improved Tire and Tube repair and retread Vulcanizer made, capacity about $300.00 worth of casing tube and retreading can be done with it in a day. Profit about one-half. Many are selling their old style machines and installing a VANDERPOOL FIVE CAVITY. It covers the business. It's an advertisement in your shop. It's the best to be had. We get hundreds of letters from our pleased customers. We have been making Vulcanizers for about eight years. We make Vulcanizers so they do the best work.

The patent applied for powerful springs on our retread molds forces and holds the tire down while it settles in the ribbed tread molds until Vulcanizing is complete, resulting in better retreads, overcoming separation and blisters. A better retread than with old methods. A size machine to fit most any size shop.

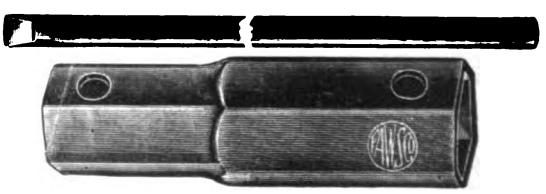
Send for our Tire Repair Manual, 25 cents, and price list of Vulcanizers.

William Vanderpool Company

Springfield, Ohio

FAWSCO SPARK PLUG WRENCHES

TUBULAR DRAWN STEEL



These wrenches are the highest grade coppered and nickel steel. Made in standard combinations of sizes. Complete with Bessemer steel pin.

No. 29x31—For ⅞ & 15/16" Plug Shells	Each,	$0.45
No. 29x33—For ⅞ & 1" Plug Shells	Each,	.45
No. 29x37—For ⅞ & 1⅛" Plug Shells	Each,	.45
No. 31x37—For 15/16 & 1⅛" Plug Shells	Each,	.45

Packed in individual boxes.

Ask for Circular.

27 WARREN ST.
NEW YORK CITY

J. H. FAW, Inc.

918 Hearst Bldg.
SAN FRANCISCO

(When Writing to Advertisers, Please Mention the Accessory and Garage Journal.)

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The Standard Spark Plug of the World

EIGHT AC Spark Plugs fired the engine of the Peerless that broke the stock car record for the arduous run between San Francisco and Los Angeles.

Eight AC Spark Plugs functioned perfectly during nine hours and twenty minutes of punishing road speed, desert fighting and mountain climbing.

Eight AC Spark Plugs played a vital part in the shattering of a record that has withstood repeated challenges for five years.

What these eight AC Spark Plugs did in the engine of the time-defying Peerless, eight other AC Spark Plugs, or eighty, or eight hundred, or eight thousand will do.

They will prove unfailingly dependable no matter in what make of car they are used or what service is demanded of them.

That's why it pays to sell AC Spark Plugs as well as to use them.

Spark plug dealers, like spark plug buyers, can't go wrong with AC's.

Champion Ignition Company, FLINT, *Michigan*

These manufacturers use AC Spark Plugs for factory equipment

Acason Trucks
Ace
Acme Trucks
Advance-Rumely Tractors
Ahrens Fox Fire Trucks
American Beauty
American-La France
Anderson
Apex Trucks
Apperson
Appleton Tractors
Argonne Four
Associated Engines
Atco Trucks
Austin Manufacturing Company
Available Trucks
Avery Tractors
A & T Tractors
Bates Steel Mule Tractors
Beaver Motors
Beck-Hawkeye Trucks
Beeman Garden Motors
Bellanger Freres (France)
Bessemer Trucks
Betz Trucks
Birch
Bour-Davis
Braddon
Bradley
Briggs & Stratton Motor Wheel (formerly Smith)
Brinton Trucks
Brockway Trucks
Buda Motors
Buffalo Motors
Buick
Bullock Creeping-Grip Tractors
Cadillac
Cameron
Capital Engines
J. I. Case T. M. Co.
Chandler
Chevrolet
Chicago Trucks
Clark Tractors
Cleveland
Cole
Collier Trucks
Comet
Commonwealth
Conestoga Trucks
Continental Motors
Curtiss Aeroplanes
Daniels
Dart Trucks
Davis
Defiance Trucks
Delco-Light
Denby Trucks (Canada)
Diamond T Trucks
Diehl Trucks
Dodge Brothers
Doman Engines
Domestic Gasoline Pumping Engines
Dort
Duesenberg Motors
Duty Trucks
Dynelectric Plants
Eagle Tractors
Elmira
Essex
Excelsior Motorcycles
Fairmont Ry. Motors
Falls Motors
Federal Trucks
Flour City Tractors
Friable Motors
Frontmobile
F-W-D Trucks
Galloway Engines
Gary Trucks
Genco Light
Glide
Golden West Trucks
Gramm-Bernstein Trucks
Gray Dort (Canada)
G. B. S. Motors
G. M. C. Trucks
Hackett
Hahn Trucks
Hall Trucks
Hamlin-Holmes Front Drive
Harvey Trucks
Hatfield
Haynes
Hendrickson Trucks
Herschell-Spillman
Highway-Knight Trucks
Holt Tractors
Howell Tractors
Hudson
Hupmobile
Hurlburt Trucks
H. R. L. Trucks
Independent Trucks
Jackson
Johnson Motor Wheel
Jordan
J. V. B. Marine Motors
Kalamazoo Trucks
Karavan Trucks
Kearns Trucks
Kent Concrete Mixers
Kenworthy
Keystone Trucks
Kissel Kar
Kleiber Trucks
Klemm Trucks
Knox Tractors
Koehler Trucks
Lalley-Light
Lawson Tractors
Leach Power-Plus Six
Liberty
Linn Road Tractors
Locomobile
L. M. C. Trucks
Maccar Trucks
Maibohm
Marmon
Master Trucks
Maxim Fire Trucks
Maytag
McLaughlin (Canada)
Menominee Trucks
Meteor
Midwest Engines
Milwaukee Gasolene Locomotives
Minneapolis Motors
Minneapolis Tractors
Mitchell
Monroe
Moreland Trucks
Napoleon Trucks
Nash
National
Nelson
Nelson Tractors
Nelson & Le Moon Trucks
Netco Trucks
New Britain Tractors
Noble Trucks
Northlite Lighting Plants
Oakland
Old Reliable Trucks
Oldsmobile
Oneida Trucks
Owens Light & Power Plants
Packard
Paige
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Parker Trucks
Paterson
Patriot Trucks
Perfect Power Sprayers
Phianna
Pierce-Arrow
Pilot
Pioneer Tractors
Pittsburgher Trucks
Porter
Premier
Ranger Trucks
Red Wing Thorobred Motors
Reo
Re Vere
Reynolds Trucks
Riker Trucks
Roamer
Roberts Motors
Robinson Fire Trucks
Rock Falls
Rowe Trucks
Rutenber Motors
R. & V. Knight
Samson Tractors
Sandow Trucks
Sanford Trucks
Sawyer-Massey Tractors (Canada)
Saxon
Scripps-Booth
Scripps Motors
Walden W. Shaw
Signal Trucks
Singer
Speedway Motors
Standard "8"
Standard Trucks
Stanwood
Stearns-Knight
Stearns Tractors
Sterling Engines
Sterling Trucks
Stevens-Duryea
Stewart
Stewart Trucks
Stockton Tractors
Stoughton Trucks
Straubel Engines
Sullivan Trucks
Super Trucks
Swartz Lighting Plants
S-S-E-Co.
Texan
Tiffen Trucks
Tioga Tractors
Titan Trucks
Tower Trucks
Trego Motors
Turner-Simplicity Tractors
Union Marine Engines
Universal Trucks
United Trucks
Van Blerck Motors
Veerac Motors
Vim Trucks
Vogue
H. J. Walker Motors
Wallace Tractors
Walter Trucks
Ward La France Trucks
Westcott
White
White Hickory Trucks
Whitney Tractors
Wichita Trucks
Wilson Trucks
Wisconsin Motors
Wolverine Tractors
Woolery Railway Motors
W. S. M. Motors

U. S. Pat. No. 1,125,797. April 13, 1915. U. S. Pat. No. 1,216,139, Feb. 13, 1917. Other Patents Pending

(When Writing to Advertisers, Please Mention the Accessory and Garage Journal.)

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Oro

GOOD as GOLD

—the Good Connecting Rod!

Made of the very finest steel—drop forged!

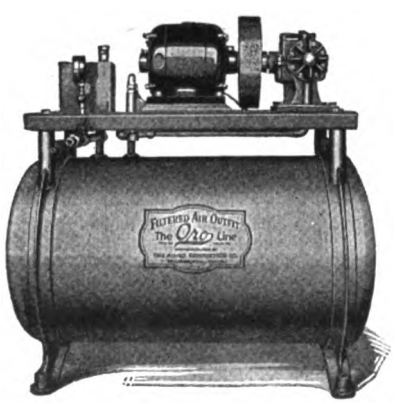
A CONNECTING Rod for Ford Cars that is made as you wish itmade—sturdy, reliable, long-lived. This rod will stand up as long as the car—eliminating all necessity for tinkering with the "underneath" part of the engine. The steel used is 30 to 40 point carbon, perfect in quality and drop forged. The babbitt is a scientific combination which gives unusual satisfaction.

This Connecting Rod, although much better than other rods, costs less than most of the others. It is economical to buy—economical to use.

The ORO Connecting Rods have been in use for many years—under all conditions—and they have proved every claim we make for them. Dealers prefer them—owners demand them. They realize the connecting rod is such an important part of an engine that only the very best quality will do.

Write us for information. We'll tell you about the ORO Connecting Rods—and also about our large line of superior automobile accessories.

We Also Manufacture "Oro" Filtered Air Outfits!



The ORO Filtered Air Compressor Outfit provides a perfect source of air—day and night—without attention from you—air that is absolutely free of oil, dust and dirt. It's a business builder—a business holder. We manufacture Au-To Air Compressors for all garages, large and small. Ask for facts about the entire line.

The Au-To Compressor Company

303 S. Mulberry Street **Wilmington, Ohio**

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Stop Leaks!

Would you think of putting a paper stopper in a bottle of lubricating oil and then turn it upside down? Of course you wouldn't, because you know that in a short time the oil would seep through the paper and run out.

Yet many repair men use paper or cardboard gaskets, expecting them to perform their work efficiently.

If you wanted to seal a bottle tightly, you would use a cork. And when you want to secure liquid-tight joints, you should use cork gaskets. You know that cork is non-absorbent and will not let oil, gasoline or water seep through.

Acco Cork Gaskets are easily applied, and if a thin coat of shellac is put on one side and some graphite on the other, the gaskets will not tear when the cover or housing is removed.

For general repair work Acco Cork is sold in sheets 12x36 inches, 1/16, 3/32 and ⅛ inch thick by supply jobbers. For Ford cars Acco Cork Gaskets are packed in dust-proof boxes containing a complete set of ten gaskets of any one shape.

ARMSTRONG CORK COMPANY

135 Twenty-Third St. Pittsburgh, Pa.

Samples and Prices Sent on Request

Acco Cork Gaskets Stop Leaks

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A Complete Outfit

Perhaps your establishment demands a compressor outfit of peculiar arrangement– possibly no assembled machine would conveniently fit the available space or meet other requirements. If this is your problem, the Brunner line includes various items from which you can select the proper apparatus and set it up to meet the conditions. Either belt driven or motor driven compressor models are offered—also a complete line of valves and fittings.

For instance, the No. 1 Outfit:— A No.102 compressor with proper tank, gauge, hose, valves, etc., all boxed and ready to install in the manner best adapted to the location. Full instructions are furnished and any questions will be answered by Brunner engineers. This outfit or another similar Brunner outfit, may be just what you have been seeking.

Consult your jobber or write us giving full details of your air service problem.

Brunner Manufacturing Co.

Works: Utica, N. Y.

Sales Offices:
UTICA, N. Y.
CINCINNATI, O.

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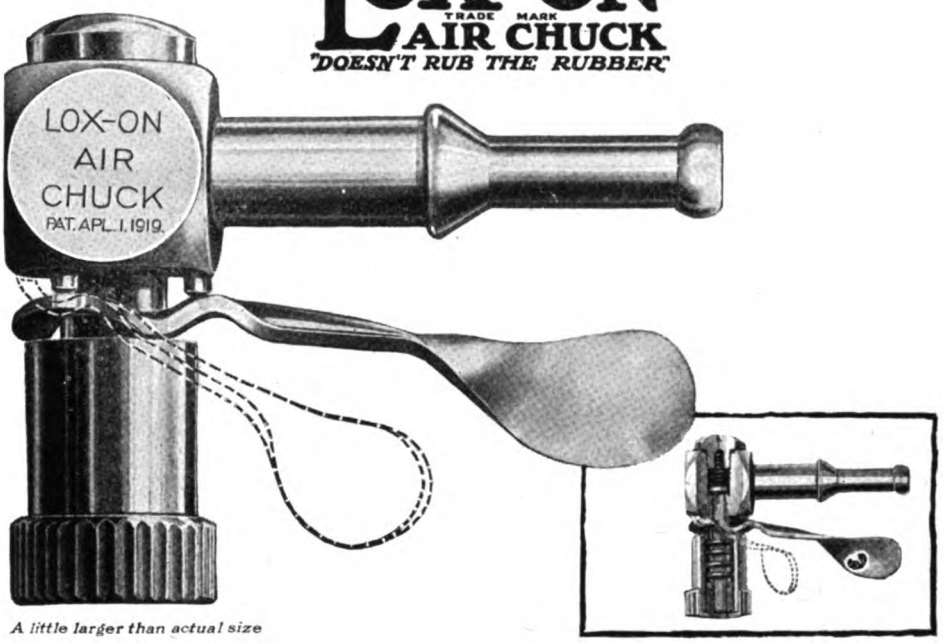
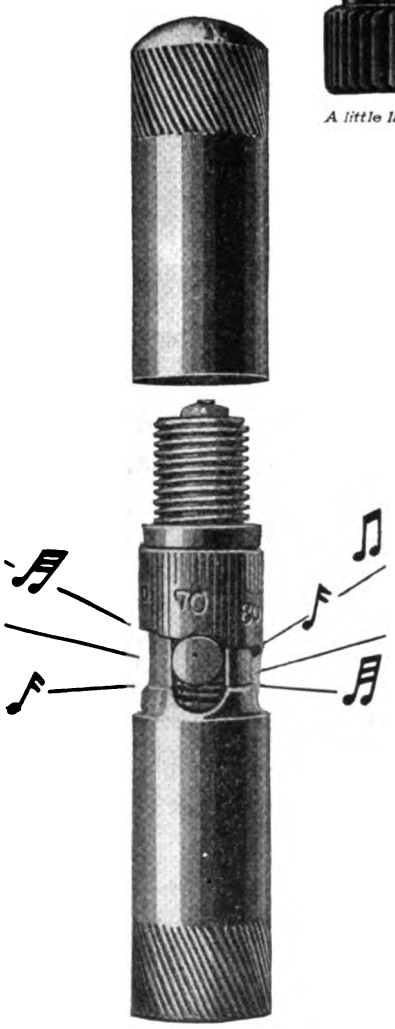
LOX-ON
TRADE MARK
AIR CHUCK
"DOESN'T RUB THE RUBBER"



A little larger than actual size

Sectional view



About twice actual size

The Most Used Thing In An Air Station

THE Air Chuck. Everyone uses it. In a short time it gets leaky, inefficient and has to be repaired. Over and over again, new washers have to be put in and new chucks bought.

You can positively stop all these inconveniences by using a Lox-on Air Chuck. It is guaranteed not to leak—to last indefinitely *without replacing the washer,* and to be handier and more reliable than any other chuck ever made. It cuts down electricity bills, wear and tear on pumps and replacement charges. It does not push over the valve threads like other chucks, but opens and grips the valve like a hand, saving all of the wear which usually ruins a rubber washer in a half day. The universal stem fits either ¼ in. or ⅜ in. hose. $3.00 each.

The Whistler Pressure Regulator

Dealers: Here is an opportunity to get one of the surest paying lines in the accessory business. The Whistler Pressure Regulator and the Lox-on Air Chuck.

Backed by strong advertising and merchandising service, these products are making friends and profits all over the country. Write us or ask your jobber.

Whistler
TRADE MARK
"IT WHISTLES WHEN IT'S HAD ENOUGH"

AUTOMATIC SAFETY TIRE VALVE CORP.
1753-1755 Broadway, New York
Factory, Long Island City, New York

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Here's the Reliable Lamp!

MOTORISTS know the meaning of the "Girl with the Edison MAZDA Automobile Lamps" in your window, for with raised hand she signals all cars where to stop—for reliable lamps.

* * *

If the lamps you sell are not backed by MAZDA Service write at once for the Edison Automobile Lamp Agency plan. Edison Lamp Works of General Electric Company Harrison, N. J.

47D-65

EDISON MAZDA

EDISON LAMP WORKS OF GENERAL ELECTRIC COMPANY

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Why Mechanics Approve It

THERE has long been a demand from mechanics and motorists for an efficient piston ring having the quick-seating feature of a narrow ring, with the wall tension of a wide ring.

It is obvious to any mechanic that when the BURD Quick-Seating Piston Ring is installed in worn cylinders, the outer edges will lap in more quickly and conform more nearly to the contour of the cylinder wall than any other type of piston ring.

Mechanics know also that it is desirable to minimize the loss at the opening of the piston ring to prevent leakage and carbon troubles. BURD Quick-Seating Piston Rings are installed to fit snugly—the points just meeting—no clearance between the points being necessary. They therefore indicate the minimum of opening after seating has been accomplished.

The BURD Quick-Seating Piston Ring is of the step-joint type, the outer surface—which comes in contact with the cylinder wall—having a channel .002 of an inch in depth in the center of the face, and raised edges which lap in quickly, seating perfectly with a hard, glass-like surface in harmony with the cylinder wall in about one-fifth of the time required to seat other types of piston rings.

The channel in the center carries an oil film that prevents leakage during the process of seating and insures perfect lubrication.

BURD Quick-Seating Piston Rings are made in all sizes and oversizes for practically every make and model of gasoline engine. List Prices: Sizes up to and including 4 inches, 60c each, and sizes over 4 inches, up to and including 5 inches, 70c.

Order from Your Jobber or Write Now for Directory of Sizes, Literature and Dealer's Price List

BURD HIGH COMPRESSION RING COMPANY, Rockford, Illinois

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PEERLESS FENDERS FOR FORD CARS

PEERLESS FENDERS, for pleasure cars, are made to fit all models of Fords—two sizes:

NO. 16 fenders fit all model cars up to and including 1916.
No. 17 fenders fit 1917 and later model Fords.

EXACT DUPLICATE OF FORD FENDER.

THEY are built thruout of No. 20 gauge steel—and two coats of lustrous black enamel baked on, gives them a handsome and durable finish.

BUILT according to the "PEERLESS STANDARD OF EXCELLENCE."

Retail Price $25.00 Per Set

CAREFULLY crated to withstand rough handling in shipment. Can make immediate delivery.

GET our catalogue of PEERLESS PRODUCTS. Address Dept. 5.

The CORCORAN Mfg. Co.

SECTION AVE. NORWOOD

CINCINNATI

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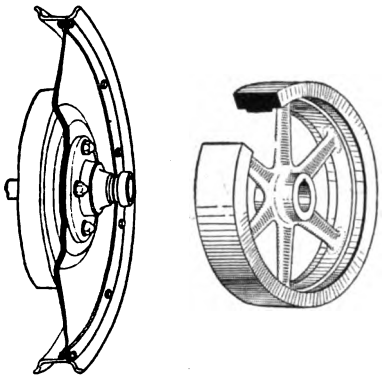
Facts You Should Know About the Wheels of Your Motor Car



Sectional Views of a Disteel Wheel and the Ordinary Fly Wheel

The weight of a Motor Car Wheel should be concentrated at the hub. A good example of what a Motor Car Wheel ***should not*** be is the fly wheel. Instead of having the weight concentrated at the hub, the fly wheel has its weight concentrated in the rim.

There is a reason for that. The purpose of a fly wheel is to preserve momentum. It keeps going. Because of the weight in the rim, the fly wheel is difficult to start and difficult to stop.

The Motor Car Wheel should start easily and stop easily. That is the reason why the weight should be at the hub, not in the rim. This saves power, gasoline and the mechanism of the car.

The spokes, too, of a fly wheel are rigid, untapered, unresilient. A fly wheel is not dished. There is no spring in it. Needless weight at the rim increases the hammering effect of every blow the tire takes from the road.

Be Sure Your Motor Car Wheel Is Not a Fly Wheel.

The Disteel Wheel is a single, dished and tapered disc of steel. This steel disc tapers in thickness from the hub to the rim, which makes the wheel lighter as well as vastly stronger and more resilient. And the wheel is dished inwardly like a bow. Also, the rim is offset where it is fastened to the disc.

It is a basic principle of wheel design that these three features, the taper, the dish, the off-set rim, diffuse and dissipate road shocks before they can reach the hub.

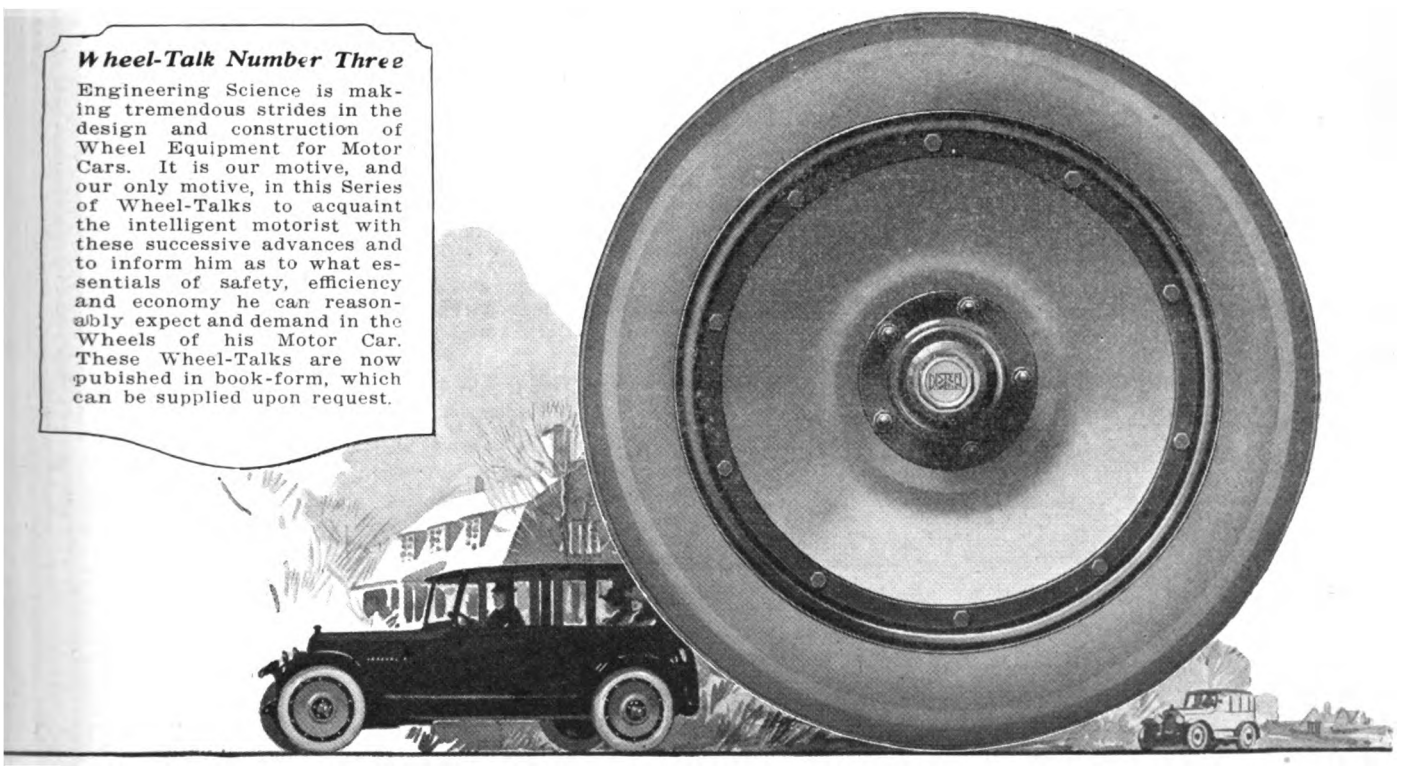
Back of the vastly greater beauty of Disteel Wheels, you will find upon investigation these fundamentals of scientific wheel design and construction that mean greater comfort, safety and economy in motoring.

Detroit Pressed Steel Company, Detroit, U. S. A.

Disteel Wheel Plant, Cabot Avenue
New York: 1846 Broadway at 61st St.
Boston: 925 Boylston Street
Automobile Frame Plant, Mt. Elliott Avenue
Chicago: 732 Michigan Avenue
San Francisco: 326 Rialto Building

Wheel-Talk Number Three

Engineering Science is making tremendous strides in the design and construction of Wheel Equipment for Motor Cars. It is our motive, and our only motive, in this Series of Wheel-Talks to acquaint the intelligent motorist with these successive advances and to inform him as to what essentials of safety, efficiency and economy he can reasonably expect and demand in the Wheels of his Motor Car. These Wheel-Talks are now pubished in book-form, which can be supplied upon request.



DISTEEL WHEELS

The Wheels That Complete The Car

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BLUE RIBBON PRODUCTS

Are a Standard Line

Jobbers and Dealers stock the full Blue Ribbon line as they do all other tried, proven and constantly selling goods.

Blue Ribbon products are made by specialists who depend wholly on the quality and service giving satisfaction afforded by lines bearing their trade mark.

There can be no experimentation at the expense of the consumer, dealer or jobber. All Blue Ribbon Specialties must be as good as they are practical in every day use as it is possible to make them.

A nation wide trade, enormous expenditures devoted to development and promotion work as well as the maintenance and operation of the largest plant of the kind in America is too great a stake to gamble against quality.

Blue Ribbon Products today stand supreme. They are passed over the counters backed by an unqualified guarantee on the part of the trade that can leave no doubt as to their merits.

That is why Blue Ribbon Products are a standard line and will always continue to be so.

That is why all jobbers and dealers sell and list them in their catalogues.

Above all else that is why the consumer buys Blue Ribbon trade marked products. Blue Ribbon Products cost no more than others, yet represent the most profitable line that can be placed by the jobber or dealer.

If the **BLUE RIBBON** trade mark is to be seen on your shelves or counter you have a silent salesman in your store that is always working, always earning.

All Blue Ribbon Specialties are sold in quantities to meet any requirement.

The full line affords a complete line and it pays to specialize in known quality goods.

Blue Ribbon Specialties Include:

Blue Ribbon Cold Cream Hand Soap
Contains no pumice or sand.

Blue Ribbon Leak Proof Cement
A permanent radiator cement.

Blue Ribbon Nickel Polish
For nickel parts and trimmings.

Blue Ribbon Auto Body Gloss
For automobile or furniture.

Blue Ribbon Lightning Carbon Remover
Quick and positive in action.

Blue Ribbon Black Enamel
For lamps, hoods, radiators and metal parts

Blue Ribbon Auto Top and Seat Dressing
A waterproof dressing that restores tops and seats.

Blue Ribbon Hand-On Patch
A self-vulcanizing patch for shoes and tubes that never fails.

Blue Ribbon Cream Metal Polish
For any metal. An easy, quick working, satisfactory polish

Blue Ribbon Oil Soap
A pure vegetable oil soap for any purpose. All quality and efficient.

This is the time to consider your winter and spring requirements

Jobbers and Dealers: Prices and discounts at request.

International Metal Polish Co.

INDIANAPOLIS, INDIANA.

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There is Good Dealer Profit In Equipping Fords With Non-Stallable Starting and Lighting Outfits

Dyneto TRADE MARK REGISTERED

Sell a high grade, dependable Starting and Lighting System—one that is proven to have "big car" quality. Dyneto—a NON-Stallable Starting and Lighting System for $85. (With a good dealer profit.)

The System is complete, with motor-generator, storage battery, battery box, all wiring, switches, brackets, sprockets, etc., etc. Can be easily installed.

It has the same characteristic features as the Dyneto system that has been used continuously since 1913 on America's highest priced light weight car, the Franklin.

Makes Fords NON-Stallable

The big advantage of this system over others is that it makes the engine NON-Stallable. If too sudden application of clutch brings motor to stop, Dyneto instantly takes hold and starts it—**automatically—driver** doesn't have to press a button or move a lever.

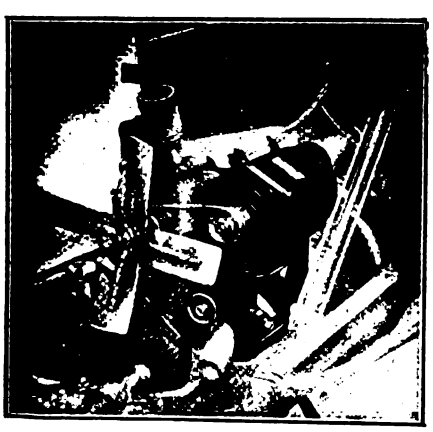
In emergency, Dyneto is powerful enough to move car out of danger, without the motor.

Liberal Discounts to Live Dealers

Only a limited number of these outfits are available for immediate shipment, and orders will be filled in the order in which they are received. Write for discounts for dealers. Better wire quantity you wish reserved for you.

$85.00

Retail F O. B.
Syracuse
Dealers' Discount



DYNETO ELECTRIC CORPORATION

SYRACUSE, N. Y.

Export Representatives:

BENJAMIN WHITTAKER, Inc.

21 State St.,
New York, N. Y.

56 Ludgate Hill,
London, E. C. 4.

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"This'll Get You Out In a Jiffy"

Users of Walker Badger Jacks talk in terms of seconds. Jacking up a car—under any condition—means no more to them than getting their Walker Badger out of the tool box—slipping it into position—pumping a few quick easy strokes with handy handle—that's all.

Walker Badger Jacks are built on the idea and fact that a Jack is an emergency tool—that when there is need for a Jack, it is an urgent need. They possess the sound excellence of construction, strength, durability—which enable them to unfaiteringly and unfailingly meet every demand.

Designed to produce greatest lifting power with least leverage. Constructed of toughest, longest wearing materials. Fewest possible working units. Lock washers on all cover screws—never work loose Never become rattle traps.

Malleable iron trip levers. Cut steel rack bar—every tooth uniform. Lifting pawls of high carbon drop forged steel—machined in gigs, insuring one-thousandth of an inch accuracy of fit. All moving parts retain original shape through hardest usage.

Never grow rickety with age. Rigid factory test for lifting capacity — labeled with lifting capacity and guaranteed to raise rated load.

Packed in neat, cardboard carton, abolishing all possibility of damage in shipping and storage.

DEALERS—Walker merit affords exceptional opportunities in the shape of exceedingly profitable trade. Catalog listing the whole Walker Badger Line—"A Jack for every Job"—and sales proposition on request. Write for them today.

WALKER MFG. CO.
Racine, Wis.

WALKER BADGER AUTOMOBILE JACKS

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GILL

The Perfect One Piece Piston Ring

"See that joint? That's the reason why I install Gill Piston Rings on my jobs. It's the one piston ring that I consider mechanically perfect."

When you hear a mechanic talk like that you may be sure there is something about the Gill Piston Ring that makes it different from any other. Mr. Dealer, try it out this way. Show a Gill Ring to the best automobile mechanic you know and see if he doesn't endorse what the man in the picture is saying.

One look at the double step interlocking joint shows him that the Gill Ring can expand from 1/8" to 3/16" without any loss of compression. That means it will adjust itself to oversize, worn or out of round cylinders within reasonable limits.

Look into this piston ring proposition for yourself and when you compare the Gill with any other ring on the market you will be convinced like the thousands of other men who handle this ring exclusively.

Send for the new Gill Piston Ring Size Directory, complete, convenient, and full of just the information you need. It is free to the trade.

Dealers—Ask your jobbers about them
Jobbers—Write to us for information

The Gill Manufacturing Company
8301 South Chicago Avenue, Chicago, Illinois.

Sole Foreign Agents:
AUTOMOTIVE PRODUCTS CORPORATION
Woolworth Building, New York, N. Y.

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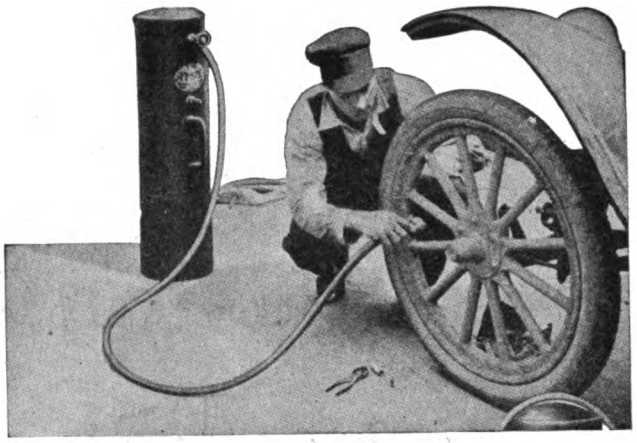
EARNS MONEY



SAVES MONEY

The ATSCO PORTABLE AIR TANKS

A Roadside Repair Wonder Worker

TANK MAKERS FOR NEARLY THIRTY YEARS

Always ready for use with the emergency car or truck. With it the largest tire may be inflated in a few seconds, saving time and cost and the use of the unreliable hand pump.

This time and labor saved is clear profit to the repairer, and the service afforded has even greater value to the vehicle owner. The hardest work with tires is inflation, but with an Atsco tank it is almost instantly done, and to the PRECISE PRESSURE RECOMMENDED.

An Atsco tank is light weight, easily carried and may be operated by any person. Its utility in garages and service stations is manifold. In many stations they are placed in all departments and several are used.

In any garage or station where service is a factor and competition keen Atsco portable air tanks are a necessity. The tanks will endure for years and be constantly profitable. They will earn their cost in a brief period; after that the service and profit are clear again.

List Price $30.00 F. O. B. Pittsburgh

Atsco tanks can be filled by any compressor system. They are 36 inches long and 10 inches diameter, constructed with genuine copper brazed seams and suitable for 250 pounds working pressure or 500 pounds test pressure.

The equipment includes a standard tire filling valve, the best pressure gauge made, a protection valve cap for filling at a compressor system connection, and an eight-foot hose, everything that is necessary.

We specialize construction of garage pressure tanks, and have in stock or build to specification tanks of any size or pressure requirements. Our tanks are used by most of the producers of compressor and air storage systems.

These tanks are genuine copper brazed construction and the seams and joints are far stronger than the stock metal. They will not crystallize or crack and are guaranteed air tight.

We make pumps and pressure tanks for all purposes.

Produced only by

AIR TIGHT STEEL TANK COMPANY

OFFICE AND WORKS

PITTSBURGH, PENNSYLVANIA

(When Writing to Advertisers, Please Mention the Accessory and Garage Journal.)

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The Liveliest Dozen You've Ever Seen

Twelve high grade, fast selling Goodrich Tire Accessories that won't go to sleep on your shelf.

Display them up in front where they'll be seen and they'll sell like hot cakes.

Every one of them a thoroughly good, high-quality product that will do the work required of it —and more.

A constant selling line that will bring in money all year 'round.

THE B. F. GOODRICH RUBBER CO.
Akron, Ohio

Goodrich Tire Accessories

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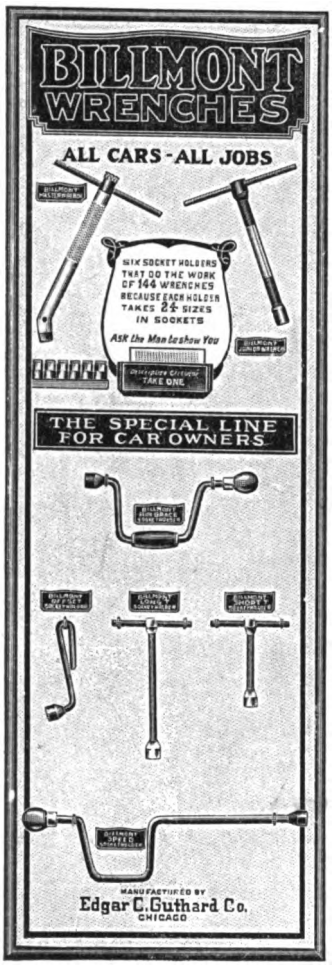
Ready Made Sales



More than half the work of selling Billmonts is accomplished through our new display board. While you are waiting on someone else the customer sells himself.

Lithographed in three colors on sheet steel, backed and mounted with finely finished hard wood—easel back or hanger.

DEALERS

Write for special display board proposition.

All Billmont wrenches have special Billmont universal nosepiece, which takes 24 sizes in sockets and permits the use of one set of sockets for all wrenches. For instance one speeder and 24 sockets make 24 sizes of speeders—a new and exclusively Billmont feature.

BILLMONT MASTER WRENCH
"The Wrench that Spins 'em off"

Is a universal socket wrench with driving parts encased in heavily knurled outer nickel tube. Hooked nose reaches into otherwise inaccessible places—few nuts or bolts are too hard to get at, too tight to turn.

Most jobbers carry the Billmont line—if yours does not, write us and learn how to profit by the "socket wrenches that are different."

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THE ACCESSORY AND GARAGE JOURNAL
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*Indicates Article Is Illustrated.

NOTICE TO SUBSCRIBERS.

The shortage of paper is the cause for the delay in the publication of the April issue of the Accessory and Garage Journal.

Paper manufacturers have never before experienced so great a demand, and production has not kept pace. Added to this is the cumulative effect of railroad blockades, strikes, embargoes and other causes of transportation retardation.

Should your copy reach you late, please be patient. The publisher is doing all that is possible to serve you to your satisfaction, but cannot expect to do this until the paper industry returns to a normal output, and railroad congestion reduced. You will continue to receive your magazine as near the date of publication as it is possible to produce it.

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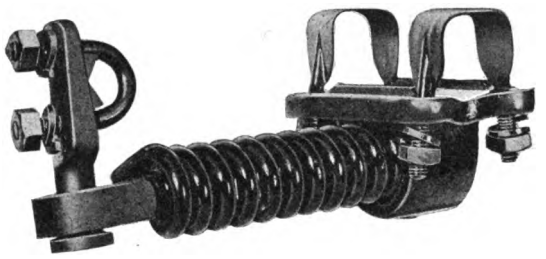
OVERCOMES ALL STEERING TROUBLES



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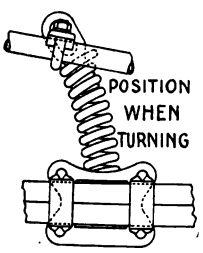

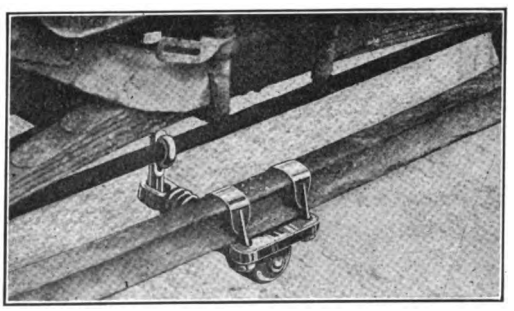

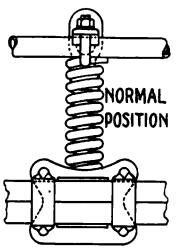

Showing D & O Safety Steering Control attached, which has run 30,000 miles.

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DEALERS who handle Harvey Springs can supply a spring quickly for any make or model of passenger car or truck—a spring specially built for the car for which it is needed.

Harvey jobbers are located in the principal cities, offering a convenient source of supply for dealers in all parts of the country.

That's one type of Harvey Service.

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Breakage is next to impossible with a Harvey—it's guaranteed against breakage under all emergencies.

Guaranteed also against sagging. Yet the Harvey affords an unusual degree of resilience which makes the Harvey-equipped car easy riding and unusually comfortable.

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Harvey Spring & Forging Co.
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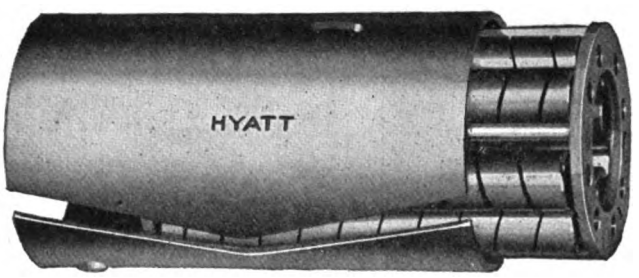
A Word to Ford Owners!

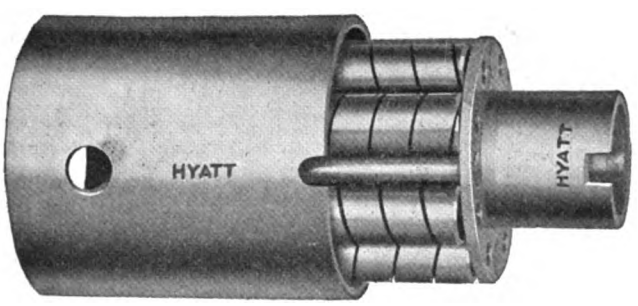
Look for the Name "HYATT" on the Bearings You Buy

THESE photographs show the Hyatt Roller Bearings used in Ford rear axles. The bearings are designed and manufactured as complete units. Each bearing-part has a direct relationship to every other. Each part is made from steels especially selected for the duties it has to perform. Each part is developed to give the particular qualities of hardness and strength needed by each individual piece for its peculiar kind of work. If any of these parts fail to conform to the required standards the bearing will not function efficiently.



Hyatt Bearing Used in Ford Rear Axle

Being a complete unit, damage to one of the parts of a Hyatt Ford Bearing impairs the service value of the entire bearing. In case of such damage a complete new bearing should be used. A complete new bearing will insure far more efficient service than replacement of damaged bearing-parts with new parts. In the future therefore the Hyatt Roller Bearing Company will distribute through the trade only complete bearing assemblies.



Hyatt Bearing Used on the Ford Driving Shaft

To insure the Ford owner that the Hyatt Bearings which he buys are composed of genuine Hyatt parts all outer and inner Hyatt Ford races are stamped with the name HYATT. Be sure that such bearings that you buy are so marked.

HYATT ROLLER BEARING COMPANY

Motor Bearings Division: **Detroit, Michigan**

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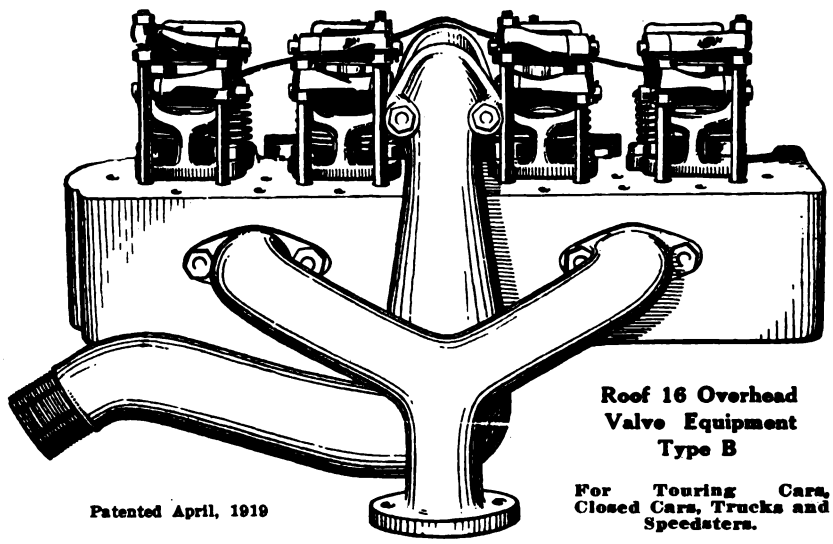
POWER and SPEED ROOF 16 OVERHEAD VALVE EQUIPMENT for FORD MOTORS



Patented April, 1919

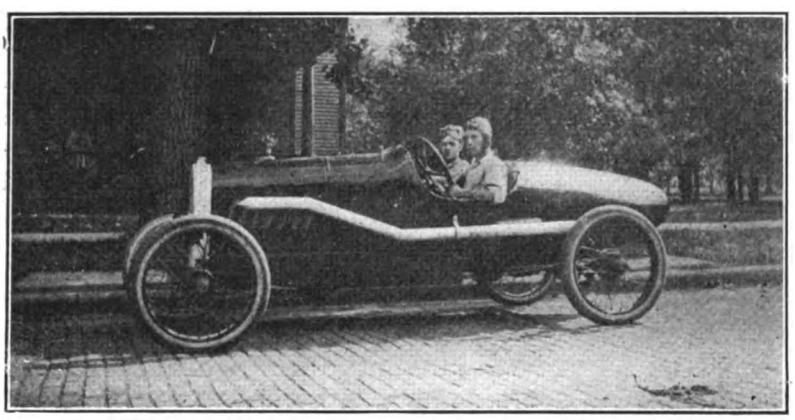
Roof 16 Overhead Valve Equipment Type B

For Touring Cars, Closed Cars, Trucks and Speedsters.

The Most Remarkable Power Device, Even in This Inventive Age

Hill climbing for touring cars—pulling power through sand and mud—doubles the hauling capacity of converted Ford truck-speed for mile and half-mile tracks to rival the fastest cars built. Ford racing cars with our Cylinder Head Equipment and special racing parts have attained speeds from 80 to 100 miles per hour. Hill climbing and pulling power for touring cars, closed cars and trucks. Cylinder head equipment all ready for installation. It takes the place of the regular Ford Cylinder Head. Any mechanic can easily and quickly install it.

Comparison Brake Horse Power Tests at the United States Bureau of Standards gave Standard Ford motor with regulation carburetor 18.7 Horse Power. The same motor with 16 Valve Head and regulation carburetor 22.4 Horse Power. The same motor with 16 Valve Head and Special carburetor 29.7 Horse Power. Recent tests at Bureau of Standards with Type B gave 32 Horse Power. We are Manufacturers and Distributors of speed and other specialties for Ford cars; 3 to 1 gears, high speed camshafts, aluminite, light grey iron pistons, lynite pistons, aluminite connecting rods, racing spark plugs, racing carburetors, roller bearings, counterbalances, wire wheels, multiple speed transmission, high tension magnetos, special oiling system, special worm and gear, steering gear, racing tires, racing bodies, hood and radiator, parts for underslinging chassis. Tell us what you want. We can supply it. Racing quality. Lowest prices. Send for our Complete Literature on how to build fast cars and double the value of your converted Ford Truck and descriptive circular on Speed and other Specialties for Fords.



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of CHAMPAIGN, ILL.,

in his beautiful Speedford racing car equipped with the Roof 16 Overhead Valve Cylinder Head. This car has attained a speed of 75 miles per hour. An excellent example of high class racing car construction with Laurel special parts.

Ford Racing Car Speed Kings

From the hundreds of fast Ford car drivers we mention the names of a few of those who have won laurels through the use of our equipment and some with speed records approaching that of the highest priced racing cars in the world, ranging from 70 to 97 miles per hour, and who on mile and half-mile tracks have closely approached the world's record with their speed cars:

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John Proctor.....Washington, D. C.
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Paul M. Boozer.....Windber, Penn.
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Packard Engineering Co .....
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Tractor Plugs Are Best for Heavy-Duty Trucks

Loaded to capacity, yet negotiating the most difficult roads with ease, your motor truck equipped with Sterling Tractor Spark Plugs, will utilize every ounce of its power.

Sterling Tractor Plugs have been developed to meet the demands of heavy-duty motors whose intense heat shortens the life of ordinary plugs.

Motor truck owners quickly discovered that these tractor plugs, feeding a strong, steady current into the cylinders of the engine, give a greater and surer power when loads are heavy and roads rough or hilly.

Sterling Tractor Plugs are made with a porcelain core of unusual strength; an extra deep combustion chamber, and the center electrode, of monel metal, will not warp. Then, too, Sterling Plugs are separable and easily cleaned.

Garages and supply dealers everywhere sell and endorse these guaranteed plugs.

The Lockwood-Ash Motor Co.
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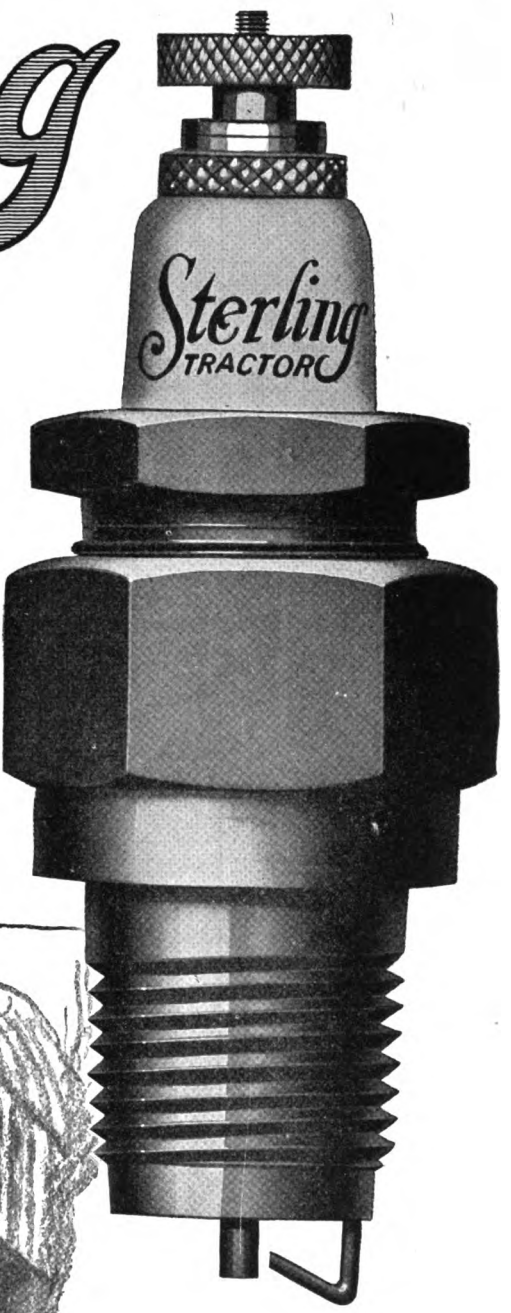
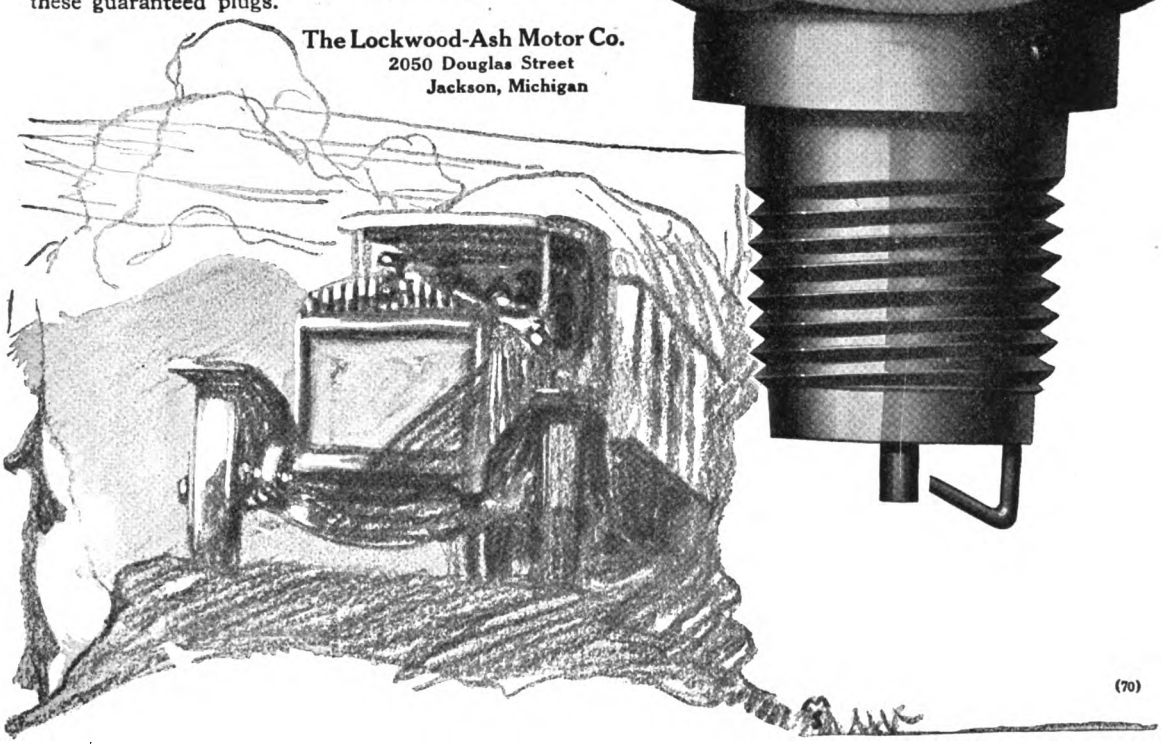
Jackson, Michigan





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McCORD GASKETS FOR PASSENGER CARS

McCord No.	CAR	MODEL
10	Abbott 6	66
1	American 6	1916-17-18
10	American Beauty 6	(Pan American)
10	Anderson 6	200-A
68	Anderson 6	De Luxe 400C-D E
30	Artemas 4	31
10	Auburn 6	(Continental 7-W)
15	Auburn 6	(Rutenber)
10	Baker R & L 6	35
38	Ball 4	16
38	Ball 4	18
27	Birch 4	Super Four
80	Briscoe 4	34 (Water Outlet)
23	Buick 4	
27	Buick 4	
10	Bush 6	(Continental 7-W)
6	Cadillac 8	57 59
16	Chalmers 6	35-A and 35 B
79	Chalmers 6	35-C "Hot Spot"
7	Chevrolet 4	4-90
7	Chevrolet 4	Baby Grand
33	Chevrolet 8	D-4 and D-5
45	Cole 8	868
10	Colonial 6	35
10	Columbia 6	(Continental 7-W)
27	Commonwealth 4	1
5	Continental Motor	4
10	Continental Motor 6	7-W
13	Continental Motor 6	7-V
14	Continental Motor 6	6-N
67	Continental Motor 6	R-2
68	Continental Motor 6	7-R
83	Continental Motor 4	U-A
10	Crawford 6	60
17	Crow Elkhart 4	1916-17
15	Crow Elkhart 6	
79	Davis 4	
27	Davis 4	SD
10	Geo. W. Davis 6	48 (Continental 7-W)
68	Geo. W. Davis 6	51-52-53-54-55
10	Detroit 6	All Models
99	Dixie Flyer 4	
11	Dodge 4	All Models
28	Dort 4	4 and 5, 1915
28	Dort 4	5-A, 6 & 8, 1916-17
28	Dort 4	8 & 11, 1918-19-20
28	Economy 4	20
10	Economy 6	43 (Continental 7-W)
77	Elcar 4	D-4
10	Elcar 6	D-6(Continental 7-W)
68	Elcar 6	K. & O. (Falls)
18	Elgin 6	(Falls)
10	Empire 6	70 (Continental 7-W)
15	Empire 6	(Rutenber)
15	Erd 4	
28	Essex 4	A 1919
26	Ford 4	T (Copper)
23	Ford 4	T (Thin Asbly)
15	Gravelette 6	(Rutenber)
15	Ghent 6	43 (Rutenber)
15	Glide 4	46 (Rutenber)
79	Golden, Belknap & Swartz Motor 4	M (Sterling)
64	Grant 6	K & O, 1917-18
28	Hackett 4	(G. B. & S.)
28	Hackett 4	(G. B. & S.)
18	Halladay 6	1918 (Falls)
18	Halladay 6	1918 (Rutenber)
10	Harvard 6	A (Continental 7-W)
28	Harvard 4	20
64	Hawkins 4	(Sterling)
10	Hollier 6	700 (Continental 7-W)
6	Hudson 6	Super Six
3	Hupmobile 6	R 1918
28	Hupmobile 6	32, Valve Plate
10	Jackson 6	35
63	Jackson 6	(Northway)
68	Jackson 6	55
15	Jeffery 6	Chesterfield
15	Jeffery 6 (Nash first series)	Chesterfield
68	Jordan 6	M
10	Kline 6	36 (Continental 7-W)
68	Klink 6	J-55
4	Lewis 4	G-3
29	Le Bel Moteur 4	G-3
41	L. P. C. 6	(Lycoming)
10	Lexington 6	(Continental 7-W)
68	Lexington 6	6
31	Locke 4	64
15	Madison 6	1916-17-18
18	Marathon 6	R (Falls)
15	Marion Handley 6	34
43	Marmon 6	34 (1918-19)
23	Mimm Motor 4	
23	Mimm Motor 8	
32	Maxwell 4	1914-15
1	Maxwell 4	1916-17-18-19-20
9	Metz 4	All Models
15	Mint 6	Mineer dis
10	Minster 6	M (Continental 7-W)
32	Monroe 4	M-2
20	Monroe 4	M-2
10	Moon 6	48, 1916-17 (Continental 7-W)
32	Moon 6	36 and 68
66	Moon 4	48 (Victory)
36	Moore 4	36-C
15	Moore 6	All Models
27	Napoleon 4	20
15	Nash (Jeffery)	Chesterfield
68	Nash 6	681-682-683-684 685 686 687 (Continental 7-W)
10	Noma 6	18
2	Northway Motor 4	
4	Northway Motor 6	
32	Northway Motor 6	
43	Northway Motor 8	
27	Norwalk 4	
37	Oakland 6	33, 33 B, 34, 34-B, 34-C
3	Oakland 4	36, 37 and 38
45	Oakland 8	80
4	Oldsmobile 4	42 and 43
37	Oldsmobile 6	37
14	Overland 6	82, 1915-16
10	Overland 6	85, 1916-17-18
38	Overland 4	75 and 90
39	Overland 4	83 and 85
72	Overland 4	4, 1918-20
19	Packard 12	3-25, 3-35 Red series
69	Packard 12	3-25, 3-35, 3rd series
16	Paige 6	46, 1915-16
15	Paige 6	39, 1917-18
78	Paige 6	35 19 (1920)
10	Pan American 6	(American Beauty)
10	Pathfinder 6	(Continental 7-W)
10	Patterson 6	45 and 47 (Continental 7-W)
26	Penny 4	18
10	Penny 6	All Models (Continental 7-W)
27	Piedmont 4	30
10	Peerless 6	60 (Continental 7-W)
46	Pierce Arrow 6	38, 24 Valve 1920
26	Pilgrim 4	(G. B. & S.)
26	Princess 4	All Models
26	Pullman 4	1916-17-18
69	Pro 6	T & U (1920)
15	Rumbler Motor 6	
5	Saxon 4	All Models
13	Saxon 6	All Models
15	Sawyer 6	All Models
10	Sayers 6	All Models (Continental 7-W)
20	Scripps Booth 4	1915-16-17
57	Scripps Booth 6	39
7	Scripps Booth 4	G 1916
29	Seneca 4	J-M & I
30	Splunt 4	1915
20	Sterling Motor 4	
64	Stirling Motor 4	
41	Studebaker Big 6	Series 19 and 20
84	Studebaker Light 6	Series 20
10	Supreme 6	(Continental 7-W)
25	Texas 4	(G. B. & S.)
10	Thoroughbred 6	All Models
21	Tulsa 4	D-1
10	Velie 6	39 (Continental 7-W)
68	Velie 6	48 (1920)
91	Wesley Motor 4	
2	Westcott 4	1914-15
10	Westcott 6	41, 1916 (Continental 7-W)
66	Westcott 6	Lighter Six B 58

HEAD OF THE MOTOR

McCORD

GASKET INDUSTRY

Order McCord Gaskets—built by the founders of the copper asbestos gasket industry—through your jobber, and by stock number

McCORD MANUFACTURING COMPANY, INC.
DETROIT, MICHIGAN

Manufacturers of McCord Automobile Radiators and McCord Force-Feed Lubricators

McCord

GASKETS

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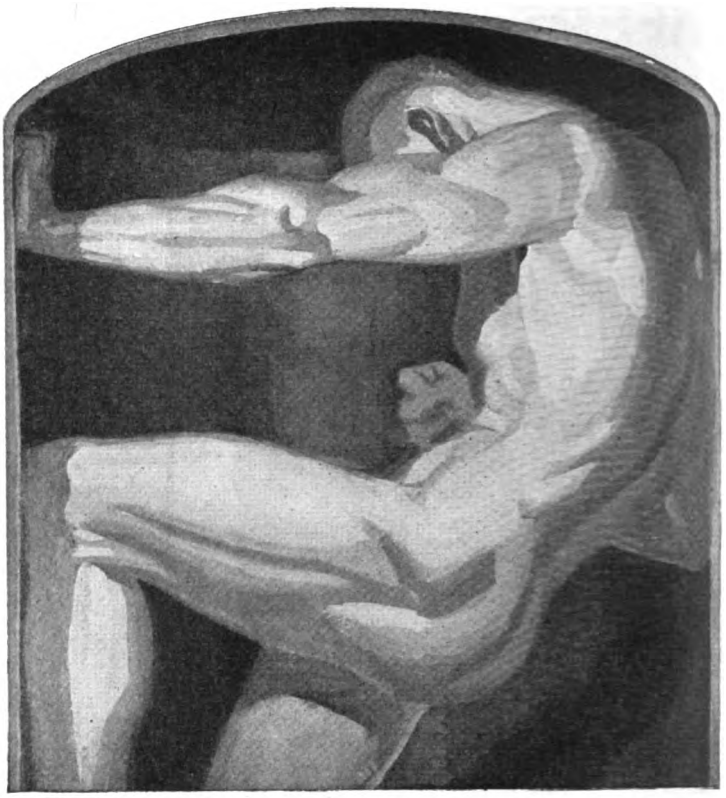

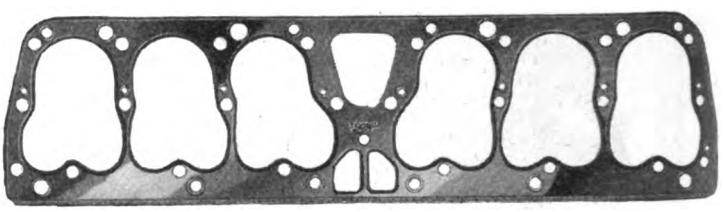

Victor Gaskets Confine Power in the Cylinders

Power, confined, is the essence of good motor operation.

There must be perfect compression in the cylinders to direct the full force of the explosion to the driving parts. Power must not escape until it has done its work.

Victor copper-asbestos cylinder head gaskets do hold compression. They resist the enormous pressure caused by each explosion in the cylinder. They do prevent the escape of power.

Thousands of dealers and jobbers have proved the worth of Victor Gaskets through long experience. They know that these gaskets last longer on all types of motors.

The extent of our line, with more than 300 types of cylinder head gaskets and more than 4,000 other types, offers a complete stock to supply from.

Victor Manufacturing & Gasket Co.
5750 Roosevelt Road
Chicago Illinois

The World's Standard Gaskets

VICTOR
COPPER~ASBESTOS
GASKETS

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KEEPS THE "BUMPS" BELOW THIS LINE

No. 701—Made of ¾-in. steel rods. Malleable threaded clamps. Weight 12 lbs.

No. 702—Made of 1-in. x 1-in. x 3-16 in. Angle iron. Weight 8 lbs.

No. 703—Made of 1-in. x 1-in. x ⅛ in. Angle iron. Jointed arms. Weight 5 lbs.

No. 733—Made of 1-in. x 1-in. x 1-8 in. Angle iron. All one piece. Weight 5 lbs.

No. 704—Made of ¾-in. tubing. Malleable threaded clamp. Weight 5 lbs.

Walker Auxiliary Radius Rods for Fords

Patented *Patented*

An absolute Ford necessity. Every Ford owner a potential customer. A big, broad, profitable market in every section of the motoring world. Stocked by most jobbers. If yours won't supply you, write us direct. Beware of infringements. Be sure you get Walker patented rods. Walker Radius Rods give regular Ford Radius Rod the necessary support. Securely brace front axle—keep it straight—eliminate danger of bending and breakage of regular rod. Attached immediately. No holes to bore. Clamp to rear of regular rod—fasten to axle—employing regular Ford perch bolt—with exception of 701, which clamps to front axle. Stock up. A quick turn over—splendid margin of profit—small investment

$7.50 Per Set of Four

Walker Steel-Bilt Shock absorbers—actually **absorb**—all shock—all vibration of rough, vicious roads. They establish a solid comfort line which puts Ford Motoring on a far more pleasureable and economical basis. They safeguard the car—keep jars and jolts from injuring mechanism and give occupants the limit of riding ease.

WALKER STEELBILT SHOCK ABSORBERS FOR FORDS

Are made entirely of steel. Not **make shifts.** Absolutely unbreakable. No wear out to them. Never lose their wonderful elasticity—their shock absorbing quality. Spiral spring, extra long and extra strong—oil tempered. Spring bolts turned from cold-rolled steel and scientifically hardened. Equipped with convenient oilers. No squeaks. No stiff, jerky action. A slow, even billowy recoil the like of which you have never experienced in any other style spring. No sliding parts. No breakage—or mishaps. Steel-strong in every part. Endure for the life of your Ford and increase your **car** endurance through abolishment of wear and tear occasioned by road vibration.

Extremely economical—only $7.50 per set of four. Pay for themselves many times over in saving of repair costs.

All complete. Ready for immediate installation. No holes to bore. No special tools needed. No bother at all. Guaranteed to give most satisfactory service. Thousands in use. No Ford complete without a set. Gigantic demand. An exceptionally attractive proposition to dealers. **Write for it.**

Walker Manufacturing Co.

Racine - - Wisconsin

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PEERLESS
AUTOMOBILE SPECIALTIES

MAKE OLD CARS LOOK LIKE NEW

These specialties are made from highest grade raw materials. They add to the appearance of the car and the greater durability of these products more than pays for any possible extra cost over ordinary dressings, paints and varnishes.

QUALITY PRODUCTS ARE:

Peerless Mohair Top Dressing

A waterproof dressing which also dyes the top with one application.

Peerless Cushion Dressing

Brightens and renews the finish of leather seats and cushions.

Peerless Lamp Enamel—Gloss and Dull

A rich enamel finish for lamps and kindred parts. Gloss and Dull.

Peerless Rim Paint—Anti-Rust

A coating which prevents rusting of rims, which is injurious to casings.

Peerless Liquid Wax

A wax polish in liquid form which is easy to apply with a light, even coat which will stand washing without dulling the finish.

Peerless Mirroroid

A clear varnish. If applied before the paint and enamel have perished will make a finish like a newly varnished job.

Peerless Ford Top Dressing

Made especially for material used in Ford Cars and will renew and brighten the finish on same.

Peerless Fender Japan—Jet Black

An air drying enamel which gives a rich finish similar to a baked job.

Peerless Gasket Shellac

A high grade alcohol product. Heavy bodied and goes in tack quickly. For use on all kinds of gaskets, whether copper, asbestos, felt or paper.

Peerless Auto Body Polish

A fine product for dull varnished surfaces. It brightens with a finish that is lasting.

Peerless Leather Top Dressing

Renews and softens leather, rubber and pantasote tops—adds months of life to tops.

Peerless Lining Dye

Makes all water-stained, grease-spotted and faded linings a dark, uniform color.

Peerless Battery Box Black—Acid Proof

An acid resisting enamel for coating wood and metal that comes in contact with acid and fumes from battery boxes.

Peerless Cylinder Enamel—Black and Gray

Heavy bodied enamels that will resist heat, grease and gasoline. Black or Gray.

Peerless Tire Paint—White, Black or Gray

A waterproof dressing that protects and improves the appearance of your tires. Made in black, gray and white.

Peerless Touch-Up Black

A quick drying product for touching up various parts of wood or metal.

Peerless Carbon Remover

A liquid preparation which will remove deposits of carbon from cylinders and always keep the motor active and full of life.

Peerless Black Japan—Extra Fine

A fine gloss black product for all around use on wood, metal or old enameled parts.

Peerless Color Finishings

Made so that you can paint the wheels, body and chassis of your car your favorite color. Made with a finishing varnish to stand wear and may be used without an undercoat (except the lighter shades). Dries over night. Made in Red, Blue, Green, Yellow, Gray, Straw Color, Black and White.

It does not take an expert to apply **Peerless Automobile Specialties.** Any one can do it by following simple, yet complete directions on each can and first-class results are invariably obtained where **Peerless Specialties** are used. There is a Peerless Product for each part of the car that needs toning-up—body, wheels, fenders and tops. And when finished the car will have a finish that anyone will be proud of.

The quality is so fine that they are used and endorsed by over 8000 of the Leading Automobile Painters.

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Order these Products today, so that you will have complete stocks from which to fill your orders. Dealers and garages get catalogs, window display material, inserts and other advertising matter from jobbers stock or direct from us if they cannot supply you.

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Used by the largest factories in America in acid, pickling and nickel plating departments. Has withstood the most severe tests.

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IBSCO Steamers and Stills are all made of spun aluminum. No seams; only aluminum and brass come in contact with water. One cell or all can be removed in from three to five minutes. Water is distilled at the rate of about a gallon an hour.

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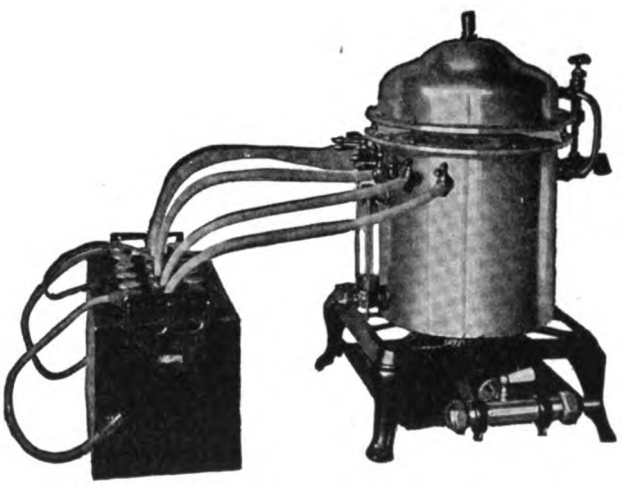

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LUCK or PLUCK?

No man ever got anywhere standing at his shop door with his fingers crossed—waiting for his luck to change.

The Automotive Repairman who gets all that's coming to him—whose shop is busy all the time—whose bank account is growing bigger every day, is a man who doesn't trust to luck—he goes after business with both feet and he gets it.

He has learned that there is no class of work which pays him the margin of profit that is produced by re-boring gas engine cylinders. It is easy work to get—it is easy to handle and it keeps up the efficiency of the shop.

Get Busy! Go After Business Hard!

Things are just beginning to open—automobiling will soon be in full swing—the trucks are working overtime—the hum of the tractor is starting on the farm—the motorcycles are beginning to fly around and the gas engines are churning away.

More gas engine cylinders will need re-boring this year than ever before. Get your share of this business. Install a Marvel Cylinder Re-Boring Machine and be in position to handle it promptly, satisfactorily and profitably.

Marvel Cylinder Re-Boring Machine Is Supreme

It is power driven—automatic—accurate—reliable and speedy. It handles any gas engine cylinder from a motorcycle to a tractor in jig time. It doubles the man power of your shop and has been endorsed and is being used by over one thousand Schools, Colleges and Automotive Repairmen.

The experience of a man who has spent years in machine shops—who has come in personal contact with nearly every make of machine should mean much to you. Just read what H. L. Kutscher of Springfield, Ill., wrote to Miller-Van Horn Co. of Columbus, Ohio.

"We are in receipt of your letter of the 20th regarding the Marvel Cylinder Re-Boring Machine and we are pleased to state that the quality of the work turned out by this machine is excellent. The writer considers himself a competent judge of re-boring machines, as he served his apprenticeship as a machinist in the railroad shops, where he came in contact with numerous machines and for 15 years he has been working with and studying machines of all kinds.

The Marvel Cylinder Re-Boring Machine is Nearer Perfect Than Any Other Machine and Its Efficiency is Wonderful

MARCO PISTON SERVICE

The Sign of a Perfect Piston

Upon numerous occasions we have had cylinder blocks sent us from different parts of the country stating that "these cylinders are to be RE-BORED and NOT RE-GROUND" and when they were done the finish was so perfect that a question arose as to whether they had been re-bored or re-ground. The answer was the short space of time it took to re-bore.

We can re-bore a Ford cylinder block in from one hour to one hour and thirty minutes and do a perfect job.

For the above reasons we recommend the MARVEL CYLINDER RE-BORING MACHINE for any re-boring that is to be done.

Sincerely Yours,

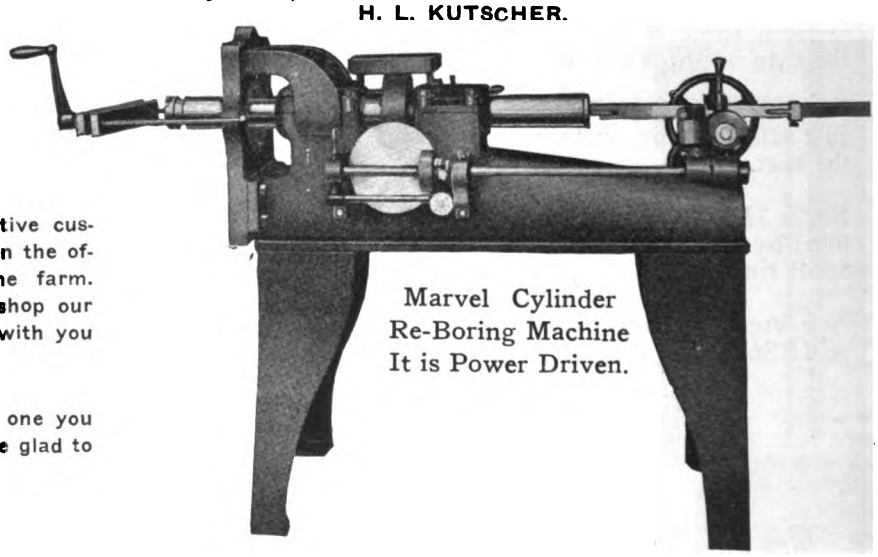
H. L. KUTSCHER.

MARCO PISTON SERVICE

The Sign of a Perfect Piston

With such unsolicited evidence as a guide you cannot go wrong with a MARVEL. And back of each MARVEL—back of your shop we put the most complete Business-Building Service ever originated. Our Co-Operative Advertising and Sales Campaign helps bring customers to your shop. Prospective customers are approached from all angles—in the office—the home—on the street or on the farm. When a MARVEL is installed in your shop our work for you has only begun—we work with you and for you to make it a Big success.

Our proposition is the most unusual one you ever heard of. Get it at once. We will be glad to go into the matter fully with you.



Marvel Cylinder Re-Boring Machine It is Power Driven.

Marvel Machinery Company

516 Loan and Trust Building **Minneapolis, Minn.**

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The ACCESSORY and GARAGE JOURNAL

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General Review of Manufacturing and Trade Conditions

Production Schedule for March in All Branches of Industry Beats Previous Monthly Records in Spite of Obstacles Affecting Supplies and Deliveries.

THOUGH predictions for the prosperity and progress of the automotive industry of the country for 1920, made at the opening of the present season, may have seemed sufficiently, if not superlatively, sanguine to conservative thinkers, the record for the first three months of the year shows that production is adhering so closely to schedule as to prove that the prophets of optimism should be acclaimed as having been imbued with the real inspiration of truth, judging, at least, by the present status of affairs.

At the beginning of 1920 it was estimated that the unsupplied demand for automobiles in this country was 2,000,000. During the first quarter approximately 500,000 cars have been produced. The prediction was that during the year 2,250,000 cars would be manufactured, and this will prove true unless some unforeseen difficulty still more serious than those experienced in the past quarter retards production. Early in the year the coal strike and the influenza proved serious handicaps, and this was reflected in the fact that the production for February was about 20 per cent. lower than for January.

The output for March, however, has again increased, showing that the industry has once more struck the 2,000,000 gait, at which rate it is at present travelling. Statistics from nearly all the large automobile producing centers demonstrate that the favorable records for the preceding two months were virtually eclipsed by the volume of increase for March, and this condition has been reflected by the amount of business reported to have been transacted in the big sales centers.

In the Detroit district, the acknowledged hub of America's automobile manufacturing industry, March was the greatest month for motor car production ever known. The total number of passenger cars turned out was 176,831 and, while specific figures on truck production are not available, it is stated that this branch of the industry showed a correspondingly large increase over any previous month. And this augmentation was effected in the face of a number of deterrent elements, such as shortage of freight equipment due to tie-ups from railway operative strikes, and other transportation difficulties which affected the delivery of materials, parts, etc., and the high price and scarcity of labor.

The Ford Motor Co. had an extraordinary month, turning out 80,008 passenger cars and 14,291 trucks, a total of 94,299. At the Overland Toledo factory a schedule of 600 cars a day was maintained for the 27 working days of the month. Here production was handicapped, as at all other plants, by the lack of freight cars, but the labor situation has eased up and the extra effort put forth by factory executives stimulated employees in all departments and increased the output materially. Overland plans to reach a maximum of 800 cars a day probably by the first of June.

A 20 Per Cent. Increase.

At the Hudson plant it was stated that production in March was 20 per cent in advance of any month in its history, and the same was true at the Cadillac, Dodge, Paige, Columbia, Hupp, Liberty and Maxwell factories as well as in a majority of the important plants outside Detroit. Factories out in the state were reported to be in a better situation than those in the city proper, in so far as the supply of parts and materials was concerned, but they were handicapped greatly by lack of freight cars to move the finished product, and were compelled to drive away most of their cars and to store the remainder.

At the Packard plant 815 cars and an equal number of trucks were built during March, and plans for April call for a 25 per cent increase.

The Studebaker factory in Detroit, while exceeding all previous schedules, was just up to 5000, the number outlined as its probable production. Studebaker experienced a difficulty in obtaining parts, but this has been somewhat obviated and it will probably greatly exceed the March output the present month.

The Jackson Motors Corporation was able to secure but one freight car a day on an average, and was compelled to store the greater part of its product at the State Fair grounds. Incoming freight conditions were, however, better than during the previous month, and the company was not handicapped by lack of parts.

The Briscoe Co. has had no freight cars for several weeks, but has been getting parts in good quantity. Officials of the company said that, while March was extraordinary from a production standpoint, it could hardly be said to be the greatest in the company's history. Plans for April, however, contemplate a big increase over March unless the freight strike forces a tie-up.

With the new cars soon to be in production in Detroit and all manufacturers aroused to their keenest efforts by insistent demand, the scheduled output will probably exceed the announced total.

The production schedules outlined by the various companies for the year are being adhered to quite closely. Ford was listed to make 1,000,000 in 1920 and turned out, during January, 96,000; dur-

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ing February, 77,000; and during March, approximately 100,000.

The Buick Motor Co. scheduled 200,000 for the year and made in January and February, respectively, 15,000 and 14,000 cars. The Overland output for 1920 was listed also at 200,000, and 13,000 cars were made in January and 16,000 in February.

Other large schedules for 1920 were as follows: Chevrolet, 120,000; Dodge, 120,000; Oakland, 100,000; Maxwell, 80,000; Studebaker, 80,000; Willys-Knight, 80,000; Oldsmobile, 80,000.

Where Competition Will Be First Felt.

In spite of this greatly augmented output, sales competition is sure to be felt, and this will probably first manifest itself in cars in the class costing from $3000 to $4000. The demand for lower priced cars is so great at the present time that it will probably keep up for a considerable time after the active demand for the higher priced product has been met. Ford alone is 235,000 cars behind orders, and at the present rate of 3000 a day this is approximately three months' production, and this does not include the requirements of hundreds of dealers who, realizing the difficulty of securing deliveries, are holding off and in the meantime are either buying used cars or holding on to cars that would ordinarily have been turned in.

Shipments for March.

The tremendously increased production of automobiles, in spite of unprecedented transportation difficulties, was reported at a late meeting of the directors of the National Automobile Chamber of Commerce in New York City. It was shown that the shipments for March would approximate 28,000 carloads, compared with 23,744 carloads in March, 1919, while more than 46,000 cars, or an additional 13,000 carloads, were driven away from the factories the past month.

Shipments for January and February of this year totalled 46,812 carloads, compared with 36,191 in the same period last year. It should be noted that the plan of drive-aways from factories has now, of necessity, become an important factor in partially solving the problem of deliveries. In the first two months of 1920 the drive-aways from factories numbered 57,482 machines, or 16,500 freight carloads. One Ohio manufacturer reports that 600 cars were driven away in one day from his factory last month, while one in Detroit made a drive-away of 500 in one day.

Reports received from the representatives of the traffic division of the National Automobile Chamber of Commerce indicate a slight increase in the supply of freight cars for the automotive industry. The situation is still very serious, however, and constitutes the greatest present handicap to manufacturers. Orders for supplies are accepted more readily, but the difficulty is in getting them delivered. Some manufacturers are using coal cars for the shipment of automobiles. They have designed special cranes for hoisting them into the gondolas and cover them with tarpaulins for protection from the weather.

At present rate of production, motor cars manufactured in America in 1920 will reach 2,250,000 mark predicted by most sanguine promoters of automotive industry at opening of season. Over 500,000 cars have already been turned out in first quarter of year and the usual high production months are still to come.

Total production of passenger cars for March is 176,831 in Detroit alone, and trucks show a corresponding increase—beating all previous months in the history of the industry, at the same time overcoming difficulties in transportation, labor troubles and shortage in materials.

Outlook for future is optimistic—labor situation is easier. Although wages are high, both skilled and unskilled workers are more plentiful. Lack of housing facilities in big manufacturing centers and poor transportation accommodations for workmen are deterrent factors.

Materials, though high in price, are not so scarce, and manufacturing conditions generally are improving.

Shortage in freight cars is somewhat relieved and probable end of tie-up is in sight.

Somewhat better conditions are expected in April, for March is always considered one of the worst months of the year for deliveries, and this year it has been particularly difficult because the rate of production has been very high and the highways generally were in such bad condition that they could not be used as an adjunct to the railroads. This condition has put an added emphasis on the importance of keeping the roads open for traffic the year round.

The Motor Truck Situation.

Reports made to the National Automobile Chamber of Commerce by members of the motor truck committee are reassuring in that they indicate that the commercial car branch of the industry is in excellent shape, and progress in production and shipments are very satisfactory when considered in the light of existing conditions.

Outlook Bright for Trailers.

The Trailer Manufacturers' Association states that as many trailers were manufactured and sold during the first three months this year as for the whole of 1919, and this production would have been still greater if the manufacturers could have secured deliveries of parts and materials; also if they had been able to obtain better facilities for shipping of the finished trailers. The demand has increased satisfactorily during the last six months and a steadily augmenting volume of business is confidently anticipated by the manufacturers.

The factories are reported to be behind on their orders from four to six weeks and, in some cases, have unfulfilled orders on the books to the value of $200,000 to $300,000, which are held up because of the inability to secure deliveries of axles, springs, bearings, castings, forgings, and even bolts and other small hardware. Severe winter storms, freight embargoes and the recent railroad strike have prevented or greatly interfered with shipments of finished trailers during the winter and early spring. Despite these handicaps, however, shipments have increased each month and, as conditions approach normal again, the production will rise proportionately.

Manufacturers are well satisfied with the sale situation, as if orders had come in more freely, they could not have been filled under the conditions that have prevailed. Buying has been distributed all over the country as well as extended to foreign countries.

Parts Situation Improved.

At the present time there seems to be more difficulty in getting the cars out of the factories than there is in getting parts into them. The steel situation has become noticeably less acute and there are fewer instances of concerns being held up for important parts, although the situation is by no means entirely clear, as there are still cases reported where manufacturers have been hampered by the inability of securing certain necessary units.

Labor Is More Plentiful.

The labor situation is reported as being easier. While wages are high, workers are plentiful and there is no shortage of skilled or experienced men. The acute housing conditions around the factory districts are, however, detrimental to a full production schedule. It is estimated that in Detroit alone there are 35,000 families not supplied with proper dwellings, and to aggravate this situation, the system of municipal transportation is now affording very poor service and makes it difficult for the laborers to get to and from work. This is a disturbing element which has its effect upon production, but which will not, however, materially curtail the total results.

Increase in Prices.

One outstanding feature of the automobile industry the present season is the general increase of prices for cars which would ordinarily be expected to cut down the demand, but has had no effect at the present time. A general upward revision has been made by more than 50 prominent manufacturers.

The majority of makers have made a flat increase applying proportionately to all models. Such, for instance, are the Chalmers, which has been advanced $150

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on enclosed as well as open types; the Chevrolet, $60 on all models in both its 490 and F. B. lines; the Cole, $200; Dodge, $100; Lexington, $300; and Mercer, $450 on all models, respectively.

The average increase is around $200. On touring models alone, the rise has been approximately eight per cent or, in round figures, $160. Closed models have advanced more proportionately, in some instances, owing largely to the difficulty in getting supplies, but also, in part, because of the unprecedented demand for this style of car.

This is typified in the Buick, which shows an advance of $80 on the K-49 touring, $100 on the K-44 roadster and K-45 touring models, $150 on the K-6 coupe, $200 on the K-50 sedan and $210 on the K-47 sedan. The H. H. Franklin Co. also has raised its price $100 on five-passenger touring cars and two and four-passenger roadsters, while on the broughams and sedans the increase has been $200.

The Liberty car shows increases of $100 on touring car, roadster, speedster, brougham and landaulet-brougham, $130 on coupe and $186 on sedan. The Moon Motor Car Co. has put into effect prices showing a flat increase of $200 on all models of its 6-48 line and of $400 on the 6-68.

The smallest advance noted is on the Willys-Overland, $40, on all models, while the Mercer shows the biggest flat increases, $450 on each type.

The general increase in prices for the most part went into effect March 1, at which time it was predicted in some quarters that this would be followed by another rise in June, as it was stated that since the first advance there has nothing developed to counteract the increase. The added cost of labor and the jump in overhead expense is held to be largely responsible for the increase. The fact that cars have had to be driven away in percentages which range all the way from 25 to 65 is also a factor. It has likewise cost more to get materials to the plants. In a great number of instances express shipments have had to be made on parts that would ordinarily come by freight. Taken by itself no one of the items is very large, but when the total amount is considered it becomes well-nigh apalling.

Advance in Tire Prices.

The recent general advance of approximately 20 per cent in automobile tire prices is another item which means much to the car maker. The increased cost of a set of four tires ranges from about $10 a car where 30 by 3½-inch shoes are used, to $30 or $40 a car for the larger sizes. Nor should the fact that nearly all materials, parts, etc., have been augmented in price be overlooked.

Upward Tendency Thought to Have Reached the Peak.

In a general way it is thought, however, that the repricing movement has reached the peak. In the first place, a majority of the more important lines have now been adjusted. Again, prices which are not advanced within the next 30 days are likely to remain intact through the balance of what is known as the manufacturing season, barring unforeseen contingencies. With the active driving season coming on and the market still short of cars, dealers who are able to make deliveries on new sales would be, in many cases, seriously embarrassed by an upward price movement coming after most of the manufacturers were all set for the summer run of trade.

There will also be a tendency for price reduction when the competitive market is reached, and it may be possible that this will have its effect on labor, due to the pressure exerted on manufacturers by dealers who will then become more insistent on closer prices, and wages might be in some degree reduced, although it is not to be expected that any material reduction will take place for a long time.

There is also to be considered the fact that another 60 or 90 days will see the beginning of the announcement of the 1921 models, in connection with which price adjustments will be readily and almost automatically accomplished, for, with the models coming in, higher prices for the old will be proportionately more difficult to maintain.

Automotive Industry an Illustration.

The unprecedented progress in the automotive industry furnishes an apt illustration of the truth that the limits to industrial development constantly recede as the industry itself advances. Industrial leaders, in the early part of the 19th century, talked about the limits to this, that and the other industry, but the growth they observed was as nothing compared with subsequent developments.

Methods of manufacture changed, unadaptable equipment was discarded again and again, but the industries themselves continued to develop and multiply every year that the wise observers predicted that the limit of that development had been reached.

Thus it will be seen that no one can as yet set any bounds to the automotive industry and, on this basis, manufacturers can go on, without fear for the future, making improvements in design and perfecting old and setting new standards in order to best adapt their products to meet the constantly changing conditions and variations in the market.

The general increase in prices of cars has caused no falling off in demand. Average advance is about $200 on some 50 leading lines. Touring cars alone have gone up about eight per cent since Jan. 1. Advance in cost of labor, materials and equipment the principal causes, while transportation difficulties, necessitating a large percentage of drive-aways, has also contributed.

Although a further increase in car prices is predicted in some quarters, it is more generally believed that the peak has been reached, with the manufacturing season well under way and the time for the appearance of 1921 models approaching, when prices will be readily and almost automatically adjusted for the following season.

While the supply of lower priced cars cannot possibly meet the demand for months to come, the competitive period on the more expensive lines will undoubtedly be reached earlier, as manufacturers have more nearly kept pace with orders, and this competition will probably first be felt by dealers in cars of the $3000 to $4000 class.

SERVICE MANAGERS' CONVENTION AT INDIANAPOLIS.

As its first important function the newly created service division of the National Automobile Chamber of Commerce will hold a convention at Indianapolis, May 24 to 26. In most professions or vocations there is a fairly definite understanding as to what the patron may expect from the party supplying the service or commodity, and vice versa, but this is not universally true of automobile and motor truck service, chiefly because these industries are still in their youth and have been absorbed in more imminent problems. It will be the effort at this convention to consider how best to bring about a more universally accepted conception of just what are the responsibilities and privileges of all parties concerned.

The programme as laid out will treat of the service situation first outside of the service department and then inside. Following are the topics more in detail:

"The Salesman's Functions in and Attitude Toward Service from the Sales Point of View," "The Same from the Service Department's Standpoint," "The Owner's Viewpoint as to His Responsibility and What He Expects in the Way of Service," "The Same as the Service Department Sees It." This group of papers from without the service department will occupy the first day and on the second there will be considered the internal affairs of the service department, under the following heads:

"Method of Estimating and Charging for Service on a Flat Rate Basis," "Repair Shop Efficiency Methods," "Stock Room Efficiency Methods," "Service Salesmanship."

The third day of meeting will be devoted to visits to local plants to study layout and conduct of service departments.

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Shortage in Oils and Gasoline Threatened

ALL of the oil and gasoline consuming industries in the United States, including automobile manufacturers and users, as well as railroad and steamship lines, are threatened with a serious shortage, unless prompt measures are taken to obviate the preemption by other nations of oil fields in foreign countries, particularly to halt the confiscatory legislation and decrees of the Mexican government aimed at American owned and operated companies in that country. Another element which enters into the situation is the continual export in immense quantities to foreign countries of mineral oils produced in American fields.

The latest figures on the world's oil supply, compiled by the United States Geological survey of the Department of the Interior, show that foreign countries are using only half as much petroleum as the United States, but have seven times as much oil left in the ground. These countries are now using about 200,000,000 barrels of oil yearly, but they have resources large enough to last more than 250 years at this rate of consumption. In striking contrast are the production figures for the United States which, at the present rate of more than 400,000,000 barrels a year, has only an 18-year supply. In other words, the United States is using up its own oil supply 14 times as fast as the rest of the world.

"Not counting all oil to be obtained from shales and other recoverable materials by distillation," the report from the Geological Survey states, "recoverable petroleum amounts to as much as 60,000,000,000 barrels. Of this amount 45,000,000,000 barrels may be regarded as oil more or less definitely 'in sight' as shown by actual drilling with successful results. The remainder covers the available oil which it is believed will be found in other regions in which oil seaps, asphalt deposits or favorable geological conditions point to oil, although no producing wells have yet been drilled. Of this great amount, which is 13 times the oil already taken from the ground in America and about nine times all the petroleum yet produced in the world, 7,000,000,000 barrels only, in round numbers, are believed to be left in the United States and Alaska, the remaining 53,000,000,000 being in foreign countries.

The United States Bureau of Mines has also just issued a warning of the probability of an actual shortage of gasoline before the end of the summer as a result of the disproportionate increase in gasoline production and the number of automobiles in use. With the number of automobiles and trucks now in use, estimated to be 25 per cent. greater than last year, it is stated that gasoline production increased only 11 per cent. in February and 20 per cent. in March.

Exports Far Exceed Imports.

In regard to the factor of exports and imports, the accompanying tables, compiled from the monthly summary of the foreign commerce of the United States, issued by the United States Department of Commerce, shows the exports and imports of crude and refined mineral oils both for the month of February, 1919 and 1920, and also for the eight months ending in February for the past two years.

It will be noted that the total exports of mineral oils exceed the imports for the periods named as follows: February, 1919, 3,448.521 gallons; 1920, 8,880,566 gallons. Eight months ending February, 1919, 497.927,265 gallons; 1920, 74,187,802 gallons. A comparison of these excess exports shows that while the excess for February, 1920, over February, 1919, increased 5,432,045 gallons, the excess for the eight month periods was 423,734,463 gallons less in 1920 than what it was in 1919.

It should be borne in mind in making these comparisons, however that the export figures for fuel and gas oil do not include fuel or bunker oil laden on vessels engaged in the foreign trade, as indicated by the foot note in the export table.

A glance at the import table will also show that imports of crude oil from other countries than Mexico were comparatively negligible and that the great bulk of imports to this country in the periods cited came from that country.

Chairman Payne of the United States Shipping board, in a recent letter to President Wilson and Former Secretary of State Lansing, warned them that unless the confiscatory programme of the Mexican government with respect to American owned oil properties was halted, the operation of the American merchant marine would be seriously embarrassed. He pointed out that the United States depended on the Mexican supply to the extent of 40,000,000 barrels for the bunkering of the emergency fleet for the period ending April, 1921.

The effect upon the United States and its industries of any interference with the production and import into the United States of Mexican petroleum is further shown when it is considered that while American produced oil now supplies the major portion of the gasoline and kerosene, as well as all the lubricants used in this country, over 90 per cent. of all the fuel oil used on the Atlantic and Gulf coasts, both for bunkering ships and for industrial purposes, is derived from Mexico, and is being used at the present time at the rate of about 60,000,000 barrels a year (increased from 38,000,000 barrels in 1918).

And unless the rate of production of American petroleum can be greatly increased, which seems doubtful considered in the light of government reports quoted above, America must rely for its increased uses of gasoline on importations, as well as for all increases in the use of fuel oil.

EXPORTS FOR FEBRUARY.

	1919		1920		EIGHT MONTHS ENDING FEBRUARY. 1919		1920	
	Quan. Gals.	Value	Quan. Gals.	Value	Quan. Gals.	Value	Quan. Gals.	Value
Crude	7,706,912	$415,461	33,475,701	$2,146,403	124,806,206	$7,848,396	239,379,892	$14,487,427
*Fuel and gas	36,948,721	1,848,674	49,556,877	2,389,736	718,455,825	40,751,639	405,025,913	20,693,595
Illuminating	67,336,063	7,566,586	75,679,113	10,355,580	373,891,510	40,344,265	648,514,866	84,739,015
Lubricating	26,882,435	9,308,520	33,230,151	11,227,878	177,5[illegible]5,922	58,048,731	187,791,748	58,727,118
Gasoline	20,752,338	4,835,982	17,909,785	4,252,168	255,668,414	61,327,255	171,432,927	40,272,402
Naphtha, etc.	6,212,426	1,537,870	14,390,889	3,665,538	104,7[illegible]0,920	28,152,382	80,743,981	21,901,041
Residuum	.....	.....	2,487,225	147,037	54,429	3,470	48,230,342	2,703,997
Total refined	158,131,983	25,097,632	193,254,040	32,038,937	1,630,417,020	228,627,742	1,541,739,777	229,037,166
Grand total	165,838,895	25,513,093	226,729,741	34,185,340	1,755,2[illegible]3,226	236,476,138	1,781,119,669	243,524,593

*Does not include fuel or bunker oil laden on vessels engaged in the foreign trade, which aggregated during the month and eight months ending in February, as follows: 1919, 682,226 barrels, valued at $1,531,890; 1920, 1,548,416 barrels, $3,187,131; eight months ending February, 1918, 3,787,690 barrels, $5,330,270; 1919, 4,892,060 barrels, $9,854,167; 1920, 12,257,233 barrels, $25,191,881.

IMPORTS INTO UNITED STATES.

	FEBRUARY. 1919		1920		EIGHT MONTHS ENDING FEBRUARY 1919		1920	
	Quan. Gals.	Value	Quan. Gals.	Value	Quan. Gals.	Value	Quan. Gals.	Value
Crude	153,536,320	$1,799,635	207,478,471	$2,447,530	1,218,005,601	$15,515,124	1,657,780,718	$19,760,749
Mexico	153,532,800	1,799,489	207,476,329	2,447,431	1,217,340,450	15,504,590	1,656,071,639	19,730,862
Other countries	3,520	146	2,142	99	665,151	10,534	683,681	11,577
Benzine, naphtha, gasoline	6,042,410	1,171,342	6,555,990	817,179	10,264,663	1,814,577	13,459,234	1,542,164
Other refined	2,811,644	205,908	3,814,714	246,992	29,025,697	2,052,356	35,691,915	2,458,450
Total	162,390,374	3,176,885	217,849,175	3,511,701	1,257,295,961	19,382,057	1,706,931,867	23,761,363

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Personal News of the Industry in Brief

Quinlivan with Bailey-Drake Co.

H. E. Quinlivan, formerly with the Splitdorf Electrical Co., is the new New York and New England states representative of the Bailey-Drake Co., Chicago, Ill., the well known distributor of automotive products. Mr. Quinlavan has had a successful experience in connection with the sale of electrical and general automotive accessories and his new appointment gives him a broad field of representation for the standard products distributed by the Bailey-Drake Co. This concern was established in San Francisco in 1908, but its rapid growth rendered necessary a general headquarters more centrally located, so these were established at Chicago. Its activities now cover the entire United States and Canada, and large branches have been established in New York City, Detroit, Atlanta, Ga.; Dallas, Tex.; Kansas City, Mo.; Minneapolis, Minn.; Seattle, Wash., and San Francisco.

Russell L. Engs, metropolitan distributor for Cole motor cars, has purchased the property at 1845-1847 Broadway, New York City, adjoining the northwest corner of 60th street. This building is now under lease to the Colt-Stratton Co., distributor for Dodge Brothers cars, and to the Auto Dealers' club. The structure has a somewhat noteworthy reputation as a restaurant headquarters, housing as it did the initial venture of George Rector, and having also been occupied by Louis Martin and Bustanoby. The property was held at $400,000.

Fred D. Newland is president of the firm of Davis, Newland & Wilson, Inc., Buffalo, N. Y., which represents the American Six line in that territory. Mr. Newland was connected with the Studebaker Corporation when that concern started to make automobiles, and later became assistant sales manager of the Lion Motor Co., Adrian, Mich. He more recently became interested in an agency at Buffalo for Paige cars. The treasurer of Davis, Newland & Wilson, Inc., is George W. Davis.

George S. Waite, sales director of the Grant Motor Car Corporation, Cleveland, O., is on a tour of cities west of the Mississippi river and will remain in that section for about two months. Before leaving the factory Mr. Waite announced that his company would take no more foreign orders for the Grant Light Six car for the present on account of the difficulty in filling domestic orders. However, orders for export, already booked, will be filled.

F. L. Waite, for seven years advertising manager with the Reo Motor Car Co., Lansing, Mich., has announced his resignation. His future plans are not yet announced, but it is understood that he will not leave the automotive industry.

A. L. Lockwood, president of the Lockwood-Ash Co., Jackson, Mich., manufacturer of Sterling spark plugs and marine engines, has returned from a business tour through the South.

H. E. Quinlivan, New York and New England States Representative Bailey-Drake Co.

R. H. Losey, head of the Losey-Nash Co., Indianapolis, Ind., has taken over the distribution of the new LaFayette car in the State of Indiana, which will be handled through a separate organization, the Losey-LaFayette Motor Co., of which Mr. Losey is president and general manager. Three floors of the building at 408 North Capitol boulevard will be remodeled as headquarters for this new interest.

Harold S. Pierce, formerly engineer in charge of chain drive layouts on automobile work with the Linkbelt Co., Philadelphia, has become chief engineer of that concern, and William H. Bond will assist him in handling motor drive work. Harry Reiser, for many years in the engineering department, a portion of the time as production manager, has been made sales engineer, acting also as customer's representative at the factory.

James M. Fitzgerald has become Cleveland distributor for the new Lincoln car, made by the Lincoln Motor Co., Detroit. Mr. Fitzgerald entered the automobile trade 15 years ago with the White Co. and later, up to last March, had charge of Cadillac sales in Cleveland. He has organized the James M. Fitzgerald Co., with temporary offices in the C. A. C. building.

F. E. McKone has succeeded Herbert Chase as assistant secretary of the Society of Automotive Engineers. Mr. McKone has been at the headquarters of the society since last September. He was formerly with the Todd Dry Dock & Construction Co., Tacoma, Wash. Mr. Chase has joined the Power Plants Corporation, Washington, D. C., which is engaged in the development of engines for automobiles and other uses, capable of burning low-grade fuels.

Cooper is Manager Keystone Truck

M. S. Cooper has severed his connection with the sales department of Willys-Overland, Inc., Toledo, O., to become sales manager of the Keystone Motor Truck Corporation, Chestnut and 42nd streets, Philadelphia, which concern is to make a new one-ton truck to be known as the Keystone. Mr. Cooper has been with the Willys-Overland Co. for the past six years continuously, with the exception of 14 months spent in France, when he was commissioned a major in the Motor Transport Corps, United States army. While with the Willys company he was in charge of the commercial car division of the sales department and more recently was handling quantity sales.

Myles B. Lambert, for many years actively connected with the Westinghouse Electric & Manufacturing Co., East Pittsburgh, Pa., has been appointed manager of the railway department of that company. Mr. Lambert joined the Westinghouse forces in 1901 in the railway department, being assistant to the manager before his recent promotion. His earlier business experience was with the Long Island railroad, then operated by steam, and he subsequently entered the employment of King's County Elevated railroad, Brooklyn, later becoming division superintendent.

John A. Randolph of the Westinghouse Electric & Manufacturing Co., East Pittsburgh, Pa., recently died from pneumonia at the Columbia hospital, Wilkinsburg, Pa. He was graduated from Syracuse university in 1903 and was engaged in engineering and writing technical literature for trade magazines. He was also for a time interested in the activities of the Society for Electrical Development, New York City.

L. R. Remington, manager of the Philadelphia branch of the Bearings Service Co., has been transferred to Chicago, where he will serve in a similar capacity. J. A. Barnett, who has been assistant branch manager at Philadelphia, succeeds Mr. Remington in that city, and F. C. Fuller of the Detroit branch has been appointed manager of the Cleveland office.

Robert H. Salmons, vice president of the Selden Truck Corporation, Rochester, N. Y., in charge of foreign business, has sailed for an extensive trip to the West Indies, to include Cuba, Haiti, Santo Domingo, Porto Rico and Jamaica.

Thomas P. C. Forbes, formerly with the Fulton Motor Truck Co., H. A. Lozier Co. and Monarch Motor Car Co., has taken over the distribution for New York of the Ferris, the new $3500 model car manufactured by the Ohio Motor Vehicle Co., Cleveland, O.

Arthur Curren has taken over all the interests of the Auto Sales & Storage Co., North Liberty street, Independence, Mo.

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A. L. Ellis, New Production Manager, Jenkins Vulcan Spring Co.

Ellis with Jenkins Vulcan Spring

A. L. Ellis is the new production manager of the Jenkins Vulcan Spring Co., Richmond, Ind. He was formerly with the spring division of the Detroit Steel Products Co., and his experience in the production of leaf springs extends over a period of 20 years. Mr. Ellis will have full charge of production to meet the demand of more than 8000 Vulcan dealers in all parts of the United States and Canada.

Ed McCullough is president of the McCullough-Davies Co., a new concern recently incorporated at Waco, Tex., which has established headquarters at the corner of Third street and the Square for the distribution through Central Texas of automobile parts manufactured by the General Motors Co. The line will include G. O. tractors, Oliver farm implements, Cape New Model separators and Western Electric Co. farm lighting plants. The McCullough-Davies Co. will also operate a branch at Dallas at 508 Griffith street. Other officials of the concern are Prentiss Davies, vice president and general manager; Leland G. McCullough, secretary and treasurer; W. H. McCullough, member of board of directors.

G. W. Kenney is the manager of the G. W. Kenney Motor Co., which has succeeded the Howard-Spence Co. as distributor at Waco, Tex., and vicinity, of Reo cars and trucks, Studebaker cars and Firestone tires. Mr. Kenney was formerly manager of the F. L. Shaw Co. and was later connected with the Howard-Spence Co., in the same capacity. The new firm will continue in business at the old stand of the Howard-Spence Co., 822 Austin avenue.

Guy Beardsley, a Binghamton, N. Y., newspaper man, has taken the agency for Oakland cars in that city, under the name of the Binghamton Oakland Co., and is located in the new building at 48 Collier street. Mr. Beardsley was allotted 300 Oakland cars for his territory.

Alec J. Mayberry, for many years manager of the United States Rubber Co., Boston branch, and known in the rubber trade throughout New England, died suddenly at his home at Allston, Mass. He was born at Bangor, Me., 49 years ago, and entered the rubber business in the early 90's. From 1900 to 1910 he was with the Tremont Rubber Co., Boston, and after that time was president and treasurer of the Springfield Rubber Co. until his connection with the United States Co.

I. D. Cross, who has been representing, in the western states, the Northwestern Chemical Co., Marietta, O., manufacturer of Norwesco "Chemically Correct" automotive utilities, was recently promoted to the office of western sales supervisor. Mr. Cross is an experienced salesman of automotive equipment and now assumes charge of the entire western field with considerable of a sales organization under his direction.

Walter H. Yeager, formerly located at 682 Beacon street, Boston, has moved into more commodious quarters at 983 Commonwealth avenue, where he will continue to conduct an auto service station. Mr. Yeager specializes on the repair of Cadillac cars and is also the New England distributor for sales and service of Heinze-Springfield starters for Ford cars.

H. K. Dobson, who went to Columbus, O., in 1911, from the management of the Studebaker Boston branch, to join the sales force of the Twyman Motor Car Co., and in 1912 organized the Everitt Auto Sales Co., becoming state distributor of the Everitt car, retains the office of president and general manager of the Dobson Auto Sales Co., 207 North Fourth street, recently incorporated to succeed the Everitt Auto Sales Co. The company is Central Ohio distributor for Maxwell and Chalmers cars.

George G. Norwood, until recently sales manager of the Lambert Automobile Co., Mount Royal and Maryland avenues, Baltimore, Md., distributor of Hudson and Essex cars, has been made manager of that concern. Mr. Norwood associated himself with the Lambert Co. in 1916 as manager of the used car department. He was made sales manager at Baltimore a year ago and now succeeds L. E. Lambert as manager.

C. H. La France of the sales department of the Franklin Automobile Co., Chicago, has been appointed general manager of Franklin Products, Inc., Syracuse, N. Y., which concern is engaged in the manufacture of the Brown rubbing machine, invented by Spencer Brown of the H. H. Franklin Manufacturing Co. This device is designed to supplant hand rubbing on paint jobs.

J. A. Dove, a well known Newport News, Va., druggist, has entered into partnership with M. N. Carter in the automobile business, under the style of Dove-Carter Auto Co. They have the agency for the Patterson Six automobile, and maintain a service station and show room at 29th and Jefferson avenue, that city.

Stevens Heads Goodrich Highway

Major A. G. Stevens, highway transportation expert of the Council of National Defense, has been made head of the highway transport division of the Goodrich Travel and Transport Bureau, Akron, O., of which Raymond Beck is chief. Before entering government service when the United States entered the war, Major Stevens was engaged in railroad tariff compilation, in which work he was considered an authority. Because of his experience he was placed in charge of the section of the finance division of the War Department which issued railroad freight charges. Amounts handled by his department often totalled $30,000,000 a month. After the war Major Stevens was assigned to the Council of National Defense to make a comprehensive survey of highway transportation throughout the country. He compiled data showing the comparison between railway, waterway and highway rates, obtained reports from all agencies interested in motor express development, and gathered accurate figures on operating costs in various sections. In his present work Major Stevens will correlate all available information on highway transportation, make analysis of engineering features of motor trucking and issue bulletins containing a digest of all matters of interest.

Bruce E. Adams has been promoted from the office of secretary and sales manager to the presidency of the Magnetic Motors Corporation, Chicago distributor of Rauch & Lang electrics and Peerless and Stevens-Duryea gasoline cars. Richard S. Griefen was elected vice president and succeeds Mr. Adams as sales manager.

L. M. Corbin, for the past year with the Ohio Auto Sales Co., has joined the sales force of the Stearns Motors Sales Co., 1424-1426 East Main street, Columbus, O., distributor of Stearns and Liberty cars.

M. Tanksley and C. J. Nelson have opened a garage at Cotte, Ark., under the name of Baxter County Motor Co.

Major A. G. Stevens, Head of Highway Transport Division Goodrich Travel Bureau.

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Manager Miles Goes Abroad

S. A. Miles, the well known manager of national automobile shows, has sailed for a trip abroad, including England, France and Italy. He will secure first hand information regarding automobile and general foreign trade conditions for the members of the National Automobile Chamber of Commerce, and will represent that organization at the meetings of the Bureau Permanent Interallie des Constructeurs d'Automobiles of which the American body is a member. Consideration will be given at these meetings to the subject of tariffs, brought up at the request of the American manufacturers for a reduction from 45 to 30 per cent. in import duties on automobiles and also to the question of further cooperation in standardization, shows, etc.

Manager Miles of National Shows, Who Is Now Abroad.

Louis Sachs is president of the Enterprise Garage, Inc., which recently opened for business at Virginia avenue and 34th street, Newport News, Va. The Enterprise Garage is agent for Kissel Kar, Stearns-Knight, Grant Six and Maxwell automobiles, and Mack, Paige and Atlas trucks, and is also distributor for U. S. L. batteries and Thermoid and Victor tires. The other officers are E. S. Phillips, vice president and treasurer, and Henry Sachs, secretary.

R. J. W. Hamill, and his son, **George R. Hamill,** have formed the Hamill Motors Co., Inc., at Baltimore, Md., to distribute Briscoe cars and trucks. For 15 years R. J. W. Hamill has been closely identified with the automobile industry in that city and was lately connected with the Monumental Motor Car Co. He has leased, for the new concern, the building which was occupied by the Monumental company at the southeast corner of Maryland and Mount Royal avenues. George R. Hamill is to be secretary and treasurer of the Hamill Motors Co.

James Sweeten, Jr., who was recently appointed distributor of Lincoln motor cars in Philadelphia affords an example of a somewhat unusual career from country store keeper to a motor car merchant of the first rank. In taking on the new Lincoln line Mr. Sweeten will establish a sales and service station which will be one of the largest and best equipped in his territory. His first place of business in Philadelphia was at 37th and Spruce street. In 1912 he moved from his store in Pennsgrove, N. J., and devoted himself entirely to the automobile business. By that time he had built a two-story building at 3430 Chestnut street. Three years ago, operating as the Sweeten Automobile Co., he established at a separate location a used car department known as the Sweeten Used Car Clearing House and leased an additional building for an overhaul department and also acquired a warehouse for storing cars. All of these facilities becoming inadequate for his constantly increasing business, in the fall of 1919 he purchased the Parkway building, at Broad and Cherry streets, and later purchased the Union Transfer building, a four-story structure adjoining his main building, with a four-story service station directly in the rear. Pending the completion of alterations on the Parkway building, his sales department is located at 441-451 North Broad street.

George F. Bauer has been engaged by the National Automobile Chamber of Commerce to be secretary of its foreign trade department to succeed H. R. Cobleigh, who has been made secretary of the new service department which has been established by the chamber for the purpose of bringing about further standardization and better service conditions in automobile plants and in the headquarters of their distributors and dealers. Mr. Bauer has been commercial agent on the staff of the New York office of the Bureau of Foreign and Domestic Commerce, with the tariff question and foreign statistics as his specialties. He will work in cooperation with the foreign trade committee of the chamber, which consists of J. Walter Drake of the Hupp Motor Car Corporation, Detroit; Peter S. Steenstrup, General Motors Co.; H. M. Robins, Dodge Brothers, Detroit; Jay Rathbun, White Motor Co., Cleveland; R. T. Williams, Willys-Overland Co., Toledo; J. P. Robe, Studebaker Corporation, South Bend, Ind., and H. B. Phipps, Hudson Motor Car Co., Detroit.

Jesse E. Smith, Edward M. Kernan and Edward R. Kernan are in charge of the Oakland Agency, 180 West Main street, Waterbury, Conn., and in addition to the show room are to operate a service station on Watertown avenue in the building formerly occupied by the Reo Agency.

Henry L. Bill, who has been in charge of production for the Winton Co., has been elected a vice president of the Saxon Motor Car Corporation and will fulfill similar duties for the latter concern.

W. C. Durant, president of the General Motors Corporation, was recently elected to the directorate of the Lincoln Highway association.

Gilmore Takes Over Mercer Agency

R. J. Gilmore, formerly president of Packard Motor Car Co. of New York, is the head of Gilmore Motors, Inc., of Boston, which recently took over the representation for Mercer cars in New England. Mr. Gilmore is a native of Boston and was graduated from the Lawrence Scientific school at Harvard university in 1909. After leaving college he went to Detroit and entered the Packard factory in the engineering department. He later went into the sales department and became sales manager of the Philadelphia branch. He next joined the New York branch of the Packard Co., soon becoming territorial manager, later being promoted to vice president and assistant general manager and eventually becoming president. Mr. Gilmore was very active among the dealers' associations of

H. G. Root, New President Springfield Employers' Association.

New York and was chairman of the executive committee of the New York Automobile Dealers' Association. When war broke out he was one of the first civilians to become a military aviator, and was in charge of the engineering division of the aviation field at Mineola. In assuming charge of the Mercer interests in New England, Mr. Gilmore is continuing his former associations with Emlen S. Hare, former vice president of the Packard Motor Car Co. of Detroit, who sometime ago accepted the presidency of the Mercer Motors Co. of Trenton, N. J.

J. F. Stacy, the new sales manager of the Buick branch at Buffalo, N. Y., was, prior to his promotion, a traveling representative for that concern. He succeeds Mr. Fletcher, who was recently made manager of the Buffalo Buick branch when former Manager Browning was transferred to another city.

H. G. Root, general manager of the Westcott Motor Car Co., has been chosen president of the Springfield, O., Employers' Association. Mr. Root was president of the Springfield Chamber of Commerce last year.

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Well Known Officials in Motor Truck Industry

C. L. Costello, New Sales Manager, United States Motor Truck Co., Cincinnati, O.

H. P. Mills, New Credit Manager for the Acason Motor Truck Co., Detroit.

George D. Wilcox, Director of Sales and Advertising, Commerce Motor Car Co.

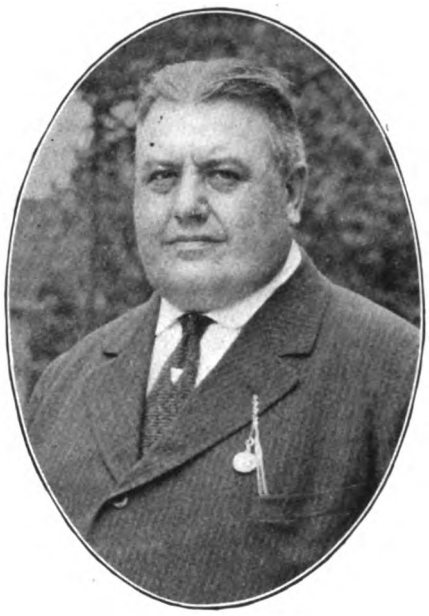
Fisher Promoted by Haynes Co.

Walter H. Fisher, distributor of Haynes cars at Los Angeles, Cal., has had his jurisdiction enlarged to include the entire southern half of the state. This allotment of the additional California counties to Mr. Fisher comes as the result of the retirement of C. H. Haynes, head of the Haynes factory branch in San Francisco. Mr. Fisher will continue to make his headquarters at 917 South Grand avenue, Los Angeles, and his plans include an immediate expansion of his organization to cover the entire lower half of the Golden Gate territory.

Charles A. Tucker, president of the Nebraska Oldsmobile Co. of Omaha, has resigned to become general sales manager of the Olds Motor Works, Lansing, Mich. Mr. Tucker has been engaged in automobile sales work for 20 years and has always been conspicuously successful. During the time he has been an Oldsmobile distributor he has become thoroughly conversant with all the factory's products and policies, and is thus extremely well prepared to undertake his new work.

L. R. Sutherland, for many years connected with the United States Light & Heat Corporation, has joined the sales force of the Burton-Rogers Co., the sales organization for Hoyt electrical instruments. Mr. Sutherland has had a long experience in the storage battery field and will be of great assistance to the Burton-Rogers Co. in developing its service department.

J. E. Forgy, purchasing agent of the Locomobile Co. of America, was elected to the directorate of the National Association of Purchasing Agents at its recent annual meeting in New Haven, Conn., retiring as president of the association.



Forrest J. Alvin, General Manager, United States Motor Truck Co., Cincinnati, O.

T. J. Toner, director of sales for Maxwell and Chalmers cars, announced his resignation following his return from an extended trip to the West coast. Mr. Toner joined the Maxwell forces under Walter E. Flanders in 1910 and, in this decade, it is stated that he developed one of the most remarkable personal followings among automobile dealers of anyone in the industry. Although generally considered an official of the Maxwell organization, it is stated that a large portion of the credit is due him for the return of the Chalmers car into popularity since 1917, at which time he became sales director of the combined lines.

L. W. Darrow and son, Marvin, of Floral avenue, Johnson City, N. Y., are constructing a building at Johnson City Heights to be used as a garage and automobile sales room and repair shop.

Atkin in Charge Exide Western District

Godfrey H. Atkin, who has been manager of the Chicago office of the Electric Storage Battery Co. for 18 years, has been appointed manager of the recently formed western district and will have charge of all departments for the distribution of Exide batteries, etc., in the territory from Indiana to the Rocky mountains and from Canada to the Gulf of Mexico. Mr. Atkin has been connected with the electrical industry in Chicago since 1889, when he joined the staff of the Thomson Houston Electric Co., which was afterwards merged with the General Electric Co. Taliaferro Milton succeeds Mr. Atkin as manager of the Chicago office.

U. Speck, formerly of the firm of Compere & Speck, Waco, Tex., has taken charge of the service department of the Central Motor Co., which specializes on repairs and adjustments on Dodge Brothers cars, that city, at 16th and Jackson streets. Mr. Speck has had wide experience in the automobile business in general and in the rebuilding of used cars in particular. The service and parts department of the Central Motor Co. employs over 20 men and represents a capital investment of more than $100,000.

J. B. Clarkson, Sydney, Australia, wholesale dealer in automobiles, motorcycles, accessories, etc., sailed from Sydney, March 8, on the steamship Megantic and was scheduled to arrive in New York City via the Panama canal about April 10.

F. L. Waite, for seven years advertising manager with the Reo Motor Car Co., Lansing, Mich., has resigned. Although his future plans have not been announced, it is understood that he will remain in the automotive industry.

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J. H. Wise, Now Pioneering Latin-American Markets for Selden Truck Corporation.

Wise Touring South for Selden

J. H. Wise is touring South America and the Latin-American countries in the interests of the Selden Truck Corporation, Rochester, N. Y., studying the motor truck situation. He has had 18 years' experience in the sale of automobiles in Mexico, Cuba, Spain and Central and South America. Mr. Wise is working under the direction of Gaston, Williams & Wigmore, a large export house, which company handles the Selden foreign business under the supervision of R. H. Salmons, vice president of the Selden Truck Corporation.

C. W. Butterfield has been appointed sales manager of the Herschell-Spillman Motor Co., North Tonawanda, N. Y. He has, for the past four years, been connected with the Dyneto Electric Corporation, Syracuse, maker of automotive products, as sales and service manager, and was also previously engaged in sales promotion work with the Brown-Lipe Chapin Co., Syracuse, and the J. Walter Thomson Advertising Agency, Detroit. The Herschell-Spillman Motor Co., which is nationally known as a quantity producer of 3½ by five four-cylinder and 3¼ by five six-cylinder passenger car and truck engines, is rapidly expanding its manufacturing and sales facilities.

Dwight T. Hersey has assumed his duties as director of sales of the Jenkins Vulcan Spring Co., Richmond, Ind. He was for many years associated with the Splitdorf Electrical Co. both in the capacity of branch territory representative and more recently in the factory sales department at Newark, N. J.

F. G. Harris, manager of the Buffalo, N. Y., branch of United Motors Service, Inc., has been transferred to New York City, and is succeeded by F. L. Willcox, formerly director of service of the Buffalo branch.

Hugo Gibson has joined Root & Van Dervoort Engineering Co., Moline, Ill.

Fred J. Titus has joined the staff of the Renault American Branch, 719 Fifth avenue, New York City, as sales manager. Mr. Titus is a veteran in the automotive business in this country and has long been identified in a prominent way with the marketing of high grade automobiles. He first entered the bicycle business, having a large establishment on Broadway. His automobile career began in 1903 when he was Harry Haupt's right hand man in introducing and marketing the once famous Thomas Flyer in the New York territory. Later he was special representative, established the business in Canada and was sales manager in New York of the Alco, made by the American Locomotive Co., when that car was enjoying no little popularity among high grade automobiles. Since then he has been identified with the Owen Magnetic, having resigned recently the position of sales manager and secretary.

Albert S. Olssen has been designated by Commissioner Cole of the Masachusetts Public Works commission, as acting chief inspector of the motor vehicle registry division, vice Fred L. Austin, resigned.

George J. Chabot has been made service manager by Frank P. Anthony, Boston distributor of McFarlan cars, who recently moved into new quarters at 685 Beacon street.

C. E. Faulaber, general manager of the Little Rock Motor Car Co., Little Rock, Ark., has secured headquarters in the Arcade building.

Carl G. Nelson, who has been for som time one of the most successful salesmen on the staff of the Emerson-Brantingham Implement Co., Rockford, Ill., has been appointed assistant division sales manager. He has a thorough knowledge of farming conditions throughout the West.

Carl G. Nelson, Assistant Division Sales Manager, Emerson-Brantingham Implement Co.

V. V. Torbensen, Inventor of the Torbensen Internal Drive, Now of Eaton Axle Co.

Gil Anderson Returns to Stutz Co.

Gil Anderson, sensational automobile racing pilot and engineer, has returned to the Stutz Motor Car Co. of America, Inc., Indianapolis, Ind., as head of the experimental engineering department. His skill and daring as a driver made him a contender in every big motor classic since his debut as a Stutz pilot in the first 500-mile race on the Indianapolis motor speedway in 1911. Those on the inside know him best as the man who not only successfully drove Stutz cars in all competitive races, but also was responsible for their building. Anderson was with the Stutz company from the very start, having carried on the experimental work of the first Stutz car built, and remained with that company until the time of his going with the Revere Motor Car Corporation some two years ago. His engineering abilities placed him at the head of the production department of the Revere company first as engineer and later as general superintendent.

C. J. Morris, who in the past has been a sales man on the staff of the Automobile Equipment Co. of Scranton, Pa., has joined the sales force of the Luce-Paige Motor Car Co., 324 North Washington avenue, distributor of Paige commercial and passenger cars.

H. S. Block, distributor of Chandler and Cleveland motor cars at Baltimore, Md., has just moved into a new show room and service station at the northeast corner of Cathedral and Eager streets, that city.

W. C. McCormick of Williamsport, Pa., has been appointed a distributor of Artcraft tops, made by the General Top Co., Cleveland, O.

T. D. Meese and C. R. Meese recently purchased the C. A. Kiplinger garage at Erickson, Neb.

William B. Walker, Jr., has become purchasing agent of Dupont Motors, Inc.

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FINANCIAL NOTES OF THE AUTOMOTIVE INDUSTRY

New General Motors Dividend Equals 12½ Per Cent.—Expansion of Industry Shown by Incorporations—Mullins Body Earnings.

NEW GENERAL MOTORS DIVIDEND EQUALS 12½ PER CENT.

The directors of the General Motors Corporation have fixed the dividend rate at 20 per cent. annually on the old shares (par value $100), and a dividend of 1/10 this amount on the new shares, which were issued on the basis of 10 to one of the old. This represents an increase of eight per cent. in dividend disbursements from the rate paid since 1918. Dividends on the old stock are payable quarterly a $2.50 cash and one-fourth in new shares. Holders of new shares are to receive 25 cents and 1/40 of a share of new stock. It is planned to retire the old stock and hereafter dividends will be paid on the new issue.

On a basis of $40 a share for the new no par value common stock, the quarterly dividend of 1/40 of a share would have a market value of $1. Adding the cash dividend of 25 cents a share, the total $1.25 a share would yield 12½ per cent. on the stock selling at 40.

Regular quarterly dividends of 1½ per cent. on the preferred stock, 1½ per cent. on the six per cent. debenture stock and 1¾ per cent. on the seven per cent. debenture stock were also declared.

The annual report of this company, recently issued, shows that part of its cash working capital to provide for its great increase of business last year was gained through the sale of Liberty bonds from its treasury. The $28,852,018 government bonds bought in 1918 were disposed of, leaving bonds valued at $213,218 to be carried as an investment. The report states that of the $7,305,626 due the company on government contracts Dec. 21 1918, all but $304,334 had been collected by the end of last year.

Sales of motor cars, trucks, etc., amounted to $509,676,694, an increase of $183,631,938 over 1918. The number of automobiles and tractors sold was 406,158, a gain of 64.5 per cent. as compared with the preceding year. The profit, before allowing for federal taxes and emergency appropriations, was $90,517,519, an increase of $55,012,943, and the balance left for common stock dividends was equal to slightly more than $36 per share of stock outstanding at the end of the year.

The net working capital shown in the balance sheet totalled $158,754,500 on Dec. 31 last. Cash increased during the year from $30,636,621 to $48,231,200, but none of this growth resulted from the Liberty bond sale. The report states specifically that these proceeds were used for new construction, as was intended when the investment in government paper was made. Inventories were valued at $128,696,651, against $91,137,512.

The company spent during the year $47,741,697 for real estate, plants and equipment, and added more than $42,000,0000 to property accounts through appraisal of property. The item of "good will, patents, copyrights, etc.," was reduced from $35,714,893 to $20,323,888.

The company bought the Fisher Body Corporation during the year, and the financial side of this transaction is displayed in notes payable amounting to $21,840,000. The Fisher Body stock, valued at $27,600,000, figures in the investments.

The year's pay rolls aggregated $104,380,000, and the number of employees on Dec. 31 was 85,980, compared with 49,118 a year before. The number of stockholders, the report states, is in excess of 24,100, of whom 6650 are employees of the comporation.

The number of passenger cars, trucks and tractors sold for the first quarter of 1920 to March 21 being 119,779, as compared with 82,456 for the corresponding period of the previous year, an increase of 45.2 per cent. The net profits for this period, before deducting federal taxes, are estimated at upward of $26,500,000.

EXPANSION OF ENTERPRISES SHOWN BY INCORPORATIONS.

Since Jan. 1 new concerns have been incorporated representing the huge sum of $4,815,118,600, or an increase of 305 per cent. over the figures in 1919, and more than 622 per cent. as compared wiht the showing made in 1918.

Representing $1,375,797,000 authorized capital 1273 new enterprises were incorporated under the laws of the principal states in March, comparing with a total of $370,871,000 in the same month a year ago, when only 550 companies were organized. The February returns this year indicated that 945 new enterprises took out charters, with an authorized capital of $1,158,861,000.

EARNINGS OF MULLINS BODY CO. FOR QUARTER.

The reported earnings of the Mullins Body Co. for the first quarter of this year are approximately $250,000, or at the rate of $1,000,000 a year, and as the big production months are still ahead it is estimated that the profits, after allowance for taxes, etc., are likely to total over $900,000, or the quivalent of $9 a share on 100,000 shares of common stock ater allowance for preferred dividends.

The total sales in March amounted to $406,000, from which resulted a profit of $132,000. For the three months ended with March the profit was in excess of $283,000 before making deuctions for federal taxes.

The Premier Motor Corporation has made an initial offering of its stock. The authorized capital is $2,000.000.

STUDEBAKER CO. DECLARES $15,000,000 STOCK DIVIDEND.

Directors of the Studebaker Corporation declared, on April 6, a common stock dividend of $15,000,000, or 33 1/3 per cent. of the amount outstanding. It was announced that the new shares, which will bring the company's common stock capitalization up to $60,000,000, will carry the cash dividend payable May 5 to shareholders of record April 19. The purpose of this stock dividend was to capitalize a part of the company's surplus, which now stands at approximately $28,000,000.

A. R. Erskine, president of the company, stated that sales of Studebaker cars from the Detroit plant alone in the quarter ending March 31 numbered 14,000, and that the company expected to dispose of 80,000 during the present year. Last year the company produced and sold 39,356 cars, for which it received about $80,000,000. This compared with 65,885 cars in 1916, the previous record year in point of production.

Net profits last year, after all charges and federal taxes, were $9,312,283, equivalent, after deducting preferred dividends, to $28.54 a share on $30,000,000 common stock. Additional common stock of $15,000,000 was issued in December, 1919, making the $45,000,0000 outstanding at the present time. In 1918 the company earned $10.13 a share on the junior stock issue.

Last year was the first year since 1916 in which the commercial operations of the company were not curtailed by the manufacture of military supplies for war purposes. Mr. Erskine has estimated that total sales for 1920 will aggregate $150,000,000.

BIG DIVIDEND FOR COLUMBIA MOTORS CO.

The Michigan Securities commission has given the Columbia Motors Co. of Detroit authority to increase its capital from $500,000 to $6,000,000, and a stock dividend of 700 per cent. will be given the stockholders. New shares will be issued to each stockholder on the basis of eight new shares in return for each share now held at $10 a share. In addition the company will sell 100,000 at par to present stockholders.

A year ago this stock was quoted at $8 a share, while its present market value is reported to be 10 times that figure. Eighteen per cent. was paid in dividends in 1919 and for the past three months dividends have been paid at the rate of six per cent. monthly. The present production is 60 cars a day, with the probability that 100 a day will soon be made. This company is only three years old.

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NOTES OF TRADE AND INDUSTRY

Middleton Joins Kelly Metals Co.

Ray T. Middleton has resigned as general sales manager of the Standard Steel Castings Co., Cleveland, O., to become vice president and director of sales and advertising for the Kelly Metals Co., Chicago, Detroit and Los Angeles.

Mr. Middleton's headquarters will be Chicago, where the Kelly Metals Co. will at an early date establish its principle production plant. The company will continue its present plants in Detroit and Los Angeles and later establish a third branch plant at a point to be selected in the East.

Mr. Middleton's past experience with such concerns as the Brown Hoist Machinery Co., the Elwell Parker Electric Co., the Rhinelander Ball Bearings Co.

Ray T. Middleton, Vice President and Director of Sales, Kelly Metals Co.

and the Steel Products Co. peculiarly fit him for the new duties he assumes.

Mr. Middleton announces additions to the sales staff of his company as follows:

C. G. Germaine, who has represented the standard welding plant of the Standard Parts Co. in the western territory, has resigned to accept the position of western representative of the Kelly Metals Co. with headquarters at Chicago.

S. C. Bohannon of Indianapolis, one of the successful sales representatives of the Hoosier state, has been appointed State of Indiana representative for Kelly Metals Co. with headquarters at Indianapolis. Mr. Bohannon also represents Hartford shock absorbers, Boyce motor meters and Kellogg pumps.

M. E. Simpson, formerly general manager of the Minneapolis Steel and Machinery Co., also of the Toro Motors Co., manufacturer of the Bull tractor, has been appointed representative for the Kelly Metals Co. in the northwest territory, with headquarters at Minneapolis.

DEATH OF ELMER APPERSON, PRESIDENT APPERSON BROTHERS CO.

Elmer Apperson, president of the Apperson Brothers Automobile Co., Kokomo., Ind., died on March 29, while watching an automobile race at the Los Angeles motor speedway, aged 58 years. He was one of the best known figures in the automobile industry having, with his brother Edgar, started in 1894 in the manufacture of one of the first mechanically successful motor cars.

Elmer Apperson was born on the family homestead near Kokomo, Aug. 13. 1861. He came of a good old American family, being a great-great grandson of Daniel Boone, Kentucky's most famous pioneer. He attended the district trade schools in the vicinity of his home and the normal school at Valparaiso. From his early youth he had an aptitude for mechanics. His apprenticeship as a machinist was served in the old Star Machine works in Kokomo, and his first employment as a finished craftsman was in the railroad shops at Peru. In 1888 he established a small machine shop in East Sycamore street, Kokomo, and in 1889 with his brother, Edgar, founded the Riverside Machine Works, on the site now occupied by the south side plant of Apperson Bros. Automobile Co.

The Riverside Machine Works was the first automobile factory in America, although it never assumed that name. In this place Elmer and Edgar Apperson built America's first automobile. Mr. Apperson, in association with Elwood Haynes, organized the Haynes-Apperson Automobile Co., the first automobile company organized in America for the production of motor cars. In 1901 the Appersons withdrew from the Haynes-Apperson Co. and organized the Apperson Brothers Automobile Co., of which Elmer Apperson has been the president since the organization.

Mr. Apperson did not confine his investments to the automobile industry alone, but always manifested a deep interest in Kokomo's commercial growth. He was a director in the Kokomo Trust Co. and a stockholder in the Curtiss-Indiana Co.

Fraternally Mr. Apperson was a member of the order of Elks. He was a member of the South Shore Country club of Chicago, the Chicago Athletic Association, the Burgesses Corps of Albany, N. Y., and the Kokomo Country club. In politics Mr. Apperson was Republican and his religious affiliation was with the Presbyterian church.

Mr. Apperson was united in marriage with Catherine Elizabeth Clancy, the daughter of Matthew Clancy of Chicago, in 1912. He is survived by the widow and two brothers, Oscar W., who resides on the Apperson homestead in Taylor township, and Edgar Apperson, Kokomo.

During the 5½ years of war in France, not a single automobile was sold to a private individual in that country.

Expansion Plans of Buick Co.

H. H. Bassett, the recently elected president of the Buick Motor Co., Flint, Mich., announces an expansion programme representing a series of the most pretentious developments in the history of the Buick Co. They involve the expenditure, during 1920, of approximately $10,000,000, $7,500,000 of which will be invested in new buidings and equipment at Flint, and the balance in the erection of a new assembly plant at St. Louis.

The new buildings at Flint include a four-story transmission plant, enamelling and motor test buildings, central power plant, drop forge shop, heat treating buildings for motor shop, hardening

Elmer Apperson, Late President, Apperson Brothers Automobile Co.

rooms for tool plant, extension to aluminum foundry, addition to garage building, pattern shop, pattern storage, filling station and central oil house.

MOODY MOTOR SALES BECOMES HAYNES DISTRIBUTOR.

The Moody Motor Sales Co., 128-130 Mason street, Milwaukee, Wis., prominent automobile dealer, has acquired the exclusive selling right for Haynes cars throughout practically the entire state of Wisconsin, according to a recent announcement by S. M. How, general sales manager of the Haynes Automobile Co., Kokomo, Ind.

The members of this new Haynes distribution firm, Joseph Moody, president; Charles R. Moody, vice president, and Chester Moody, secretary and treasurer, are well known to the motoring trade of Milwaukee and vicinity.

Pennsylvania has 2419 farm tractors in operation throughout the state.

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Schweinert is President of Schrader's Son Co.

M. CHARLES SCHWEINERT has been elected president of the well known automotive tire accessory concern of A. Schrader's Son, Inc., Brooklyn, N. Y., to succeed Dr. Charles K. Cole, deceased. Mr. Schweinert entered the employ of the Schrader company 34 years ago as an office boy and has been associated with it ever since during its growth from a three-story factory at 32 Rose street, New York City, to its present seven-story fireproof building occupying the entire block at Atlantic and Vanderbilt avenues, Brooklyn.

The new president has long enjoyed a wide popularity among the men who made and now direct the tire industry of the country. Every improvement brought to the manufacture of tire valves, every saving made in the cost of their manufacture, every widening of their use, has found him an active contributor thereto. It was due to his untiring energy and long foresight that at no time the rapid increase in the manufacture of automobile tires overtook the output of valves to fit these tires.

M. Charles Schweinert, New President, A. Schrader's Son, Brooklyn, N. Y.

Dealers in automobile accessories throughout the country are indebted to Mr. Schweinert for the Schrader sales policy, which is based upon a license agreement and which is designed to permit the smallest dealer to reap the same profit through his sales as the dealers in large cities. This has resulted in giving to the Schrader products a nation-wide distribution and has prevented the use of these products in the demoralizing practise of price cutting.

Mr. Schweinert is also credited with having developed the export department of A. Schrader's Son. It was due to his initiative that the company established factories both in Canada and in England. Under his able management the Schrader valve has reached a position where it is recognized as standard for automobile tires the world over.

The Schrader factory in Brooklyn has long been a model of its kind and the many advantages it offers to its employees are due in a great measure to the personal contact maintained at all times between the officers of the company and the workers.

At the time of the preparedness parade, Mr. Schweinert led a regiment of the Rubber Industry division, which was entirely recruited from among the male employees of A. Schrader's Son. During the war he was active in organizing a company of Home Guards in Hudson county, where he resided at the time, and not only commanded this unit with the rank of major, but contributed liberally to its equipment.

He is an ardent sportsman and numbers among the organizations of which he is a member, the New York Athletic and Columbia Yacht clubs, the Society of Automotive Engineers and the Machinery and Akron City clubs.

HOME BUILDING PLAN FOR LAFAYETTE CO.

The LaFayette Motors Co., Indianapolis, Ind., has started the development of an independent community adjacent to its plant at Mars Hill, which is located 4½ miles from the center of Indianapolis.

The LaFayette Homes Building Co. has been incorporated with a capitalization of $1,000,000 and has started work upon the construction of modern homes to assist in housing the skilled labor required in the production of the new LaFayette car.

A wooded ridge of 110 acres, five blocks from the factory, has been selected as the residential center of Mars Hill. Work has been started in building upon this attractive site a nucleus of 200 modern homes, no two houses alike and served by a business district with stores, bank, hotel, garage and motion picture theater. A modern graded school and a large park and playground are among the community advantages which are receiving the attention of the home builders.

The development of a self-sufficing community, providing a fresh air district for its employees within walking distance of the plant, was one of the motives of the LaFayette Co. in locating at Mars Hill. The LaFayette plan while following the recent trend in this direction has individual features which are attracting interest. The houses will be sold to employees at cost with a payment down and monthly installments which range from $20 to $75 a month, supplying men of varying earning capacities with individual and attractive homes. Houses of a special fire proof concrete type will be favored.

Every one of these houses will be modern, including sewer connection, furnace, electric lights and gas.

It is the intention of some of the officers and division heads of the company to make their homes in this section.

FRANKLIN CO. ACQUIRES EXTENSIVE PROPERTY AT SYRACUSE.

The H. H. Franklin Manufacturing Co., Syracuse, N. Y., has acquired the entire block in that city bounded by Gifford, South Geddes and Seymour streets and South Wilbur avenue. Located immediately south of the main works of the company across Gifford street, the property will be used for the further expansion of the Franklin motor car industry, which is already the largest industrial establishment in Syracuse, employing 5000 persons.

The land purchased comprises approximately three acres and increases the holdings of the company to about 12 acres. It is stated that developments planned will provide for much needed storage room. Possession of the major portion of the property will pass into the hands of the Franklin Co. about May 1.

The H. H. Franklin Manufacturing Co. is now turning out 60 cars a day and it is expected that the total production for next year will not be less than 25,000 cars.

March was the biggest month in the company's history—1542 cars were shipped and 1428 assembled. The best previous record was in August, 1917, when 1133 cars were shipped and 1095 assembled. The week ending March 27 established also the highest weekly shipping record in the history of the company, 413 cars being shipped during that week.

SIMMS CO. DOUBLES SIZE OF PLANT.

One of the busiest plants in New Jersey at the present time is in East Orange, where the Simms Magneto Co., manufacturer of Simms magnetos for passenger cars, trucks, tractors, farm, marine and stationary engines, has started construction work on an extension to its plant which will enable it to increase its production more than 100 per cent. With this additional space and augmented machine equipment which will be installed, the Simms Co. will be able to turn out from 1300 to 1500 magnetos a day. It is expected that this extension will be completed by Aug. 1.

UNIVERSAL TOOL CO. MAINTAINS SERVICE DEPARTMENT.

The Universal Tool Co., Inc., Detroit, Mich., maker of the Universal cylinder reboring tool, main bearing babbitting and boring equipment, brake band mandrels, etc., is maintaining a service department which is devoted exclusively to the interest of users of Universal equipment, wherever located, and all jobbers, dealers and customers are cordially invited to avail themselves of this service, and suggestions for its improvement in any way are always welcomed.

The sales manager of the Universal Tool Co. is E. H. Herman.

The recently organized Motor Castings Co. is to affiliate with the Hercules Motor Manufacturing Co., which has increased its capital to $1,500,000. The company makes heavy duty type engines.

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NEW CHICAGO PLANT FOR HOOVEN RADIATOR.

The Hooven Radiator Co., Chicago, Ill., announces the perfection of a new tubular radiator designed especially for heavy duty trucks and tractors, the result of more than two years of concentrated study and experimenting by Hooven engineers.

The Hooven Radiator Co. is now occupying its large new factory at 410-420 North Western avenue, Chicago, the erection of which was necessitated by the increased demand for Hooven radiators, which are now standard equipment on several makes of passenger cars, trucks and tractors. As indicative of the wonderful increase in the growth in the business of this company, it may be cited that a year ago the daily output was only 35 radiators, while it is now turning out more than 1000 a day and has a capacity for double that number.

CINCINNATI SPECIALTY'S NEW FACTORY.

The Cincinnati Specialty Manufacturing Co., Cincinnati, O., is just completing a large modern factory as an extension to its present manufacturing facilities. This company has been making an automatic extension reel for electric lamps for some time and now announces the perfection by its experimental department of a new automatic reel which is claimed to be a decided improvement over the old type inasmuch as it includes an automatic switch which turns the light on when ready for use and automatically turns it off again when the lamp is returned to its original position.

The company's experts are also working on the development of an extension reel which can be used in the office and home.

STERNO AUTO NECESSITIES MADE IN NEW PLANT.

The Sterno Corporation of New York, maker for over 30 years of products closely allied to automobile accessories, has just placed on the market a line of accessories, under the trade name of "Sterno Auto Necessities," consisting of Sterno anti-freeze, Sterno primer, Sterno carbon remover and Sterno shellac. Emphasis is laid by the company on the fact that these preparations are absolutely non-injurious to any motor part.

An entire new plant for the exclusive manufacture of these products has been acquired by the Sterno corporation.

MAYBERRY CO. HAS OPENED AT BIRMINGHAM.

The Mayberry Automotive Equipment Co. has opened for business in Birmingham, Ala., under the management of Tom W. Mayberry. This company will distribute a full line of automobile supplies and garage equipment to automobile dealers and garages throughout Alabama, Mississippi and Georgia, conducting a strictly wholesale business and carrying a large, well assorted stock.

Unique Cooperative System Established at Associated Service Building in Buffalo

A SOMEWHAT unique cooperative business enterprise, which was opened in Buffalo, N. Y., last October, is proving a very successful enterprise. This is the Associated Service building, which is stated to be the largest wholesale institution of its kind in the country—a great central market place where buyers and manufacturers are brought together for mutual benefit and profit. Four hundred firms with over 1200 lines of merchandise are now represented in this building.

The 175,000 square feet of floor area is divided into small spaces, each being occupied by a manufacturer, where he puts on display the entire line of merchandise which he manufactures. Through advertising to the merchants in this section of the country the buyers are induced to come to Buffalo to buy, because the Associated Service building offers them a service which enables them to save a great deal of time, energy and money. Here they see hundreds of lines of merchandise under one roof and can look over the lines they are interested in, quickly compare values and prices and get back to their business with the least expense and in comparatively short time.

Another part of the service is the Buyers' club. Any buyer of any kind of merchandise is eligible to membership. There are no dues—it is a service organization. A beautiful club room provides the buyer with every service. There are large reading tables, easy chairs, writing desks, public stenographers, telephone service, city and transportation information bureau, provision for securing hotel accommodations and theater tickets, private conference rooms, etc.

Upon entering the building the buyer is met by an attendant and conducted to the Buyers' club room, where the thousands of products displayed are carefully indexed. After selecting the lines which he desires to see, he is referred to the Merchandising Offering books, which contain an announcement by each manufacturer of his complete line of goods. After looking over the special lines in which he is interested, he may go to the large catalogue and literature display racks and dealers' help displays and find the manufacturer's own story of each of his products. Then, with his plan of campaign mapped out and notation made of the firms he wishes to see, he is conducted through the building by a floor salesmen and shown the actual merchandise in which he is interested. The floor salesman or the manufacturer's own representative will serve him, take his order, arrange delivery dates, discounts, etc.

The various lines of goods are segregated on different floors—for example, the entire second floor is devoted to wearing apparel; the third floor to hard ware, auto supplies, etc.; the fourth floor to furniture; the fifth, to building materials. Model drug and grocery stores are planned for the sixth floor and a machinery exhibit in the basement.

The benefits derived by the manufacturer are even greater. The enormous sales overhead necessitated by advertising and sending salesmen into small towns is materially reduced through Associated Service, because the buyer is brought to him. By having his complete line of products on display in this building, the manufacturer tenant has the advantage of having his goods seen by hundreds of people daily who are there for the express purpose of buying.

CONVENTION BRANCH MANAGERS, NORTH EAST ELECTRIC CO.

The convention of branch managers of the North East Electric Co. was recently held at Rochester, N. Y., the following programme being carried out:

Monday—Arrival and registration: transaction of specific business with various departments and individuals.

Tuesday—First session, 9 a. m.; introductory remark, J. W. Tracy, Purpose and Scope of Meetings, Hours, Rules and Programme; tour of factory, conducted by G. R. Fessenden. Second session, 2 p. m., Design and Development, T. L. Lee; general discussion. Evening, theater.

Wednesday—Third session, 9 a. m., Supervision of Territory, K. O. Wolcott; general discussion. Fourth session, 2 p. m., Branch Procedure (a), Contact with the Public, J. W. Tracy; (b) Branch Accounting Practise, C. W. Coapman; (c) General Routine, K. O. Wolcott; general discussion.

Thursday—Fifth session, 9 a. m., the Engineering Side of Service, G. R. Fessenden; general discussion. Sixth session, 2 p. m., North East Movies. Evening, dinner; addresses by executives.

Friday—Seventh session, 9 a. m., Branch Organization, Personnel and Promises, J. W. Tracy. Eighth session, 2 p. m., North East Policies, J. W. Tracy.

ACTIVITIES OF NEVERFAIL CARBURETOR CO.

The Neverfail Carburetor Co., Long Island City, N. Y., manufacturer of Neverfail carburetors for Ford cars, announces the recent appointment of the Select Products Sales Corporation of Long Island City as exclusive distributor of its products for Brooklyn and Long Island.

Direct factory branches have been established in Detroit and Los Angeles, Cal., the former being in charge of the Frank M. Eldredge Co., and the latter of M. J. Seibert.

The Neverfail Co. has also appoined the following district sales managers: W. L. Banks, Michigan, Ohio and Indiana; Fred W. Engel, Illinois; E. C. Gardner, Minnesota; Deckert Brothers, western New York; T. Cappello, Colorado; Fred J. Mitchell, Utah and Idaho.

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NEW BUSINESS FOR EISEMANN MAGNETO CORPORATION.

The Eisemann Magneto Corporation, Brooklyn, N. Y., announces new business recently booked as follows:

New contracts—Graham Brothers, Evansville, Ind., for magneto-generator; Hoffman Brothers Motor Co., Elkhart, Ind., magneto-generator and GS-4 magneto with impulse starter; Minerva Engine Co.; Reliance Motor Truck Co., Appleton, Wis., ignition equipment; Turnbull Motor Truck & Wagon Co., Defiance, O., ignition equipment; Eagle Motor Truck Corporation, St. Louis, Mo., ignition equipment; Eastern Canada Motor Truck Co., Ltd., Ottawa, Canada, ignition equipment; Crow-Elkhart Motor Corporation, Elkhart, Ind., magneto for export cars; General Motors Truck Co., magnetos; Four-Drive Tractor Co.; Highway Motors Co., Chicago, Ill.; Municipal Supply Co., South Bend, Ind.; DuPont Motor Car Manufacturing Co., Wilmington, Del., GS-4 magneto; Foster Motor Car & Manufacturing Co., Montreal, Quebec, GS-6 magneto; Kentucky Wagon Manufacturing Co., magnetos for Dixie Flyer passenger cars.

Renewals—Four-Wheel Drive Auto Co., Clintonville, Wis.; Triangle Motor Co., St. Johns, Mich.; Denby Motor Truck Co., Detroit, Mich.; Iowa Motor Truck Co.; Indiana Motor Truck Co.; United States Motor Truck Co.; Higrade Motors Co.; Famous Truck Co.; United Motors Co.; Nash Motors Co.; J. C. Wilson Co., Detroit, Mich.; Kissell Motor Car Co., Hartford, Wis.; Transport Motor Truck Co., Mt. Pleasant, Mich.; General Motors Co., Pontiac, Mich.; Buda Co., Harvey, Ill.; Acme Motor Truck Co., Cadillac, Mich.; Brockway Motor Truck Co., Cortland, N. Y.

The official Eisemann service station, the Automotive Service Agency, San Francisco, Cal., has appointed two new sub-stations, as follows: Berkman & Wagner, 2500 Webster street, Oakland, Cal.; Nutt Brothers, E. M. M. Service, Lindsay, Cal.

PRODUCTS ADDED TO RAYBESTOS LINE.

The Raybestos Co., Bridgeport, Conn., successor to the Royal Equipment Co., announces that the following products have been added to its line of brake lining, brakes and clutch facings:

Rayco brake lining, for Ford cars, put up in boxes; Raybestos attaching kit and rivets in boxes; Raybestos brake lining cutter; Raybestos Packett; Royal extering, brakes, clutch facings and specialties for Ford cars.

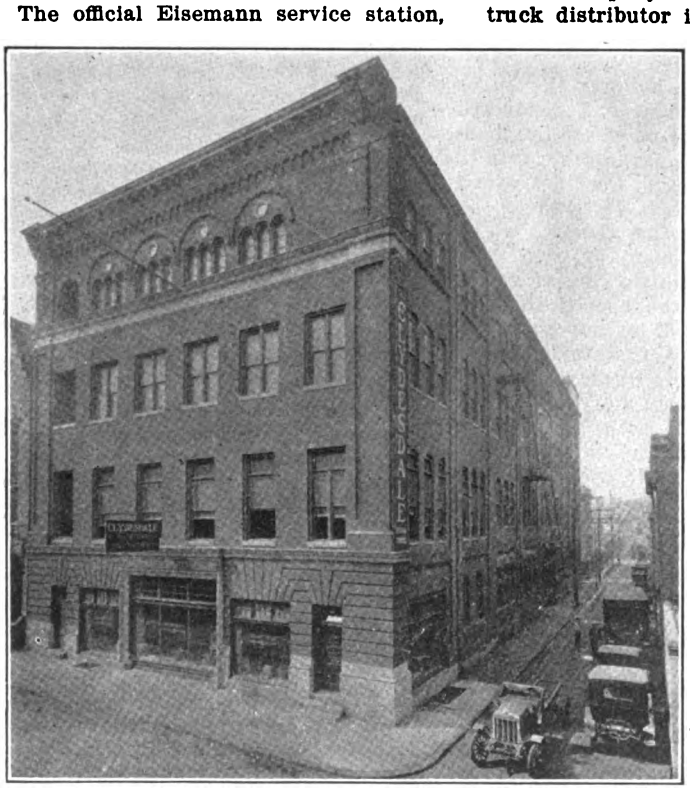
Prices on these products will be cheerfully furnished upon receipt of request addressed to the sales department of the Raybestos Co., as well as a copy of the 1920 edition of the Raybestos Brake Lining and Clutch Data Book furnishing the correct sizes of brake lining and clutch facing required on automotive vehicles.

NEW CLYDESDALE SERVICE STATION AT PHILADELPHIA.

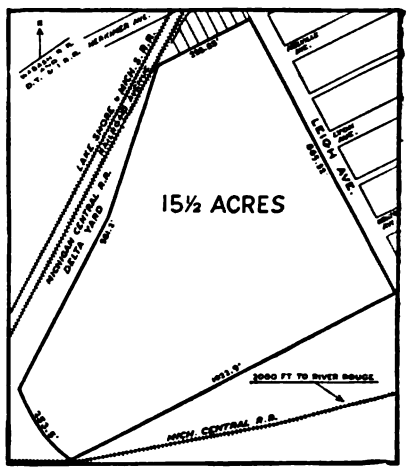
The large sale of Clydesdale trucks in Philadelphia and vicinity and the constantly increasing demands of owners for service has impelled the Cawthrop & Wister Co., the distributor in that city, to establish itself in a commodious four-story building at 14 South 21st street. The building has frontage of 70 feet and is 108 feet deep, having a floor area of approximately 30,000 square feet exclusive of the basement.

The company is the largest exclusive truck distributor in the city. Its activities are directed by J. A. Wister, vice president and general manager, who has been engaged in the trade for 10 years and is widely known. He has been active in trade promotion and during his period of service as president of the Automobile Association of Philadelphia that organization made unusual progress.

The first floor of the building is given over to show rooms for a full series of trucks and to truck storage, and on the floors above are the offices, the service department, with every facility for work of all kinds, and a large stock room in which is an unusually complete supply of parts.



New Service Station of the Cawthrop & Wister Co., Distributor of Clydesdale Trucks, at Philadelphia, Pa.



Plan View of Site of New King Motor Car Factory at Detroit.

KING MOTOR CAR CO.'S NEW PLANT AT DETROIT.

The King Motor Car Co. recently secured an option on a 15-acre site in Detroit on which to construct a new plant for the production of King cars. This site is on the west side of the city, east of the Rouge river. It is nearly surrounded by the leading railroads of that section. On one side it is paralleled by the tracks and yard of the Michigan Central and the Lake Shore & Michigan Southern railroads. The Wabash and the Detroit, Toledo & Iowa railroads are within a short distance to the north. The Michigan Central railroad approaches on another side. The street side is Leigh avenue from Thaddeus street to Herkimer avenue. Dearborn avenue and West Jefferson trolleys are conveniently near and the adjacent locality supplies housing facilities for employees who wish to live near their work.

ENLARGEMENT TO NASH FACTORY AT KENOSHA, WIS.

The Nash Motors Co. is to make substantial additions to its plant at Kenosha, Wis., in the way of an extension to the foundry, 120 by 120 feet, a foundry warehouse and pattern storage building, 80 by 100; a roller bearing tool room and pattern shop, 100 by 600; an addition to the sheet metal shop, 32 by 236; a new boiler room, 50 by 50, and an addition to the heat treating department, 40 by 140. Four courtways that formerly separated long lines of buildings of saw tooth design, have been roofed over and turned into component parts of the factory.

The Kenosha plant is to be devoted to the making of Nash six-cylinder cars and trucks, while the Nash four car will be made exclusively in the plant now under construction at Milwaukee.

There are in operation at the Nash factory over 1500 productive machines and more than 300 factory maintenance machines. The plant embraces 1,011,332 square feet of floor space and in the power plant 120 tons of coal are burnt every 24 hours. There are now on the pay roll 5000 men, which will be substantially increased on the completion of plants in both cities.

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Fairbanks Co. Holds Mechanical Clinic

ON MARCH 29 and 30 the automobile and service station equipment division of the Fairbanks Co. held a convention and mechanical clinic at the New York City offices of that company. It was held primarily for the benefit of the company's officers, branch house managers, automobile and service station equipment, department managers and salesmen.

The first day was devoted to talks by H. T. Peters, president of the Fairbanks Co.; J. R. Peters, first vice president; A. G. McMillan, manager of the automobile and service station equipment division, and branch house and division managers, the chief theme being the phenomenal success of this most recently established division of the Fairbanks Co. Later Mr. McMillan read and conducted a general discussion of the new sales campaign.

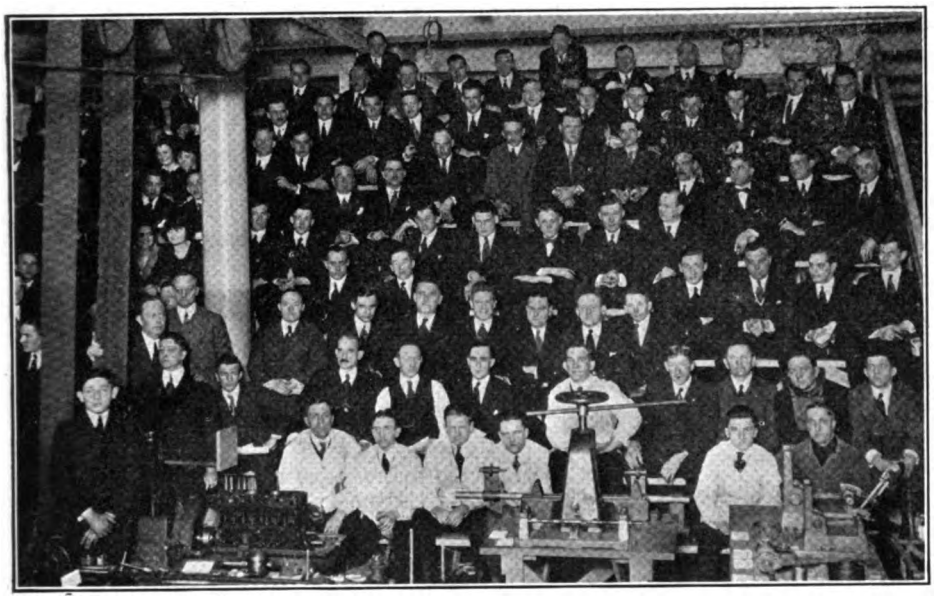
The second day was given over entirely to the mechanical clinic or demonstration of the various labor saving devices and to the display of the model repair shop. One of the features of the clinic was the demonstration of the Ford and Fordson Special, which has been designed especially for burning in and running in model T Ford and Fordson bearings. The old method of scraping bearings by hand required from five to 12 hours by a skilled mechanic and produced but 45-50 per cent. bearing surface. With the Ford and Fordson Special a bearing surface of 100 per cent. was obtained in from 20 to 30 minutes.

All main and connecting rod bearings were burned-in in full view of the spectators and after the bearings had been burned in the motor block was turned and the bearings, connecting rods and pistons were run in and limbered up with oil.

The detailed programme of the clinic follows:

Front and Rear Axle Section—Mr. Boone gave demonstrations of the Dixie stand for handling the entire front and rear systems. The bending iron, spindle body bushing facer, sleeve puller, pinion puller, propellor shaft reamers and jig, end mill and arbor were used in this demonstration.

Motor Section—The second section of the clinic included demonstrations of all tools used on motors. A Ford block was rebabbitted, using the Hempy Cooper four-way torch; babbitt cut off with brick chisel; bearings relieved, using 14-inch bastard file, and filleting was done with the filleting tool. A crankshaft was tested by means of a Geier straightening press and crank and camshaft tester. The crankshaft was then fitted with bearing caps, bolts and shims, and the operation of the test bar was explained. All tools used in this demonstration were taken from stock sets. A very comprehensive talk and demonstration was given on the various types of burning-in machines. Pistons were inserted by means of the Duplex piston inserter.



Managers and Salesmen of Fairbanks Co. in Attendance at Mechanical Clinic at New York.

Valve grinding was next in order, the demonstration showing the use of the Bilt-Rite combination electric drill and valve grinder and the Universal and Ford valve refacing tool. The camshaft alignment reamer and camshaft bearing parter were also demonstrated. A connecting rod was straightened, using the connecting rod jig and piston clamp. Transmission drum bushings were inserted, using arbor press and drivers, and bushings were reamed with the Wilson transmission reaming machine. The removal of the transmission driven gear, one of the hardest to remove, was very easily accomplished by use of the arbor.

Electrical Section—Mr. Lundell conducted the demonstrations and lectures at the electrical section of the clinic, which occupied practically the whole afternoon of the second day. Demonstrations were conducted by sales representatives for the F-B and Bilt-Rite electrical products, the Artex reel, the F-B test stand. Lincoln burning-in motors and Lincoln motors for industrial purposes.

Miscellaneous Section—The construction, operation and labor saving points of the new Duplex rim device, Amco lubricating system, Billmont wrenches and steel Servistock units were explained in detail. These demonstrations completed the programme of the clinic and the spectators were then invited into the model shop to examine the machines and devices at close range.

The entertainment committee pr a very interesting programme for the convention, including luncheon at Wanamaker's both days, a banquet with special entertainment at the Transportation club on Monday evening and on Tuesday evening a dinner party at Hotel Claridge, followed by a theater party at the Hippodrome.

The success of this first convention and clinic would seem to indicate that it will take its place as a regular feature of the New York sales campaign of the automobile and service station equipment division of the Fairbanks Co.

AMBU ENGINEERING INSTITUTE A UNIQUE SCHOOL.

In the heart of what was once Chicago's most exclusive residential district, 2632 Prairie avenue, a unique school has been established, known as the Ambu Engineering Institute, conducted under the auspices of the American Bureau of Engineering, which is rapidly fitting young men from all parts of the country for this trade in which there is still plenty of room.

There are no vacations at this school; there is no time for play. The students put in 44 hours a week of intensive shop and laboratory work supplemented by lectures. The classes are limited to 20, and a new class is made up every alternate week. The course is only of eight weeks' duration—eight weeks of "cramming" and of individual instruction, but at the end of that time the students graduate into well paid positions.

The course embraces all branches of automotive electricity, the first six weeks being devoted to the principles of starting, lighting and ignition, and the last fortnight to the construction and repair of automobile storage batteries, farm lighting, tractors, trucks, aeroplanes and motor boats.

The school was organized in response to a demand from the automotive trade. The need of such an institute has been appreciated especially by battery concerns, garage men and the thousands of car owners everywhere.

AUTO ELECRICIAN'S GUIDE NOW READY.

A new issue of the Auto Electrician's Guide, the book of wiring diagrams published by the Michigan State Auto School, Detroit, is now ready. It contains over 900 diagrams, including 1920 model cars. It is especially interesting to note that internal circuit diagrams are included. The book has been somewhat revised in form and an improved index has been added. It is bound in a strong loose-leaf cover. There is no increase over the old price, $7.50.

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PLATE V.

MODEL SERVICE STATION AND SALES ROOM.

Two-Story Fireproof Structure Complete with Show Room, Machine and Repair Shops—Generous Spacings and Modern Equipment

Designed by the Architectural Department of the Automobile Journal Publishing Co.

THE accompanying plans offer a suggestion for an ideal automobile building to be used by an up-to-date, progressive dealer, and its arrangements permit of its use for practically every branch of the trade in which he can conveniently engage.

Facilities are provided for handling the agency for one or two new cars, and the appointments are such that the dealer may handle used cars and take live or dead storage. Space is also provided for the care, renovation and repair of cars. In fact, an examination of the plans will reveal that a careful survey has been taken of the progressive dealer's requirements, which has been taken into consideration in the design offered.

Having provided for all the practical needs of such a structure, the architect has taken into consideration the value of nice appointments where customers are received and accommodated in addition to providing a suitable facade, which is valuable as an advertising feature, a fact testified to by the thousands of dealers throughout the country who have gone to considerable expense in having highly decorative fronts erected to their buildings whenever their means would warrant it.

This structure, of course, is primarily for a dealer in a fairly large city where business would pay for its erection, maintenance and a profit. It is designed to go on a corner lot 50x100 feet. On the ground or first floor plan is an entrance vestibule, leading off the main street. To the right of the entrance is the show room, where several cars may be exhibited and an accessory case set up with other stock displayed in glass cases on the walls. On the left side of the entrance is the office, which has an entrance leading into the garage floor and shops.

On the side street there is a service door leading directly into the garage and in front of the turn table. This arrangement enables the operator of the car to turn his machine in any direction and run it to any position in the garage, onto the elevator or into the repair shop. The latter room is fitted with two repair pits, although there is sufficient room to handle three cars at a time or possibly four.

Manoeuvering cars about inside of a building has always been found a troublesome problem, but the arrangement given in these plans, in relation to the layout of the building, seems to offer a simple and easy solution.

In one corner of the garage, out of the way of the passages from the entrances to the other points in the room, is a wash stand conveniently located near both the turntable and elevator, thereby facilitating the washing and storage of a car with little trouble.

A machine shop of ample dimensions is walled off in the rear left hand corner of the building and lighted by a huge skylight in the light shaft extending through the second floor to the roof. There is an entrance to the machine shop from the garage; also one to a passage back of the elevator, which leads across to the repair shop for the convenience of the machines.

On the second floor are toilet accommodations for customers, office employees, salesmen, a large floor area devoted to new and used car storage, supply and locker rooms and toilet for the employees. Entrance to the front of the second floor is reached by the main staircase, which leads into a hall similar to that on the first floor. To the right of this hall is a rest room and toilet for ladies and on the right similar accommodations for gentlemen.

In the centre of the rear end of the second floor is the elevator well, which divides the skylight over the machine shop from the locker and supply rooms and employees' toilet. These rooms may be reached from the repair shop by stairs.

The exterior of the building is of terra cotta with tile inlay, backed with brick. Steel is used for the frame, large girders in the floor and roof supported on steel "H" columns in piers that are spaced as shown by dotted lines on plans. Reinforced concrete floors and roof slab are necessary to make it a fireproof structure.

Lighting and heating equipment must be of standard make and complying with insurance underwriters requirements. Fireproof specifications would also include steel sash throughout and an automatic roller door at the service entrance on the side street.

The gas tank and service pumps are located outside the entrance on the side street and are connected up so that cars may be filled either from the inside or transient customers may be accommodated at the curb. Lubricating oil reservoirs or tanks may be placed where found most convenient.

The construction cost of such a building with all modern improvements, of course, would vary according to labor conditions and material supplies in different localities, but a minimum estimate of $25,000 and a maximum of $30,000 would cover the costs approximately.

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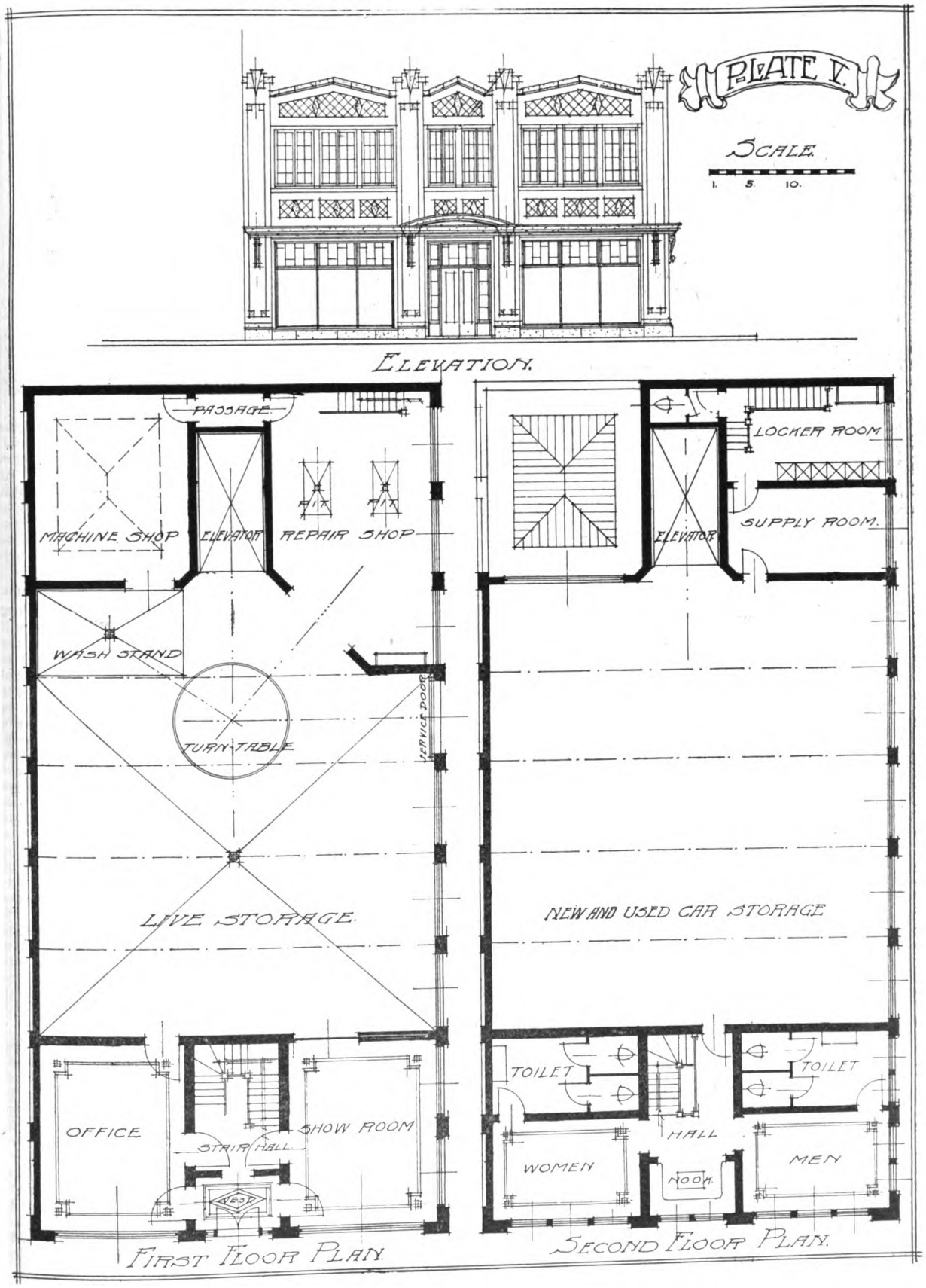

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Service Station Tools Which Can Be Made in Spare Time

ALMOST every day in regular repair work some tool is lacking for a special job, and ingenuity must be used in designing and making a special tool which would not only make the job much easier, but would save time as well. In going about among the service stations it will be noted that almost every mechanic has some special device which he has made, in use about the shop, and in some cases it is very handy. Such mechanics are usually the ones that are making a success of their business.

In Fig. 1 is seen a small, but useful device which, at first glance, gives little idea as to its function. The plugs A are made from a solid bar and have eyes in the ends, as shown at B, while the ends C are threaded half-inch standard pipe thread. The bale, or handle, is made of half-inch iron rod and the ends are bent to form a hook at each end, as shown at D. To use the device, remove the bale D and remove the two rear spark plugs from cylinders three and four in the Ford engine. Screw into each spark plug opening one of the plugs A with the eyes turned in the same direction as shown at B. Hook the bale into the eyes B and the block and falls to the bale D and the engine can be lifted from the frame and will be found to balance perfectly. It is wise to place dummy plugs in the other plug openings one and two to prevent dirt or chips from entering.

This same device can be used on other engines by arranging the plugs to balance the engine. If possible to obtain the brass stock, it is better to make the plugs of brass rather than from steel.

In Fig. 2 is shown a simple and useful device which can be employed on many cars for lifting the front ends, which is necessary when replacing or removing broken front springs, or when elevating the engine to tighten bearings. The device is made of ⅝-inch steel rod as shown at B and C. The ends D are bent in the form of a large hook. In the other ends are formed eyes which are shaped around a large steel ring A, to which the hoist is hooked. To use the appliance hook the ends D under the fender iron or the ends of the frame and lift the car from the floor. As soon as the hoist is released the tool can be detached and placed out of the way. It is much handier than a rope or chain, and far safer than either, as there are no knots to slip or become untied.

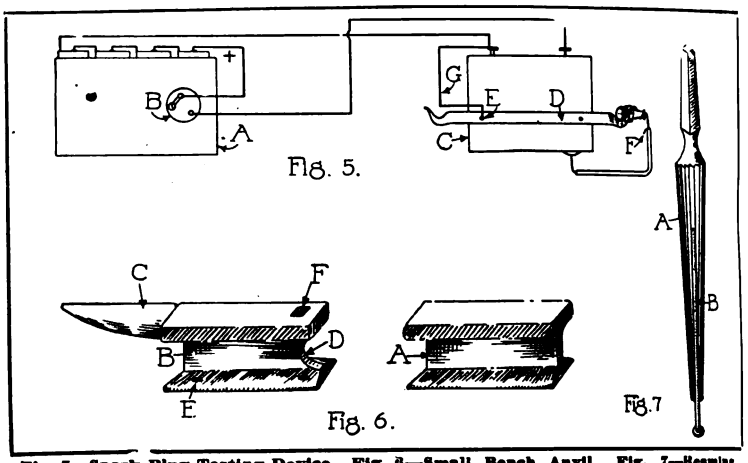

Fig. 5—Spark Plug Testing Device. Fig. 6—Small Bench Anvil. Fig. 7—Reaming Tool.

Cover for Cash Register.

Around the garage there is always more or less dust and dirt flying, which is injurious to the cash register if exposed to it. Most small garages have a cash register, but many do not have offices partitioned off where the dust and dirt are shut out. Following is a description of a cover for protecting the cash register. Make a large wooden case as shown at B, having a sloping front, leaving just room enough for the register to slip inside, still leaving the keyboard so as to be easily gotten at to register sales, etc., as shown at C. Grain or paint the case so that it has an attractive appearance, and in the front that is left open place the curtain on a spring roller. At E place a small button resembling that used on a glove, and at D the part to make the curtain fast. When the register is not in use the curtain can be pulled as a window curtain, thus protecting the register from dust and dirt.

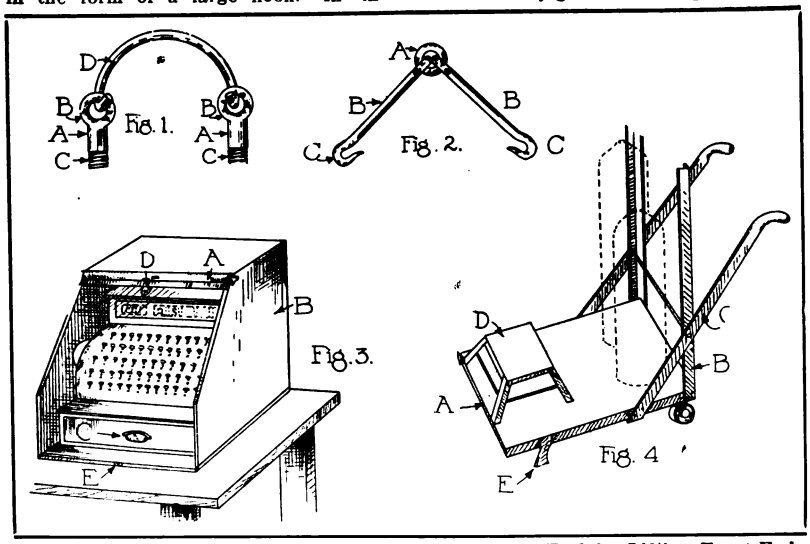

Fig. 1—Device for Lifting Engine from Frame. Fig. 2—Tool for Lifting Front End of Car. Fig. 3—Method of Enclosing Cash Register. Fig. 4—Portable Stand for Welding Apparatus.

Truck for Handling Welding Apparatus.

In Fig. 4 is a handy truck for handling the welding apparatus, as many times it is necessary to move it about from one place to another, when the jobs are so bulky they cannot be moved to the machine. The device described will answer very nicely for the purpose and can be made in a very short time with a waste material gathered from the junk heap. The frame A, B, is made from angle iron and held together with rivets or welded as the case may be. The handles C are taken from an old plow which has been discarded. The small table D is made from scraps of angle iron and serves as a welding surface for the small parts. The foot E acts as a support for the front of the truck when not in use, while the machine rolls on the wheel F when the weight is applied to the handles C, lifting the front end from the floor and making it easily moved about on the two small truck wheels. The welding machine can be clamped to the truck to prevent its tipping off when being moved about.

Spark Plug Tester.

In Fig. 5 is presented a useful device for testing the spark plugs that are taken from the car, and there is doubt whether or not they are in working condition. It is made of parts that can be picked up about the garage. Batteries that test 10 or 12 amperes will do the work satisfactorily.

At A is a box which holds five or six dry cells, and can be fastened to the wall in some out of the way place high enough up so as not to be tampered with. C is an old vibrating coil, which can be fastened alongside the battery

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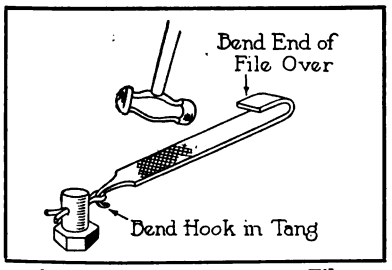
box. To this attach a bar of metal, D, by the aid of screw E, in such a manner as not to interfere with the working of the coil. One end of the bar should be formed to hold the plug F to be tested as shown. At E, or one of the screws, connect a wire leading from the primary circuit, which will answer as a ground. Connect the secondary wire as shown at H, leading it to the terminal of the plug. Connect the batteries in the regular way in series, positive to negative, etc., with the positive lead of the battery connected to the switch B and the negative connected to the negative point on the coil. The switch B is placed in the circuit to make and break the flow of current. It does not much matter what type of switch is used for this purpose, but a push switch will be found to be the most satisfactory, as it cannot be left on when not in use.

To test the plug it is only necessary to place it in the bar B, as shown, and close the switch. If the plug is in working order the spark will arc the points, and if it is shorted the spark will not appear at the points, but instead will jump around the porcelain, or many times it is not visible at all.

To fasten the secondary wire to plug F it is a good plan to construct a sort of snap device so that it will not be necessary to unscrew the nut on the end of the center electrode, as some little time is lost in doing this.



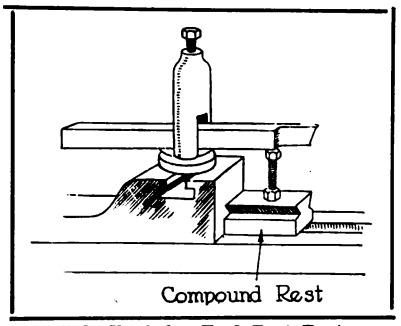
Cotter Pin Puller Made from File.

Small Bench Anvil.

In Fig. 6 is seen a very handy tool which can be made in any shop that is equipped with a forge. It is a small bench anvil made from a piece of railroad iron. At A and B is shown the finished product. The end C represents the nose of an anvil with the square opening for the small hardy at F, and the holes at E will prove valuable when fastening the anvil to the bench, while the circle D is cut out to allow of work being done over the back end. This little anvil is handy because of the fact that it can be moved from place to place to meet requirements, or to get the best light for magneto repairs.

Kink for Reaming.

Quite often it is necessary to ream a hole a trifle larger than can be reamed with the reamer at hand, and in this case the following kink will prove of value. Take a wire nail and place it in one of the flutes far enough up on the taper to cause the reamer to cut oversize, as shown in Fig. 7 at B. The reamer A usually has about five flutes and two wire nails can be used, if necessary, to get the desired results. This, however, only applies to the taper reamer, for the straight reamer will not start so well into the work with the nail in the flute.



Bolt Used for Tool Post Rest.

TOOL POST JACK.

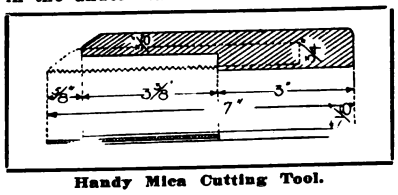
When cutting off large diameter stock in the lathe it is necessary to use a long cutting blade in the tool post and it has been found that placing a jack bolt under the end of the tool near the blade, as shown in the illustration, will prevent the tool from vibrating, thus reducing the danger of its digging in, jamming or breaking. This same idea can be applied to tools that chatter when cutting. The jack bolt is simply a regular stock belt cut the right length so that the next can be unscrewed from the bolt just enough to tighten the tool and support it.

HOME MADE COTTER PIN PULLER.

A cotter pin puller can be made easily from an old file by heating the tang and bending it in the form of a hook, hardening it so that it will not break in use. The wide end of the file is heated in the forge in the same manner, and bent over as shown, forming an end on which to strike the hammer when withdrawing the cotter pin.

MICA CUTTING TOOL.

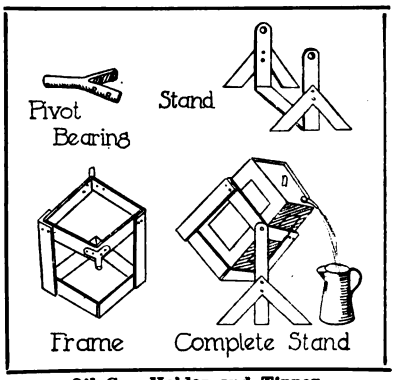
A handy mica cutting tool can be made in a few minutes time by taking a piece of hack saw blade about six inches long and inserting it in a holder. Some repairers prefer a wooden handle, while others prefer to make their handles of more enduring material. One repairer makes the suggestion that a section of an armature coil, taken from an old Delco generator, gives an ideal handle, providing a wide surface on the top that would protect the finger when bearing down on the tool. The piece of coil should be about seven inches in length, ⅛ inch wide, ¾ inch deep at the back and ⅜ inch deep over the blade. A slot is cut in the under side for the saw blade, as shown in illustration, this being held in position by the size of the slot, so that new blades can be inserted from time to time. This device is to be used when cutting down the mica on the motor or generator commutator when wear has lowered the copper segments, allowing the mica to stick up above them, causing the brushes to jump, and giving an uneven current supply.



Handy Mica Cutting Tool.

OIL CAN TIPPER.

A handy oil can tipper can be made in a few hours time by one handy at carpentry by making a stand from 2x3-inch stock, mortising the corners of the upright, rounding off the upper ends, boring a one-half inch hole one inch from the end and fitting the side braces from a one-inch board. The crate which holds the oil can is made from one-inch planed stock as shown, while the picot bearings are of half-inch gas piping, split open at one end, drilled for screw holes and fastened with screws at the two corners. A flange edge of one-inch stock should be fitted at the bottom of the crate to keep the oil can from passing through the crate. This device will be found very handy in the private garage, where the oil is stored in five-gallon square cans.



Oil Can Holder and Tipper.

FORMULA FOR HARDENING CUTTING TOOLS.

To make a hardening solution for metal cutting tools, mix saltpeter two ounces, sal ammoniac two ounces, alum two ounces, salt 1½ pounds and soft water three gallons. Keep the solution in a stone jar, for it will eat a wooden tub and rust an iron pot. Do not draw the temper of the tools, but only warm them enough to relieve the hardening strains. It is also well to rinse the tools well in water, for if this is not done the solution will rust them.

PIPE CLAY TO CLEAN MATS.

Pipe clay acts as a preservative of rubber and makes one of the best mediums for treating the rubber mats used in automobiles. Oil and grease are rubber solvents and ruin the floor mats if allowed to remain on them. The mats should be wiped quite dry and then be pipe-clayed. The pipe clay dries and sucks the oil out of the rubber.

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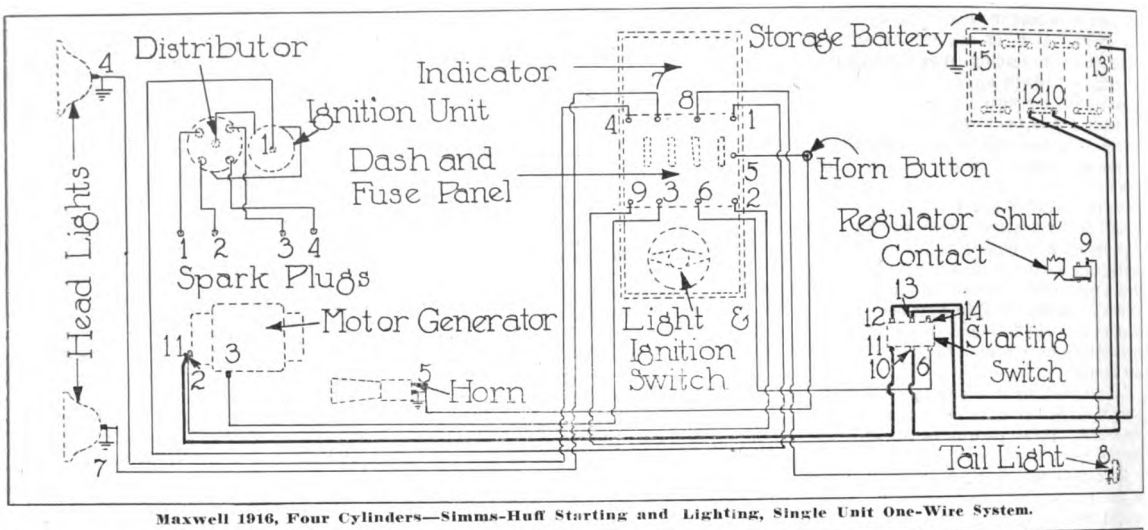
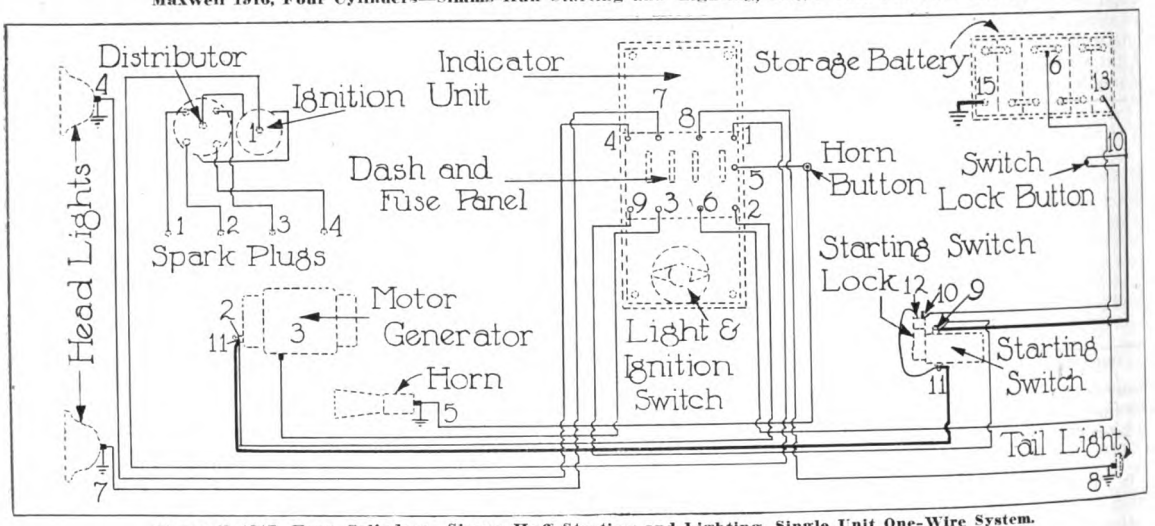
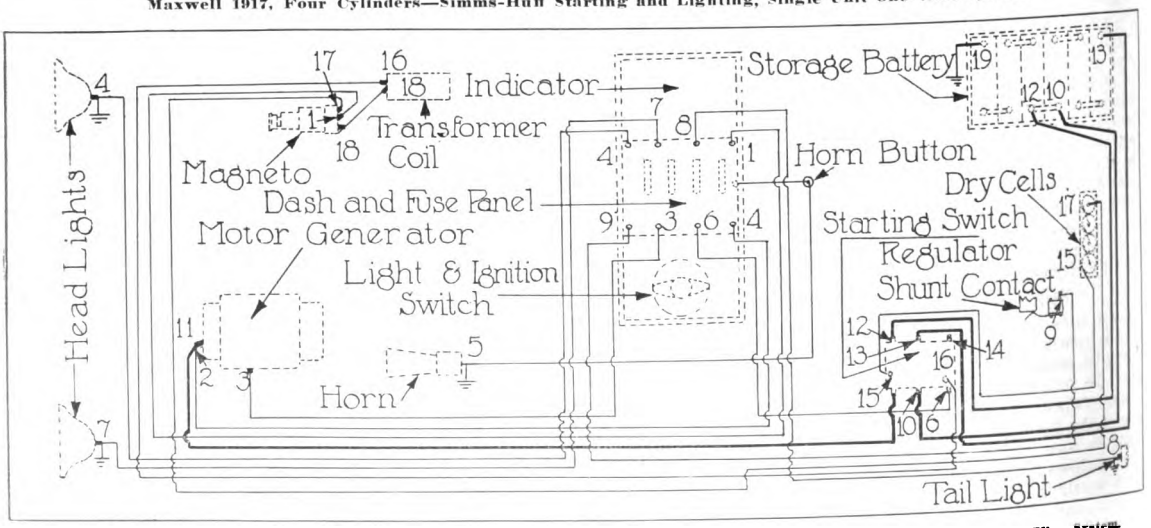
Monthly Wiring Diagram, No. 4



Maxwell 1916, Four Cylinders—Simms-Huff Starting and Lighting, Single Unit One-Wire System.



Maxwell 1917, Four Cylinders—Simms-Huff Starting and Lighting, Single Unit One-Wire System.



Maxwell 1918, Four Cylinders—Simms-Huff Starting and Lighting, Atwater Kent Ignition, Single Unit One-Wire System.

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Columbia Pyramid Starting and Lighting Brushes

SUPPLYING Columbia Pyramid Starting and Lighting Brushes for renewals on automobile starting motors and lighting generators is a profitable business for live dealers. Columbias come to you ready to install.

Make This Profit Yours
Write Your Distributor Today

NATIONAL CARBON COMPANY
Incorporated
Cleveland, Ohio San Francisco, Calif.
Canadian National Carbon Co., Limited, Toronto, Canada

7320

(When Writing to Advertisers, Please Mention the Accessory and Garage Journal.)

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A Big Season *for* Amazon Dealers

An AMAZON sales franchise becomes more valuable day by day and season after season.

The main reason for this condition is the inherent goodness of AMAZON Tires.

Always good, AMAZON Tires are even better than ever this season. The satisfaction of AMAZON users has boosted sales everywhere.

AMAZON Dealers are an enthusiastic lot because their sales efforts result not alone in permanent customers but in the constant increase of Amazon "Boosters" in the community.

DISTRIBUTORS: If you wish to join in Amazon success, NOW is the time to discuss territory.

DEALERS: If Amazon Tires are not sold in your town write immediately for name of distributor.

THE
AMAZON RUBBER CO.
AKRON, OHIO

Amazon Native Emptying Cup of Rubber Latex

AMAZON

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On The Trail

CHIEF Keokuk's tawny warriors traveled a-horse. They broke new paths thru the wilds—opened up new country—broadened their territory. The horse was their "car."

Today, everywhere, America's motorists are blazing new travel trails, discovering to themselves new country, widening their vision and enjoying all-outdoors. This is especially true when the car is shod with STANDARD FOURS—The Chief of the Tire Tribe.

These tires—made near the home of the old Indian Chieftain partake of his qualities. They are essentially sturdy and true and hard to wear out. They travel easily over rough roads, cushioning the shocks of hard travel. America's motorists have been quick to sense the primitive strength and power of endurance built into STANDARD FOURS. This is the best asset for permanent dealers and distributors business.

Write or wire for exclusive territory now open.

STANDARD FOUR TIRE COMPANY,

Dept. B, KEOKUK, IOWA

Branches at

INDIANAPOLIS, IND., *245 N. Penn St.* LOS ANGELES, CAL., *342 W. Pico St.*
CURRIE-AKERS TIRE CO., ATLANTA, GA.

Standard Four Tires

"Chief of the Tire Tribe"

(When Writing to Advertisers, Please Mention the Accessory and Garage Journal.)

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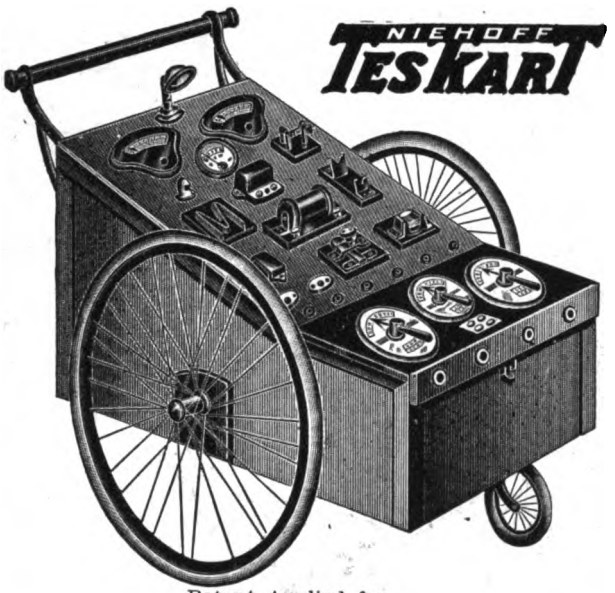
Niehoff Automotive Repair Shop Equipment



Patent Applied for

The NIEHOFF TEST KART is the latest achievement in the way of a complete Testing Outfit for locating all electrical trouble in the ignition, starter, generator, battery, wiring, relays, meters, in fact anything in connection with the electrical mechanism of an automobile. It will also recharge Ford magnets on the car. This outfit is a necessity in every repair shop. With it you can render a service to the motorist that will insure you increased business. It will enable you to inform the motorist intelligently, just what has to be done and give him an estimate as to the approximate cost.

The NIEHOFF TEST KART is the ideal rig for the general automotive garage service station. Price, **$350.00.**

We list below a few other important testing outfits.

Niehoff Defectometer—For testing magnetos and coils. Price, **$50.00.**

Niehoff Generometer—For locating shorts in starting and generator armature. Price, **$55.00.**

Niehoff Mag-Charger and Testing Outfit for Fords—Will recharge Ford magnets on the car, burn out shorts, test coils, spark plug, voltage of magneto, etc. Price, **$60.00.**

Niehoff Growler—To test armatures. Price, **$30.00.**

Niehoff Laminated Magnetizer—To recharge all sizes of magnetos for automobiles.
Storage Battery model. Price, **$25.00.**
110 D. C. Current model. Price, **$30.00.**

Niehoff Power T. B. Test Bench—To test generators and magnets after assembled.
Complete with motor. Price, **$550.00.**

PAUL G. NIEHOFF & CO. INC.

232-242 E. Ohio St. Chicago, Ill.

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KHK OIL SIGNAL

DEALERS!

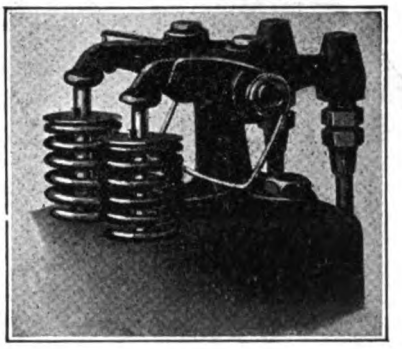
Here's Another Fast Selling KHK Accessory

"When Your Oil is Low Your Horn Will Blow"

Automatically starts horn blowing when oil supply is low. Insurance against burned out bearings, scored pistons and cylinders. Fits all cars. A novel, practical accessory that sells on sight. Popular price. It's the only practical automatic oil signal on the market. Easily attached and no complicated parts to wear or get out of order. Be the first dealer in your town to show this new accessory. It will pay you.

STOP THAT NOISE WITH

KHK Valve in Head MOTOR SILENCERS



Guaranteed to eliminate from 75% to 90% of that clacking noise caused by the action of push rods and rocker arms in Buick, Chevrolet, Oakland, Oldsmobile, Scripps-Booth motors. Adds pep to motor. Eliminates continual tappet adjustment. Dealers say it is the fastest selling accessory they ever saw.

Ask your jobber about KHK Accessories or write direct to

KAY H KAY Co.

967 Woodward Ave. Detroit, Mich.

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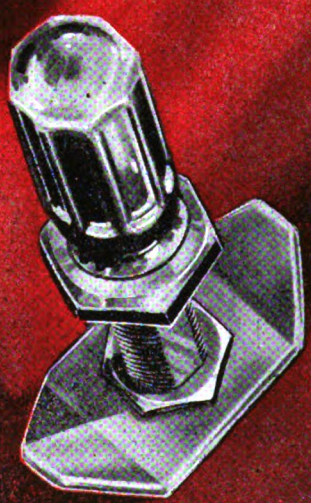
STANWOOD
Inner Tubes

OVERSIZE, manly fellows with a matchless tensile strength. Tough as the finest pure rubber can make them. Built up layer on layer in a perfect criss-cross of grain. Eager for hard going as hungry hounds.

STANWOOD TUBES, Red and Gray, made of full-floating stock exclusively.



Jobbers are invited to investigate also STANWOOD TIRES—Cord, Fabric and Truck Pneumatic—and full line of Repair Materials.

STANWOOD RUBBER COMPANY

Executive Offices: 9 EAST 40th STREET, NEW YORK CITY

Chicago Branch: 1712 SO. MICHIGAN AVE. *Plant:* ELIZABETH, N. J.

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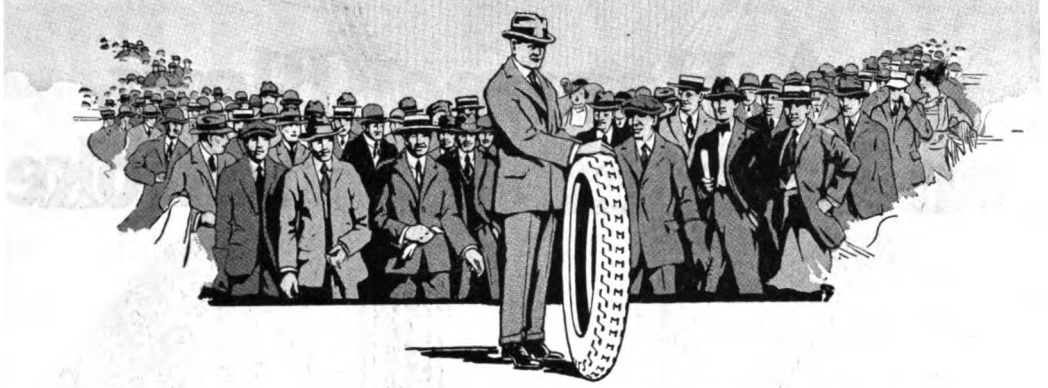

An Army of Satisfied Users

Wholesale Tire Distributors and Retail Dealers

DO you want to annex an army of satisfied customers? If so, sell them Sterling Tires. They will not only continue to do business with you, but they will tell their neighbors and friends about the honest values you are giving, in Sterling Tires!

For many years the tide has been in favor of Sterling Tires; and today, the tide is stronger and swifter than ever.

Here are the reasons why Sterling Tires have won and held the confidence of dealers and car owners:

First, we have always had a sincere desire to build perfect satisfaction and extreme endurance into every Sterling Tire.

Second, our long and successful experience has taught us a great deal about making dependable tires. We have every manufacturing resource.

Third, we use the very best material—and plenty of it.

We give the broadest and fairest guarantee. It will pay you to read this guarantee!

Territory is being rapidly taken up. Write today for full information; tomorrow may be too late.

Sterling Tires

STERLING TIRE CORPORATION

Rutherford, New Jersey, U.S.A.

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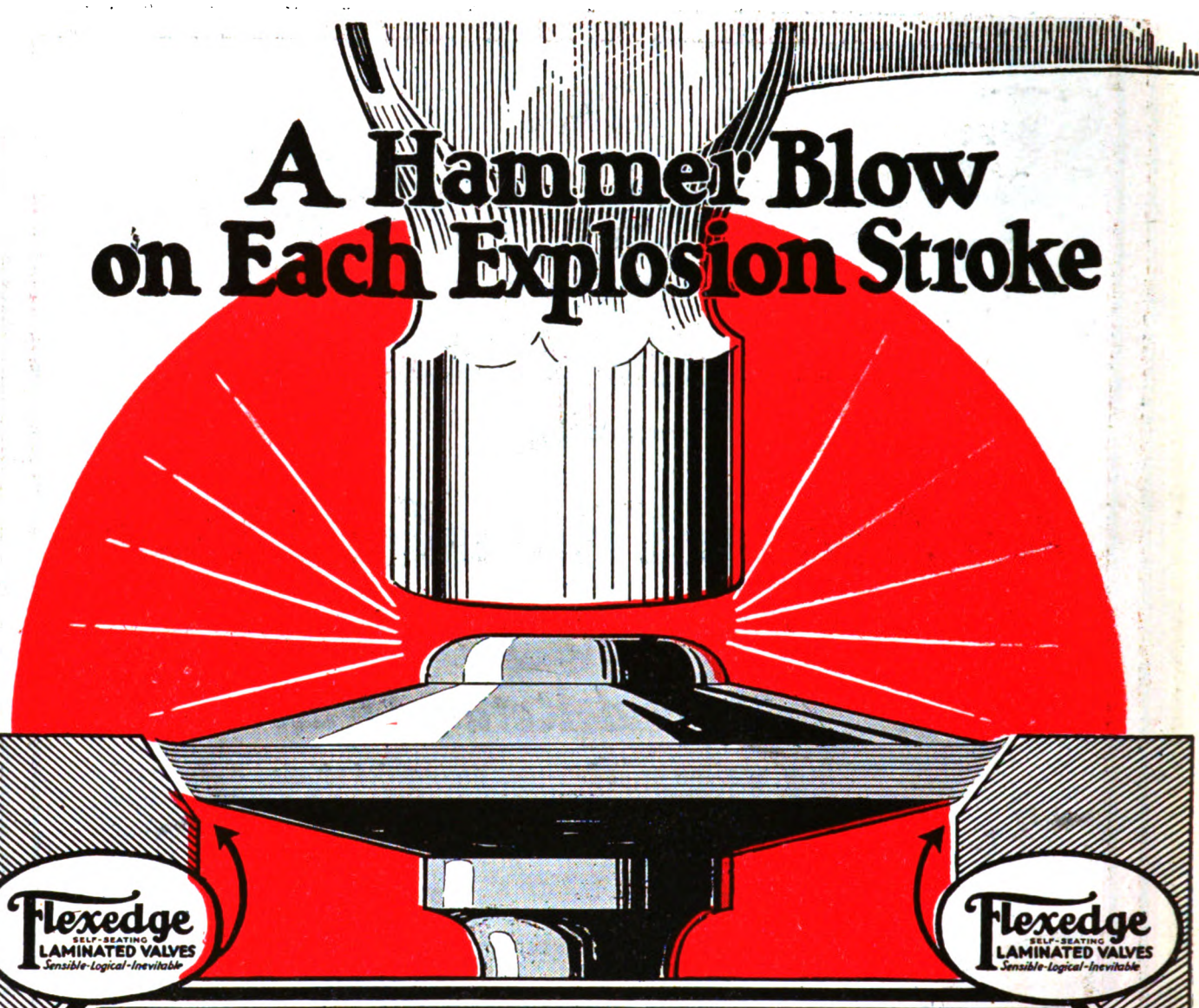
A Hammer Blow on Each Explosion Stroke



Depresses the Centre and Flexes the Edge of the FLEX-EDGE VALVE—*Preventing Carbon Formation*

This movement (pre-determined) isolates the edge of each individual steel disc or laminae of the valve, making it impossible for carbon to find lodgement.
Flexedge valves are guaranteed not to warp, pit or leak, or need regrinding during the life of the motor.
Every motorist wants the high degree of response and power that is experienced when valves are freshly ground. Flexedge valves are always freshly ground. They grind themselves. Dealers find that they turn over with minimum sales resistance. The following jobbers can supply you in standard and oversize stem sizes for all the more popular cars.

FLEXEDGE JOBBERS.

Herring Motor Co., Des Moines, Iowa
The Gibson Co., Indianapolis, Ind.
Motor & Machinists Supply Co., Kansas City, Mo.
Reinhard Bros., Inc., Minneapolis, Minn.
Repass Automobile Co., Waterloo, Iowa.
Chicago Automobile Supply House, Chicago, Ill.
Motor Car Supply Co., Chicago, Ill.
Western Motor Supply Co., Milwaukee, Wis.
The Automobile Supply Co., Detroit
Electric Appliance Co., Chicago
The Auto Equipment Co., Denver
Minneapolis Iron Store Co., Minneapolis
Nicols, Dean & Gregg, St. Paul
Harbison & Gathright, Louisville, Ky.
Campbell Iron Co., St. Louis, Mo.

Chanslor & Lyon Company
Seattle, Los Angeles, San Francisco, Tacoma, Portland, San Diego, Spokane

The Beckley Ralston Co.
Chicago, Detroit, New York, San Francisco, Pittsburgh, Kansas City

Kopac Brothers
Omaha, Nebr., Norfolk, Nebr., David City, Nebr., Columbus, Nebr., Schuyler, Nebr.

National Auto Supply Co., Chicago
Continental Auto Supply Co., Chicago
Superior Lamp Mfg. Co., Newark, N. J.

SELF SEATING VALVE CO., Chicago

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"SUPERB ENDURANCE"

means

Larger profits for you.

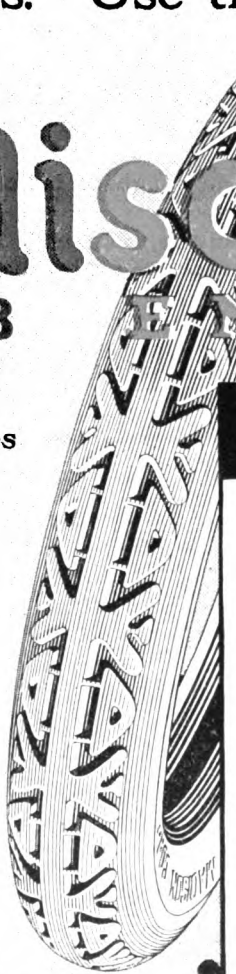
Much better tires for your customers.

No competition. You have an exclusive franchise. We cooperate with you to build a demand for yourself, and for no other dealer, in your city.

If you retail tires, it will pay you to know us. Use the coupon.

Madison Tires

SUPERB ENDURANCE



Direct Factory Branches

CITY OF NEW YORK
20 West 60th Street

CHICAGO
1606 Michigan Avenue

BOSTON
859 Boylston Street

Factories—Buffalo, N. Y.

Send this to-day

Madison Tire & Rubber Company, Inc.,
20 West 60th St., City of New York.

Gentlemen: I want to know more about Madison Tires and your proposition for dealers. I assume no obligation whatever in making this request.

Signed .....

Street .....

City .....

Pin This To Your Letter Head

Accessory and Garage Journal.

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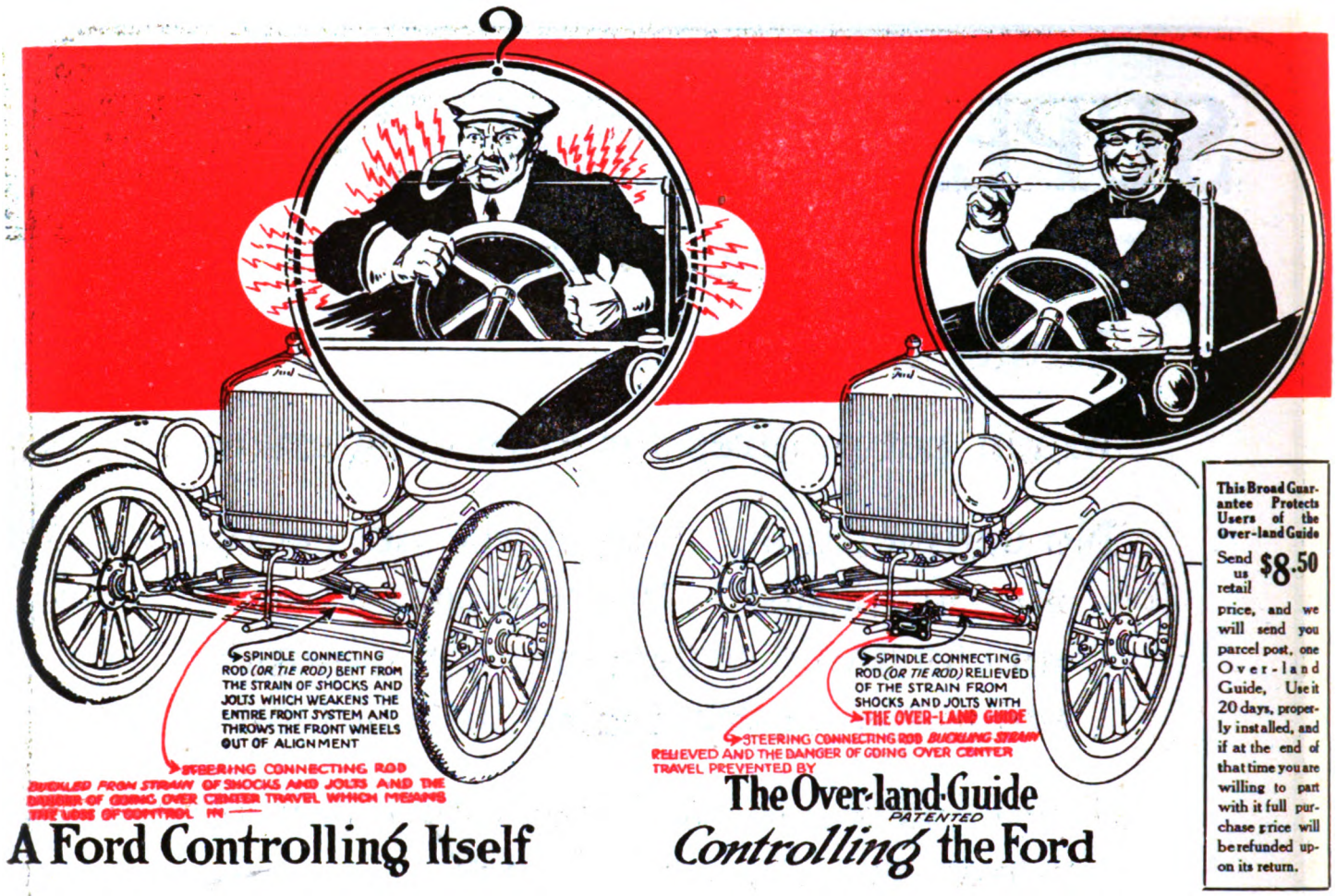


This Broad Guarantee Protects Users of the Over-land Guide

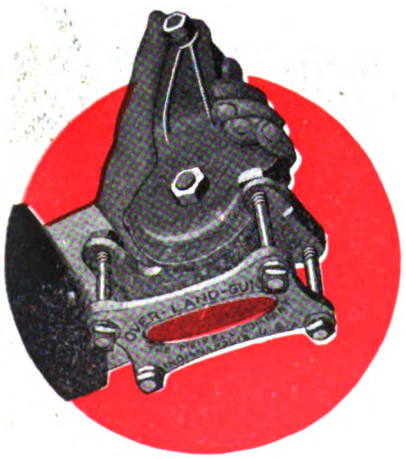
Send us retail price, $8.50, and we will send you parcel post, one Over-land Guide. Use it 20 days, properly installed, and if at the end of that time you are willing to part with it full purchase price will be refunded upon its return.

Are You An Over-land Guide Dealer?

If not, you do not know of this extremely efficient accessory, designed for Ford cars or trucks. None is more useful; there is no substitute for it. No other item of stock will afford greater returns, for the sales are the year round.

You know the demand for articles of quality and merit; these factors impel dealers to recommend Over-land Guides.

Over-land Guides are a well-made 100% efficient utility, sold with an ironclad guarantee to afford satfaction and economize upkeep and repair expense in a short time that will many times exceed the initial cost.



UNLIKE all other STEERING DEVICES the SPRING in the Over-land Guide is completely enclosed and packed in hard grease, which keeps it free from dust and moisture and means indefinite service and no up-keep.

Distinct Over-land Guide Qualities

It saves tires, parts, repair bills, upkeep and greatly prolongs vehicle service.
It is car insurance of extreme value against skidding, ditching, collisions and personal danger of passengers.
It will protect the car or truck and occupants should the steering gear fail or break.
It keeps the vehicle moving directly ahead; the wheels are aligned no matter what the road surface.
It absorbs road shocks and minimizes the stresses upon the arms and shoulders of the drivers; the machines can be steered with the finger tips.
It minimizes wear upon the vehicle mechanism.
It nullifies danger from a tire blow-out at any speed, for the machine will be kept in its course.
It increases vehicle efficiency, convenience, pleasure and comfort.
It can be changed from one machine to another and will last for years.
It can be installed by anyone in a few minutes.

The Over-land Guide Protects

Wheels	Tires	Wheel Bearings
Wheel Spindles	Steering Pivots	Steering Knuckles
Steering Arms	Tie Rod	Tail Lever
Drag Link	Steering Lever	Steering Column
Radius Rod	Spring	Spring Shackles

List Price $8.50. If not satisfactory after 20 days' trial money will be refunded.

JOBBERS and DEALERS: Ford car and truck owners buy Over-land Guides at sight. The sales opportunities are unlimited. Our proposition is extremely attractive. Send for particulars today.

THE MEIXELL COMPANY

216 Board of Trade Building, INDIANAPOLIS, IND.

(Automobile Sundries Co., 18 Broadway, New York, N. Y. Sole Foreign Agents.)

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The aristocrat of the tire world

WORKMANSHIP produces no greater quality than the standards and policies of the institution demand. The product is always a true reflection of the house behind it.

The tires which bear the famous name of Brunswick are made in our own factories. The workmen are guided by the ideals that have made possible a world-wide reputation for highest merit.

Brunswick Tires are made under the direction of experts who constantly promote the standards of perfection set up by the founder of the House of Brunswick 75 years ago.

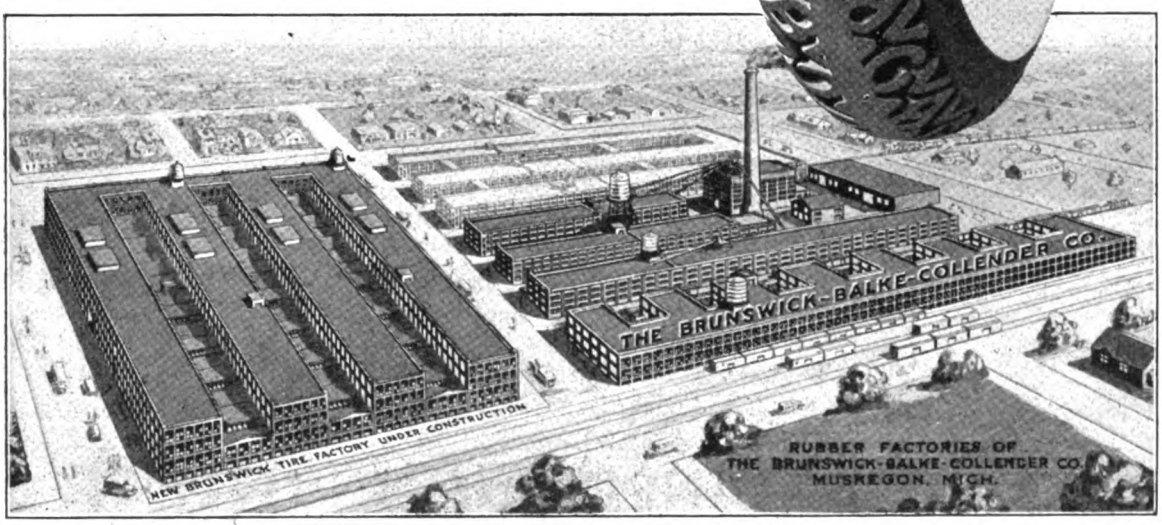
To both car owner and tire dealer, Brunswick Tires offer the utmost in materials, methods and workmanship. It pays to ride on Brunswicks. It pays to sell them.

Sold on an Unlimited Mileage Guarantee

THE BRUNSWICK-BALKE-COLLENDER COMPANY

General Offices: 623-633 South Wabash Avenue, Chicago
Branches in principal cities of United States and Canada

BRUNSWICK TIRES



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Why Don't You PREPARE YOURSELF for One of These Positions?

Repair Shops and Garages the country over are calling for men trained in electrical repairing. This demand has come so quickly—almost overnight—that there are not half enough trained or experienced men to take care of this work.

Big wages are being offered—the work is clean and light. The trained electrical men are the aristocrats of the automobile repair field.

And the demand is increasing faster than men can prepare. This is YOUR opportunity—grasp it NOW. Enroll in first possible class at

AMBU ENGINEERING INSTITUTE

In eight weeks you are trained in the details of Automotive Electricity. You not only learn WHAT to do in every possible case, but you learn WHY you do it.

All instruction is individual—by actual work on standard equipment, under the constant guidance of the teachers. You spend these eight weeks—

Two weeks in fundamental Electricity—laboratory work and class room lectures.

Two weeks in Starting and Lighting. Actual shop work and lectures.

Two weeks in Ignition. Shop work on actual installations——with lectures on theory.

Two weeks in Battery Shop. Building, Repairing and Tearing Down Batteries. Lectures on theory and practice.

Only 20 men to each instructor insures constant individual attention. All of the instructors are the best obtainable. They not only are educated and experienced, each in his line, but they can teach you what they know.

These limited classes start every two weeks.

Pave the way to a bigger, better future by training yourself here. Write today for terms and classes open.

AMBU ENGINEERING INSTITUTE
Room 109 E. 16th Street **CHICAGO**

Founded by American Bureau of Engineering

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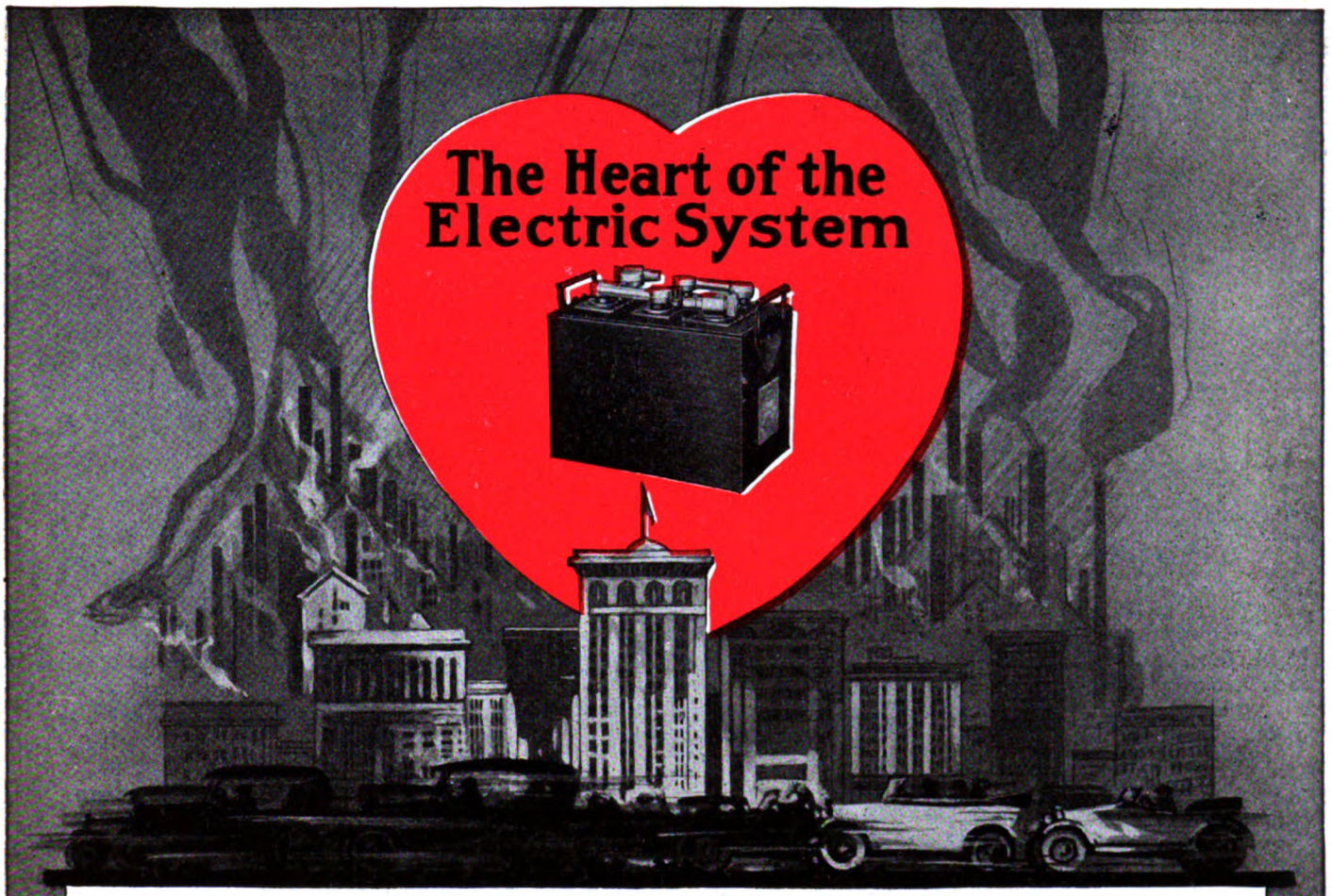

Quicken the Pulse of Trade

Universal Batteries will speed up your sales. They will "quicken the pulse of trade."

From the time the first starting and lighting battery was made until the present time, Universal Batteries have been the preference—they have been in the lead.

The possible sales of the Universal dealer are greater than the sale of any other battery dealer. Greater sales are made possible by the adaptability of Universal Batteries.

There is a Universal Battery for any make or size car. Also a Universal repair part for any make or size battery. This alone makes the dealer's field unlimited.

Conscientious manufacturing principles for years past have established a foundation of prestige for Universal Batteries. Many dealers have built a successful business upon this foundation.

Every dealer that is desirous of building up a permanent and ever increasing Battery business should sell Universal Batteries.

Every dealer who is anxious to give his customers the Battery that will meet every demand, should offer them the Universal Battery.

Also manufacturers of Sealed Glass Cell Batteries for house lighting plants. And parts for any make Sealed Glass Cell Battery.

Reliable dealers are requested to write for interesting sales proposition.

UNIVERSAL BATTERY CO., 3420 So. La Salle St., Chicago, Ill.

UNIVERSAL Batteries

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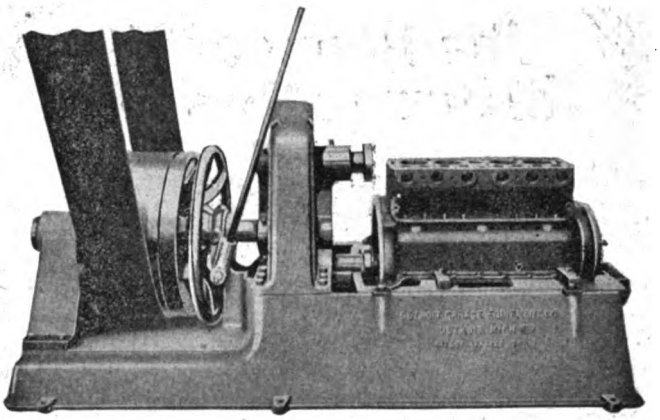
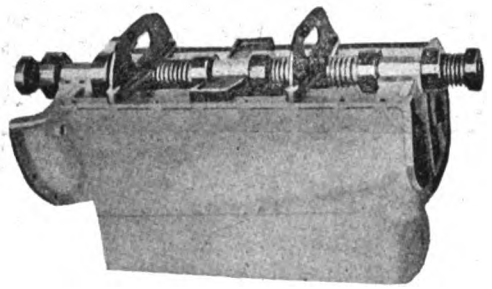
FACTORY ACCURACY AND SPEED IN THE SERVICE STATION

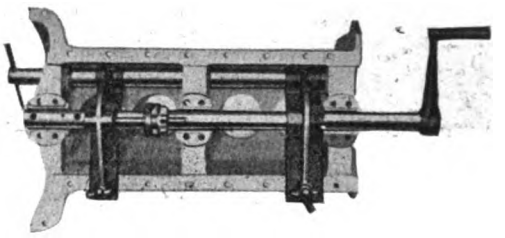


DETROIT BURNING-IN AND RUNNING-IN MACHINE adaptable to any make of motor.

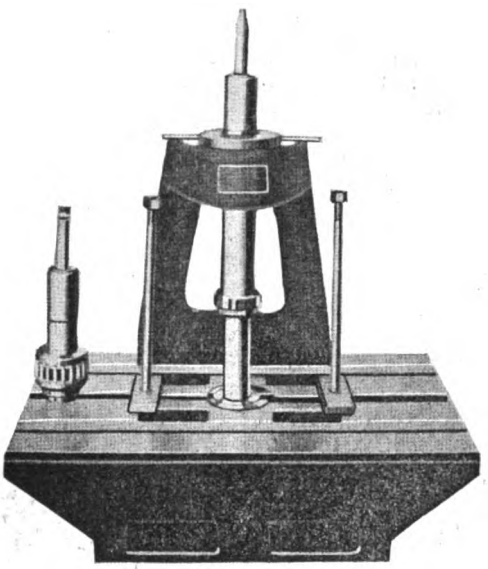
SPECIFICATIONS

Two distinct spindles. Gear Ration, 3 to 1. Burning-In speed, 200 R. P. M. Running-In speed, 600 R. P. M.; the recommended speeds. 40 pt. carbon steel shafts and highest grade bronze bearings. Spindle bearings 3 in. dia., 6 in. long, giving a good bearing surface. 5 pitch cut gears, running in oil. Friction clutch. Fly wheel, 22 in. dia., 12 in. face, and has two large S. K. F. Ball Bearings. Weight of Fly Wheel, 450 lbs. Total weight, 2650 lbs.

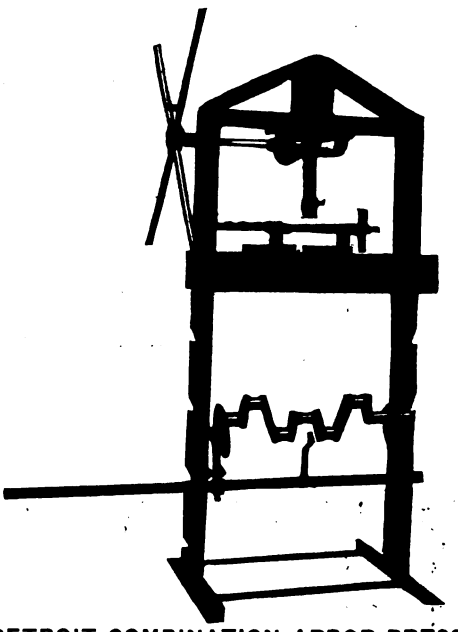




DETROIT REBABBITTING AND REBORING OUTFIT FOR FORDSON TRACTOR MAIN BEARING. Also supplied in separate unit for Ford Model "T" Main Bearing. A simple, rigid and accurate tool for the Service Station.



DETROIT CYLINDER REBORING and BURNISHING OUTFIT for Fordson and Model "T" motors. Designed for use in connection with 26" Drill Press.



DETROIT COMBINATION ARBOR PRESS, STRAIGHTENING PRESS and TRUING-UP MACHINE. A guaranted capacity of 200 tons.

For further particulars write your jobber or

DETROIT GARAGE EQUIPMENT COMPANY, Detroit, Michigan, U. S. A.

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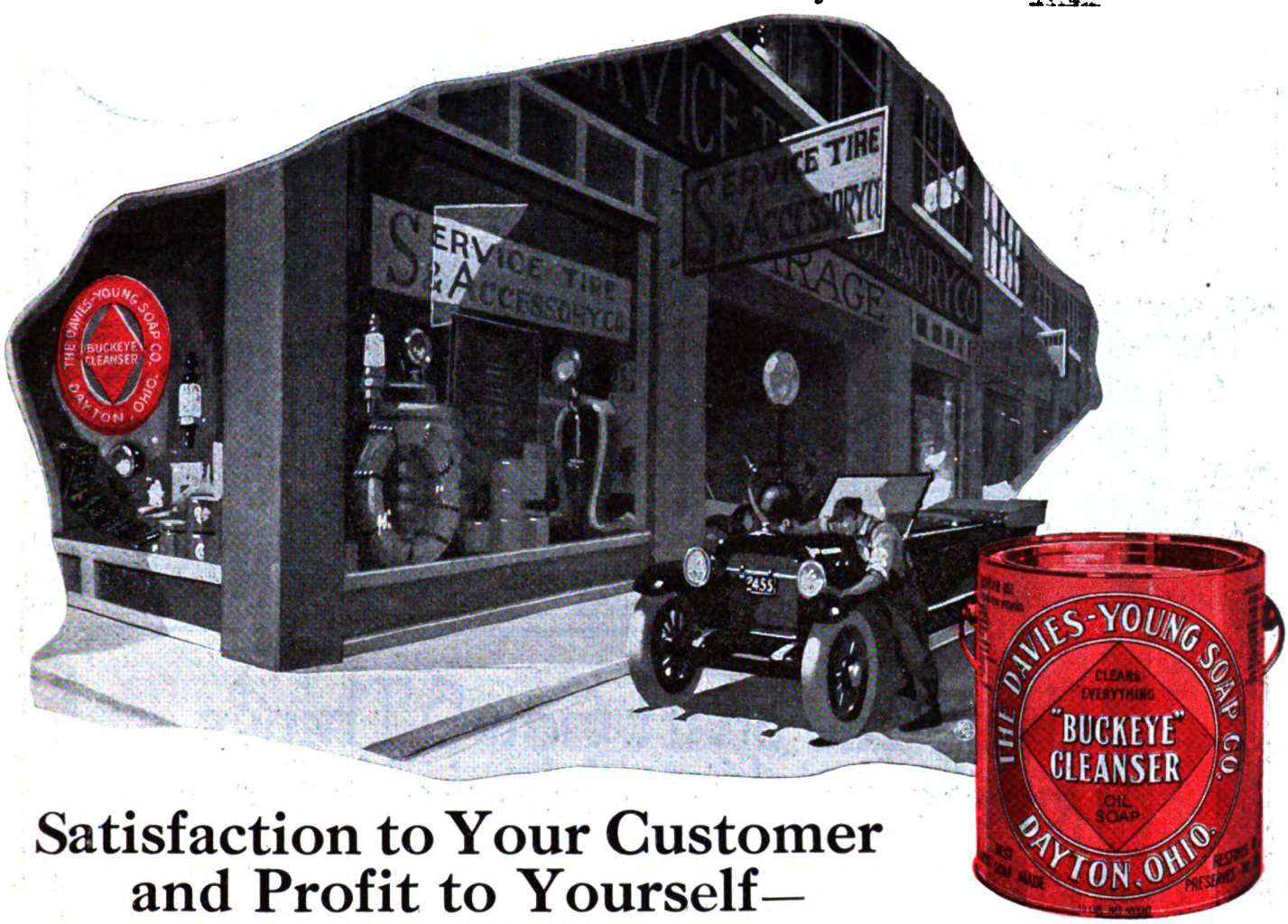

Satisfaction to Your Customer and Profit to Yourself—

that is the experience of the thousands of dealers who recommend, use and sell—**BUCKEYE CLEANSER**
—the auto soap that cleans and polishes.

MADE of pure vegetable oil—without alkali or grit—that acts as a solvent and carries off the dirt in a rich heavy lather.

Not only that, but it also preserves and polishes the finish, adding to the appearance—and hence, to the value—of the car.

No wonder, then, that a soap like this brings satisfaction to your customers, and—because your customers are satisfied—profit to yourself.

Auto supply dealers, general stores and hardware stores find it a ready repeater.

Ask your jobber for particulars.

THE DAVIES-YOUNG SOAP COMPANY
DAYTON, OHIO

Coast Sales Agents:
Allied Industries, Inc.
San Francisco
Los Angeles Seattle

Denver Sales Agents:
Paramount Lubricants Co.
Denver, Colorado

Southern Sales Agents:
The Colley-Minnich Co.
Atlanta, Georgia

BUCKEYE CLEANSER

THE AUTO SOAP THAT CLEANS & POLISHES

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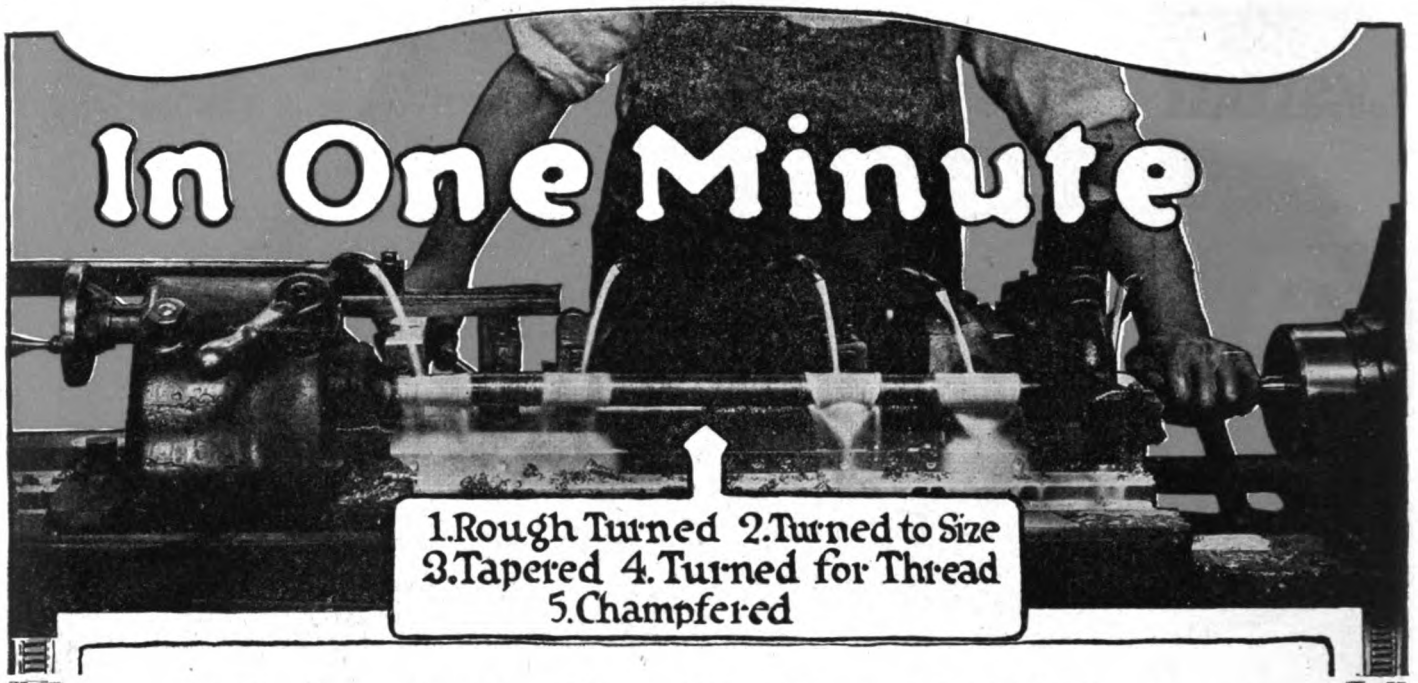

This Axle Shaft Gets 5 Things Done to it on 1 Machine in 1 Minute

That's why we can assure you dealers that our production will keep abreast of your orders.

And there's another angle. Machines like this turn out axle shafts that are absolutely accurate in construction—the equal of the part they replace in every detail.

Every Spencer guaranteed product is marked with the name "Spencer" as an assurance to you that the maker stands back of the goods and back of *you* when you sell Spencer replacement parts to your trade.

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RECORD OF BUILDING OPERATIONS FOR APRIL

Contracts Made and Plans Contemplated for Alterations or Erection of Garages, Repair Shops, Service Stations and New Plants.

PLANS AND SPECIFICATIONS.

Ensley, Ala.; Pegram & Meade; one-story garage; $15,000.

Talladega, Ala.; Wikle-Sims Motor Co.; one-story garage; $25,000.

Globe, Ariz.; Eisenheur Motor Co.; one-story garage, 50x142.

Conway, Ark.; T. R. Douglas & Son; one-story garage, 46x53.

Bakersfield, Cal.; George F. Elliott; one-story garage; $51,000.

Colusa, Cal.; J. J. O'Roure; one-story garage, 80x100.

Fresno, Cal.; L. S. Cobb & Co., Inc.; one-story garage, 75x150; $70,000.

Hanford, Cal.; Hanford Mercantile Co.; one-story garage; $70,000.

Los Angeles, Cal.; R. J. Bird; one-story garage, 45x110; $7300.

Los Angeles, Cal.; C. Woldenfels; one-story garage, 100x145.

Los Angeles, Cal.; H. S. Taggart; one-story garage, 60x100; $6000.

Los Angeles, Cal.; Charles W. Louden; one-story service station, 51x130; $9000.

Los Angeles, Cal.; J. A. Hill; one-story garage, 100x140.

Los Angeles, Cal.; G. A. Gray; one-story garage, 54x150.

Los Angeles, Cal.; Arthur H. Darling; one-story garage; $13,500.

Los Angeles, Cal.; F. O. Cass; one-story garage, 32x50; $3000.

Los Angeles, Cal.; William Bloeser; one-story garage, 60x165.

Oakland, Cal.; W. N. Parker; one-story garage; $10,000.

Sacramento, Cal.; Earl C. Anthony; one-story garage and sales room, 100x100.

San Francisco, Cal.; Republic Motor Truck Co.; one-story garage, 80x175.

San Francisco, Cal.; Louis R. Lurie; one-story garage; $35,000.

San Francisco, Cal.; J. A. Lang; one-story garage; $6000.

San Francisco, Cal.; Rodger Colt; one-story garage; $100,000.

San Juan, Cal.; Chester L. Caine; one-story service station, 14x16; $1300.

Denver, Col.; Harry C. Davis; one-story garage; $35,000.

Denver, Col.; Richard Seeley Motor Co.; one-story garage; $50,500.

Daytona, Fla.; Renner & Williams; one-story garage; $30,000.

Jacksonville, Fla.; Barnwald Motor Co.; one-story garage; $12,000.

Tampa, Fla.; J. C. Davis Motor Car Co.; one-story garage, 60x100.

Atlanta, Ga.; W. J. & T. Zahr, Andersonville, Ga.; two-story auto repair shop, 168x185; $10,000.

Atlanta, Ga.; Black & Mobbet; two-story brick and steel garage, 75x363; repair shop machinery purchased; $150,000.

Atlanta, Ga.; Charles W. Tway Co., 181 Peachtree street; five-story concrete and steel fireproof show room and service station, 72x150; $150,000.

Bainbridge, Ga.; Fleming & Hines; one-story brick garage; $25,000. Lessee, H. S. Biggs.

Fillmore, Ga.; Zeligler Brothers; one-story garage and repair shop 48x100; $3500.

Savannah, Ga.; Vinson Motor Co.; one-story garage, 60x100; $50,000.

Benton, Ill.; Standard Oil Co.; one-story brick fireproof filling station, 30x42.

Chama, Ill.; Thompson & Kasper; one-story brick and hollow tile garage and machine shop, 60x86; $12,000.

Chicago, Ill.; E. Waller, Jr.; one-story brick and stone garage, 45x100, at Hiron and La Salle streets; $15,000.

Chicago, Ill.; Theodore Spitison, care of Worthman & Steibach, 155 North Clark street; two-story garage, 36x105, southwest corner 79th and Justin streets; $15,000.

Chicago, Ill.; Dubin & Eisenberg, 139 North Clark street; one-story brick and stone garage, 100x120, at Ogden avenue and 16th street; $30,000.

Chicago, Ill.; C. W. Studley, 105 South La Salle street; one-story reinforced concrete garage, 100x100; three-story service station, 100x235; $125,000.

Chicago, Ill.; E. E. Bausenbach, care of Fox & Fox, 111 Washington street; one-story garage, 50x50, at 5921 Broadway; $16,000.

Chicago, Ill.; Isadore Korween, Division and North Branch streets; one-story brick garage, 20x25, at 6225 Kenmore avenue; $10,000.

Chicago, Ill.; Griswold & Walker; one-story garage; $15,000.

Chicago, Ill.; John Frasscht; one-story garage; $27,000.

Chicago, Ill.; L. Larocca, 11,600 South Michigan avenue; one-story brick and stone garage, 80x125, at 116th street and Michigan avenue; $25,000.

Chicago, Ill.; H. E. Straessheim, 5026 Broadway; one-story brick garage and sales room at 5006 Broadway; $6500.

Chicago, Ill.; M. H. Spades, 110 South Dearborn street; one-story brick sales room and service station, 190x275, at 2960 College Grove avenue; $45,000.

Elgin, Ill.; Sinclair Refining Co., 111 West Washington street, Chicago, Ill.; one-story garage, 30x40; $15,000.

Galesburg, Ill.; H. H. Gunther; one-story brick public garage; $65,000.

Harvard, Ill.; Manley Motor Co.; one-story brick garage and sales room, 68x113; $18,000.

Marion, Ill.; Davis Brothers; two-story brick and reinforced concrete garage, 85x115; $85,000.

Oregon, Ill.; Benis Motor Co.; one-story brick and concrete garage and repair shop, 80x122; $20,000.

Winnetka, Ill.; Hathaway, Watson & House; two-story stucco and hollow tile garage, 37x49; $15,000.

Anderson, Ind.; Gault & Brown, 921-923 Central avenue; one-story brick and concrete garage and filling station, 72x72.

Bluffton, Ind.; O. E. Shafer, 510 South Morgan street; one-story brick garage, 60x100; $25,000.

Clinton, Ind.; Edward Ruby; one-story brick commercial garage, 50x100; $10,000.

Fort Wayne, Ind.; C. N. Fitch & Sons. Shoof building; two-story brick garage and sales room, 110x120; $55,000.

Franklin, Ind.; Consumers' Service Station, Inc.; one-story garage, 40x72.

Hammond, Ind.; White Brothers; one-story garage; $4000.

Hammond, Ind.; G. A. Johnson; one-story garage; $15,000.

Indianapolis, Ind.; Frank Hatfield Co.; one-story garage; $15,000.

Indianapolis, Ind.; Bailey Fesler, proprietor Mammoth Garage; one-story garage; $2000.

Indianapolis, Ind.; Anthony W. Bowen, 941 Fort Wayne avenue; two-story brick and reinforced concrete garage and sales room, 40x175.

Indianapolis, Ind.; Olin Sales Co., 511 North Meridian street; three-story brick garage and sales room, 61x200; $100,000.

Muncie, Ind.; Joseph F. Stephens, 217 North Walnut street; three-story garage and sales room, 62x63.

Otterbein, Ind.; Percy Read; one-story garage and sales room, 60x120; $27,000.

Peru, Ind.; Consumers' Service Stations, Inc.; one-story brick service station, 30x30; $7500.

Terre Haute, Ind.; Nichols Motor Co.; one-story garage, 75x13730; $65,000.

Wabash, Ind.; Charles Abbott; one-story brick and concrete garage and sales room, 27x60.

Council Bluffs, Ia.; Sinclair Refining Co., 111 Washington street, Chicago, Ill.; one-story garage and storage station, 30x40; $30,000.

Des Moines, Ia.; Dr. O. E. Lynch; one-story garage and sales room, 50x167; $38,000.

Grinnell, Ia.; J. W. Morris & Son; one-story garage 81x148; $14,000.

Marshalltown, Ia.; T. C. Blue Realty Co.; one-story sales room, 40x60; $12,000.

Sioux City, Ia.; W. R. Shipman; one-story garage, 60x100; $10,000.

McPherson, Kan.; Florman & Brubaker; one-story garage, 47x98; $8500.

Topeka, Kan.; Woods Motor Co.; one-story garage; $75,000.

Topeka, Kan.; Charles D. Cuthbert; one-story garage, 50x150; $35,000.

Topeka, Kan.; M. E. Palmer Tire Co., 220 West Sixth street; two-story brick and stone trim garage and sales room, 50x130, at Jackson and West Sixth street; $50,000.

Topeka, Kan.; Page Milling Co.; three-story garage, brick and stone trim, 50x150, at 912-914 Kansas avenue; $50,000.

Wichita, Kan.; O. S. Shirk; one-story garage; $50,000.

Wichita, Kan.; D. G. Hughes; one-story repair shop and service station, 32x80.

Wichita, Kan.; City Ice Delivery Co., 115 North Rock Island avenue; one-story stone and cement block garage, 65x140, at 335 South Washington street; $4000.

Wichita, Kan.; Anderson & Klein; one-story garage, 100x140; $40,000.

Wichita, Kan.; Samuel Friedson; one-story garage, 147x150; $40,000.

Corbin, Ky.; Corbin Garage & Sales Co.; two-story fireproof garage and repair shop, 105x113.

Covington, Ky.; Comet Service Station, 711 Orchard street, Newport, Ky.; two-story brick garage and service station, 60x108, at 11th and Monmouth streets.

Frankfort, Ky.; Watter-Oetken Motor Co.; one-story garage; $15,000.

Frankfort, Ky.; Service Motor Co.; one-story garage, 182x195.

Glasgow, Ky.; Glasgow-Buick Garage Co.; one-story fireproof garage, 50x100; concrete floor; $20,000.

Knoxville, Ky.; Rogers Automobile Co.; one-story auto building; $75,000.

Lawrenceburg, Ky.; Val P. Collins, 622 Paul Jones building, Louisville, Ky.; one-story garage, 53x213.

Louisville, Ky.; Stoll Oil Refining Co., 723 River road; one-story brick filling station, 16x28.

Owensboro, Ky.; Consumers' Service Station; one-story tile and stucco service station, asbestos roof; $10,000.

Red Oak, Ky.; Sheets & Tomlinson; one-story garage, 60x100.

Houma, La.; Terrebonne Motor Co.; two-story brick and concrete garage; install repair machinery; $25,000.

New Orleans La.; Robert Motor Co., Inc.; one-story garage; $30,000.

Shreveport, La.; V. Wink; one-story garage; $2000.

Shreveport, La.; Nevitt-Sanford Automobile Co.; one-story garage; $50,000.

Baltimore, Md.; Marion D. Williams; one-story garage; $14,000.

Baltimore, Md.; Fred Rob; one-story garage, 60x200.

Baltimore, Md.; Reinhard Motor Car Co.; one-story garage; $32,000.

Baltimore, Md.; Parkway Apartment Co.; one-story garage, 54x67; $18,000.

Baltimore, Md.; George Huencke; one-story garage, 31x160.

Baltimore, Md.; Howell Motor Car Co.; one-story garage 100x123.

Baltimore, Md.; Prudential Oil Co., Keyset building; one-story garage, locker room and time office, 121x124; $37,000.

Baltimore, Md.; Daylight Realty Co.; one-story brick garage, 189x100x23.6, $30,000.

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Baltimore, Md.; Cliffview Garage, 411 North Milton avenue; one-story garage, 40x250.

Baltimore, Md.; J. H. Symington Co., 1005 Maryland Trust building; two-story garage, 24x40.

Baltimore, Md.; Franklin Motor Car Co., 1017 North Eutaw street; two-story garage and show room, 40x150, at 1122-1124 North Charles street; $75,000.

Baltimore, Md.; Maryland Casualty Co., Baltimore street and Guilford avenue; two-story garage, 60x122; $40,000.

Baltimore, Md.; Merin Brothers, 1024 East Baltimore street; three-story garage, 62x72; $10,000.

Baltimore, Md.; Charles E. Litzinger, 3678 Falls road; one-story brick garage, at 38th and Elm avenues; $10,000.

Baltimore, Md.; H. S. Born Motor Corporation, 35 North Brentalow street; one-story brick public garage, 100x150; $40,000.

Baltimore, Md.; Independent Ice Co., 315 North Holliday street; one-story brick garage, 125x125; $95,000.

Baltimore, Md.; Federal Motor & Sales Co., 803 Low street; three-story fireproof salesroom and service station, 150x300.

Cambridge, Mass.; G. F. Snell, 96 Winthrop street; two-story public garage, 62x70.

Chelsea, Mass.; F. A. Glazier, 107 Addison street; two-story reinforced concrete garage, 100x200; $50,000.

Norwood, Mass.; Stanley Vasilliansky, 1008 Washington street; one-story brick garage, 33x34.

Calumet, Mich.; James McClure; one-story garage, 118x169.

Detroit, Mich.; M. A. Young; one-story garage, 60x200.

Detroit, Mich.; A. J. Towar; one-story garage; $45,000.

Detroit, Mich.; Winer & Fuller, 231 East Palmer street; one-story brick garage, 171x418, at 190 Garfield street; $20,000.

Detroit, Mich.; L. G. Grimm, 395 Military avenue; one-story brick garage, 97x132; $50,000.

Detroit, Mich.; Kirby, Sorge & Felske, Dime Bank building; one-story public garage, 100x100; $60,000.

Flint, Mich.; Cook Barnes Motor Co.; one-story garage and repair shop; $50,000.

Flint, Mich.; City of Flint; two-story brick and reinforced concrete garage and repair shop, 66x180; $65,000.

Jackson, Mich.; Michigan Buick Sales Co.; one-story garage, 50x132; $20,000.

Stambaugh, Mich.; Westman Holmes; one-story garage, 40x60; $5000.

Elk River, Minn.; E. N. Daly Co.; one-story brick garage, 50x100.

Hibbing, Minn.; Mesaba Garage Co.; one-story garage, 125x150; $75,000.

Minneapolis, Minn.; Cadillac Auto Co.; one-story garage, 110x190; $200,000.

Batesville, Miss.; W. H. Wall & Sons, Sardis, Minn.; one-story garage; $6000.

Clayton, Mo.; A. J. Kerth, 402 Bonhomme street; one-story brick and reinforced concrete garage, 63x140; $35,000.

Excelsior Springs, Mo.; McDavid Brothers; one-story brick and stone trim garage, 57x114.

Kansas City, Mo.; Nash Motor Co., 27th street and McGee road; four-story auto building, 79x115; $140,000.

Kansas City, Mo.; White Motor Car Co., 1619 McGee street; three-story service and distribution station, 268x317; $250,000.

Kansas City, Mo.; Globe Coal Co., 2040 McGee Traffic way; one-story brick and stone trim garage, 100x100, at 3312-3318 East 27th street; $15,000.

Moberly, Mo.; J. N. Taylor, 211 North Fourth street; one-story brick fireproof garage, 100x140.

Nevada, Mo; H. R. Primer; one-story garage, 97x160; $75,000.

St. Joseph, Mo.; T. L. Richey, care of Lehn Construction Co., 1712 Frederick avenue; two-story garage, 19x144.

St. Louis, Mo.; Mendenhall Motor Co.; one-story garage, 50x155; $8000.

St. Louis, Mo.; Schluter Manufacturing Co; one-story brick and reinforced concrete garage, 50x62; $25,000.

St. Louis, Mo.; Rudolph Brook, 4386 Olive street; one-story garage, 100x155.

St. Louis, Mo.; E. A. Schneider, Red Bud and Penrose avenue; one-story brick garage, 25x30; $4000.

Laurel, Mont.; Harry Penninger & Co.; one-story garage and repair shop; $10,000.

Grand Island, Neb.; Teeter & Homan; four-story brick and reinforced concrete garage and sales room, 66x132.

Omaha, Neb.; E. Reuman, 3115 Leavenworth street; one-story brick garage, 57x110, at 3701 Leavenworth street; $15,000.

Rising City, Neb.; E. E. Reece; one-story garage, 75x120; $15,000.

Sidney, Neb.; Louis Mann; one-story garage, 36x48.

Asbury Park, N. J.; Thomas E. Brown; one-story hollow tile show room, 50x60; $10,000.

Elizabeth, N. J.; Stephen Koesis, Magnolia avenue; one-story garage, 25x50.

Hackettstown, N. J.; W. G. Vey; one-story brick garage; $10,000.

Hoboken, N. J.; Matthew Wright; one-story brick public garage at 554 Newark avenue; $15,000.

Newark, N. J.; Macphee Brothers, 134 Lehigh avenue; one-story brick public garage, 49x90, at 1041 Bergen street; $8000.

Newark, N. J.; Jacob Rosenkranz, 65 North 12th street; one-story brick public garage, 25x25, rear 656 South 12th street.

Newark, N. J.; Jacob Salkalin, 197 South 13th street; one-story brick public garage, 50x117, at 15 South 14th street; $15,000.

Newark, N. J.; McGann Co., 146 North Front street; two-story brick reinforced concrete and limestone trim commercial garage, 50x81, at 140-142 North Front street; $20,000.

Passaic, N. J.; W. C. Pattison, Lawyers' building; two-story hollow tile public garage, 52x150; $45,000.

Trenton, N. J.; Henry Kehr, 682 Princeton avenue; one-story brick and hollow tile garage, 25x100.

Trenton, N. J.; E. Niedt Ertle Motor Co.; two-story brick public garage, 60x181.

Ventnor, N. J.; William Frieholder; two-story garage, 22x24, at Oxford and Ventnor avenues; $3500.

Raton, N. M.; Gate City Garage Co.; one-story garage, 75x110.

Albany, N. Y.; Walter D. Watson, 51 State street; seven-story commercial garage; $100,000.

Albany, N. Y.; Harry D. Williams, Erie County Bank building; one-story sales room, northeast corner Main street and Woodlawn avenue; $15,000.

Albany, N. Y.; Edward McArdle, 266 Livingston avenue; one-story private garage, 40x57, at 169 North boulevard; $12,000.

Binghamton, N. Y.; Achilles Rubber & Tire Co.; one-story hollow tile garage and storage station, 50x100; $6000.

Buffalo, N. Y.; Leon J. Newak, 1067 Broadway; 1½-story hollow tile and stucco private garage, 22x27, rear 215 Beard avenue; $3000.

Brooklyn, N. Y.; Louis Oxfeld, 3536 Stone avenue; one-story brick garage, 75x155, west side Ormond place and South Putnam avenue; $30,000.

Brooklyn, N. Y.; P. Howard Reid, 2021 Emmons avenue; one-story brick garage, 100x100, east side Ocean avenue, south Voorhees avenue; $75,000.

Brooklyn, N. Y.; Edward A. Richards, 147 Barbey street; one-story brick garage, 90x100, southeast corner Bushwick avenue and Fanchon place; $42,000.

Brooklyn, N. Y.; Allied Building Corporation, 158 Broadway; one-story brick garage, 100x113, south side Hope street, east Roebling; $32,000.

Brooklyn, N. Y.; Emanuel Sommer, 440 Ocean parkway; one-story concrete garage, 18x30, east side Ocean parkway, south itmas avenue; $6500.

Brooklyn, N. Y.; Abraham Kaplan, 1462 Eastern parkway; one-story brick show room and service station, 118x180, north side Atlantic avenue, west Franklin avenue.

Brooklyn, N. Y.; Mary E. Lucke, 21 Suydam place; one-story garage, 74x159, east side Utica street, north Prospect place; $50,000.

man street; one-story brick garage,

Brooklyn, N. Y.; Frank Keim, 411 Troutman street; one-story brick garage, 100x100, at 413-421 Troutman street; $25,000.

Brooklyn, N. Y.; Jacob Selicowitz, 825 Myrtle avenue, New York; one-story garage, 99x100, south side Fulton street, east Hopkinson avenue; $25,000.

Brooklyn, N. Y.; Walter A. Heuchel, 424 55th street; one-story brick garage, 90x200, west side Eighth avenue, between 44th and 45th streets; $40,000.

Brooklyn, N. Y.; Talhensar Realty Co., 175 Bay 79th street; one-story brick garage, 60x107, southwest corner High and Adams streets; $35,000.

Brooklyn, N. Y.; Lowenstein & Doeb, 933 St. John's place; one-story brick garage, 60x157, north side Carroll street, west Franklin avenue; $20,000.

Brooklyn, N. Y.; C. Modica, 286 Jefferson avenue; one-story brick garage, south side DeKale avenue, east Irving avenue, 100x100; $17,000.

Brooklyn, N. Y.; Henry Pope, 65 Webster avenue; one-story brick garage, 59x100, at 115-120 Lawrence avenue; $18,000.

Canandaigua, N. Y.; Marks Garage, 34 Phoenix street; two-story hollow tile garage, 29x130.

Flushing, L. I., N. Y.; Knickerbocker Ice Co., 1480 Broadway, New York; one-story garage, 43x83, at 455 South 34th avenue; $17,000.

Glens Falls, N. Y.; Dr. M. L. Haviland, 47 Ridge street; one-story concrete block and wood public garage, 44x68, at 35 Ridge street; $5000.

Huntington, L. I., N. Y.; B. F. Abraham; 2½-story hollow tile show room and service station, 86x84, at Main street and Stewart avenue; $20,000.

Kingston, N. Y.; Wright & Smith; one and two-story public garage and show room, 64x128 and 4060; $35,000.

Mt. Pleasant, N. Y.; Joseph Sammler, 337 Fourth avenue; two-story concrete block public garage, 50x70; $10,000.

New York, N. Y.; William Lowe, 2145 Boston road; one-story public garage, 100x150, at 523-533 East 70th street; $30,000.

New York, N. Y.; William L. Byrnes, 477 East 33rd street; two-story brick public garage, 50x100, northeast corner 134th and Brown place; $30,000.

New York N. Y.; Harry Kline, 425 West 54th street; two-story brick public garage, 50x120, at 115 West 54th street; $25,000.

Niagara Falls, N. Y.; Frank A. Jensa, Division avenue and Main street; one-story frame and stucco private garage, 22x34, at 1129 Niagara avenue; $3000.

Niagara Falls, N. Y.; Wincenze Caterine, 1102 Fairfield avenue; one-story brick public garage, 45x75, at 11th street and Fairfield avenue; $10,000.

Penn Yann.; N. Y.; Edward L. Geer, 1 Main street; one-story garage, 50x100.

Ridgewood, L. I., N. Y.; Kreis & Somerbitz, 54 Pulaski street, Middle Village, L. I.; one-story garage, 41x74, east side Sherman street, south Central avenue; $8000.

Ridgewood, L .I., N. Y.; Getter & Breitenbach Motor Car Co., 2442 Myrtle avenue; one-story brick garage, 41x48, east side Felix avenue, south Cypress avenue; $5500.

Rochester, N. Y.; John M. Ward, 87 Franklin street; two-story brick and stucco garage, 20x24; $5000.

Salamanca, N. Y.; Frank Froness, 5 Broad street; two-story garage; $45,000.

Utica, N. Y.; Rockway Truck Sales Co.; one-story brick public garage, 50x150, Second and Broadway; $20,000.

Utica, N .Y.; Hotel Martin Co.; two-story storage garage, 50x100; $30,000.

Utica, N. Y.; Sherman Sales Co., 516 John street; two-story brick, steel and tile garage and sales room, 120x135; $150,000.

Asheville, N. C.; Casel Curry Car Co.; one-story garage, 50x140; $50,000.

Asheville, N. C.; Alexander & Black, Biltmore and Southside avenues; one-story, fireproof garage, 27x120; two-drive filling station; install air compressor, gas and oil pumps, 5000-gallon gas tank; $12,000.

Calypso, N. C.; Calypso Motor Co.; one-story garage; $25,000.

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Gastonia, N. C.; L. N. Patrick; one-story garage, 60x117.

Greensboro, N. C.; Master Motor Co.; one-story garage and show room, 55x150; $75,000.

Lexington, N. C.; Harman-Taylor Motor Co.; one-story garage; $50,000.

Marshville, N. C.; Gem Auto Co.; one-story repair shop; $10,000.

Morgantown, N. C.; Oxford Machine Shop Garage Co.; one-story garage; $50,000.

Plymouth, N. C.; P. E. Price; one-story garage; $20,000.

Rod Springs, N. C.; Rod Springs Motor Co.; one-story garage; $100,000.

Salisbury, N. C.; Lingle Garage Co.; one-story concrete block garage; $4000.

Winston-Salem, N. C.; Universal Motor Co.; one-story garage; $125,000.

Winston-Salem, N. C.; Standard Motor Co.; two-story garage, 60x200.

Akron, O.; A. J. Akers; one-story garage; $12,000.

Akron, O.; Akron Motor Exhibition Co.; one-story garage; $10,000.

Akron, O.; Central Garage Co.; one-story garage; $10,000.

Akron, O.; West Hill Garage; one-story garage; $50,000.

Cincinnati, O.; Thomas Estate, Denton building; one-story brick sales room and service station; $50,000.

Cincinnati, O.; A. R. Marsche, 597 Terrace avenue; one-story brick and concrete public garage, 21x28; $2500.

Cleveland, O.; Kelly-Springfield Tire Co.; one-story garage, 100x102; $75,000.

Columbus, O.; Mr. Taylor, care Stribling & Lum, 85 North High street; one-story brick commercial garage, 48x188.

Columbus, O.; C. W. Bellows, Ruggery building; one-story garage (two parts), 66x95 and 66x96; $35,000.

Hamilton, O.; Miami Motor Car Co.; one-story garage; $49,000.

Loveland, O.; George Sayen, Union Trust building, Cincinnati, O.; one-story public stucco and hollow tile garage, 24x40.

Mansfield, O.; George Stroch, treasurer Farmers' bank; two-story brick and concrete garage, 50x200; $50,000.

Mansfield, O.; Schell Wolf Co.; one-story garage and service station, 60x120, for A. M. Colby; $20,000.

Mansfield, O.; Thomas W. Lutz; two-story brick garage and sales room, 80x80; $40,000.

Sandusky, O.; Herb & Meyers; one-story garage, 50x99; $35,000.

Steubenville, O.; H. D. Brond; one-story garage, 50x95; $35,000.

Steubenville, O.; A. L. Holmes; one-story garage, 60x160; $50,000.

Toledo, O.; Landaman Griffith Co.; one-story garage and service station, 100x130; $15,000.

Toledo, O.; E. H. Close; one-story garage, 50x100 and 50x150; $75,000.

Youngstown, O.; Ohio Garage Co.; one-story garage, 50x60; $75,000.

Enid, Okla.; R. R. Kisner; two-story brick and reinforced concrete garage, 50x150; $50,000.

Muskogee, Okla.; F. B. Tuttlis; one-story brick repair shop; $18,000.

Norman, Okla.; Taylor Motor Co.; one-story garage; $5000.

Oklahoma City, Okla.; E. A. Hickman; one-story garage; $10,000.

Oklahoma City, Okla.; T. C. Huff; two-story garage, 53x140, and one-story oil station, 12x20.

Tulsa, Okla.; Ellington Brothers; one-story garage and repair shop, 60x140; $15,000.

Tulsa, Okla.; Emerod & Legare; one-story garage; $25,000.

Baker City, Ore.; Masters & Perkins; one-story garage, 100x200.

Klamath, Ore.; A. A. Bellman; one-story garage, 100x100.

Portland, Ore.; White Garage; one-story garage; $5000.

Portland, Ore.; D. T. McCarthy; one-story garage; $3500.

Portland, Ore.; Keeney Brothers; one-story garage; $17,000.

Portland, Ore.; Journal Garage Co.; one-story garage, 100x100; $10,000.

Portland, Ore.; Jones & Graf; one-story garage; $6000.

Portland, Ore.; W. E. Jacobs; one-story garage; $8000.

Portland, Ore.; C. S. Jackson; one-story garage; $6000.

Portland, Ore.; F. Forrestal; one-story garage, 60x108; $35,000.

Portland, Ore.; Elks' Lodge; one-story garage, 100x100, $35,000.

Portland, Ore.; Division Street Garage Co.; one-story garage; $5000.

Allentown, Pa.; City of Altoona; two-story brick and reinforced concrete garage, 35x60, at Fountain and Jackson streets; $7000.

Crafton, Pa.; G. J. Rudolph Sales & Service Co., 63 Station street; one-story brick and reinforced concrete garage; $30,000.

Etna, Pa.; Ernest Koeberlinn; one-story brick, reinforced concrete and stone trim commercial garage, 53x103, at Crescent and Dewey streets.

Harrisburg, Pa.; Keystone Auto Top Co., 72 South Cameron street; one-story public garage, 40x151, at 124-128 South Cameron street.

Johnstown, Pa.; Dodge Brothers Motor Cars Co., 216 Debert street; two-story brick and concrete commercial garage, 66x162; $75,000.

Merion, Pa.; Dr. George D. B. Daily; 1½-story stone garage, 24x60; $15,000.

Northampton, Pa.; Northampton Garage, 1716 Washington street; two-story brick public garage, 35x75; $20,000.

Pittsburgh, Pa.; Nevile Land Co., care of D. A. Crone, 2537 Oliver building; five-story brick and reinforced concrete garage and show room, 175x200.

Pittsburgh, Pa.; F. W. Edmondson, 1130 South Negley street; two-story brick private garage, 20x24.

Philadelphia, Pa.; Charles E. Biddle, Real Estate Trust building; one-story brick public garage, 40x95, at 52nd and Pentridge streets; $80,000.

Reading, Pa.; Central Taxicab Co.; two-story brick and reinforced concrete garage, 45x90, at Washington and Madison streets.

Reading, Pa.; Merchants' Auto Service Co., 424 Court street; three-story brick and reinforced concrete garage, 90x119, at Polar and Court streets.

Scranton, Pa.; O. D. Dewitt, 730 Wyoming avenue; two-story public brick and concrete garage, 90x117; $125,000.

Providence, R. I.; Thomas F. Cullinane, 63 Olive street; two-story public garage, 83x118; $100,000.

Providence, R. I.; Chandler Motor Co. of Rhode Island, Inc., 212 Broad street; two-story brick public garage and service station, 50x100; $35,000.

Columbia, S. C.; Burns Motor Co.; one-story brick garage; $30,000.

Columbia, S. C.; Automotive Sales Co.; one-story garage; $10,000.

Florence, S. C.; D. W. Alderman, Jr.; one-story auto supply station; site, 200x360.

Condo, S. C.; George Fossum, Aberdeen, S. D.; two-story brick garage, 50x120; $15,000.

Milbark, S. D.; Wright Motor Co.; one-story concrete and tile garage, 50x110; $15,000.

Columbia, Tenn.; Fry Brothers; one-story garage, 80x160; $75,000.

Columbia, Tenn.; Howard & Sumpter Construction Co., Nashville, Tenn.; two-story brick, steel and concrete garage, 25,000 feet floor space, white tile enamel front, plate glass show room, steel cased windows in storage and work rooms; $75,000.

Knoxville, Tenn.; Rodgers & Co., 900 Gay street; one-story reinforced concrete show room, 87x93; install equipment for repair shop and service station, electric door openers, turn tables; $50,000.

Memphis, Tenn.; Watkins Overton; one-story garage; $54,000.

Nashville, Tenn.; Cole Brothers; one-story garage; $11,000.

Abilene, Tex.; Spaulding Automobile Co.; one-story brick show room and paint shop, 110x140; $20,000.

Bay City, Tex.; John A. Crawford; one-story garage, 75x90.

Bryan, Tex.; Vick Brothers; one-story concrete garage, 96x115.

Dallas, Tex.; Staten Auto Co.; one-story garage, 75x200; $50,000.

Dallas, Tex.; Packard-Dallas Motor Co.; one-story auto bulding, 118x128; $70,000; install machinery; $5000.

Dallas, Tex.; Keith-Patterson Motor Co.; one-story concrete, steel, white tile and terra-cotta sales room, 132x137; double-decking arrangement; for storage; $200,000.

Dallas, Tex.; M. C. Cameron, manager Trinity Motor Co., Commerce and Pearl streets; one-story sales room, 50x50; $75,000.

Houston, Tex.; Ford Motor Co., 3027 Woodward avenue, Highland Park, Mich.; two-story service station, 100x259.

Orange, Tex.; Magnolia Petroleum Co.; one-story brick and concrete filling station; site, 75x75.

San Antonio, Tex.; A. E. Staacke Automobile Co.; one-story service station, 100x140; $25,000.

Taylor, Tex.; T. V. Marse, care Walsh & Giesch, Littlefield building, Austin, Tex.; one-story brick garage, 50x125; $15,000.

Waco, Tex.; Texas Telephone Co.; two-story garage and repair shop; $40,000.

Weatherford, Tex.; Clarence Hopkins; one-story garage, 130x150.

Danville, Va.; Crowell Automobile Co.; one-story garage, 120x180.

Danville, Va.; Coleman Storage Battery Co.; one-story concrete garage, 60x300.

Lexington, Va.; H. H. Johnston, 25th and Cranby streets; two-story brick sales room and service station, 100x105.

Norfolk, Va.; McLean & Cooper; one-story garage, 25x110.

Petersburg, Va.; J. A. Dameron & Co.; one-story garage, 32x120.

Portsmouth, Va.; J. M. Broughton; one-story hollow tile garage, 22x50x64; $8000.

Richmond, Va.; W. S. Forbes; one-story garage; $60,000.

Richmond, Va.; Laburnum Corporation; one-story garage, 40x140.

Ellensburg, Wash.; W. W. Seymour; one-story garage, 60x120.

Seattle, Wash.; Hudson Brothers; one-story garage, 60x120; $20,000.

Seattle, Wash.; J. A. Scherer; one-story garage, 56x128; $40,000.

Spokane, Wash.; Riegel Brothers; one-story garage, 100x156; $125,000.

Spokane, Wash.; Protective Service Garage; one-story garage; $25,000.

Tekoa, Wash.; E. Cole; one-story garage, 48x100; $8000.

Toppenish, Wash.; Beaver-Gardner Motor Co.; one-story garage; $10,000.

Yakima, Wash.; Brewer Motor Car Co.; one-story garage, 50x145.

Bluefield, W. Va.; D. W. Miles; one-story garage; $130,000.

Charleston, W. Va.; George R. Isaac; one-story garage; $10,000.

Clarksburg, W. Va.; Tanner & Bishop, Traders avenue and Sixth street; one-story fireproof garage, 70x80; $25,000.

Clarksburg, W. Va.; Clarksburg Welding & Brazing Co.; one-story concrete block garage and machine shop, 51x95.

Elkins, W. Va.; Howard Day; one-story garage, 50x150.

St. Albans, W. Va.; L. K. Sturgeon; one-story garage, 50x120.

St. Albans, W. Va.; Jewett B. Smith; one-story garage; 40x90.

Welch, W. Va.; Hill Motor Co.; one-story garage, 75x150; $100,000.

Crandon, Wis.; Crandon Motor Car Co.; one-story garage; $10,000.

Manitowoc, Wis.; Dicke Motor Car Co., 1101 Franklin street; one-story brick and hollow tile sales room, 60x120; $15,000.

Medford, Wis.; G. Kriplean; one-story garage, 60x100; $25,000.

Milwaukee, Wis.; Wisconsin Rubber Co., 181 Fourth street; five-story sales room and service station, 50x100; $75,000.

Milwaukee, Wis.; Wisconsin-Oakland Co., 525 Jefferson street; three-story brick and reinforced concrete sales room and service station, 78x120, at Oneida and Jackson streets.

Oconto Falls, Wis.; Oconto Falls Motor Co.; one-story brick and tile garage and sales room, 90x120; $25,000.

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Osceola, Wis.; Otto Beyl; one-story brick and concrete garage; $10,000.

Sparta, Wis.; M. E. Steele; one-story garage, 95x100.

Sheboygan, Wis.; Peter Kwekkelboom; two-story brick and concrete garage and sales room, 65x120; $25,000.

CONTRACTS AWARDED.

Bessemer, Ala.; T. C. Donald and B. G. Perry; one-story garage; $25,000. Lessee, Dennis Automobile Co.

Birmingham, Ala.; Mann Brothers; two-story brick fireproof garage for Frank S. White; $14,000.

DeKalb, Ark.; Lee Quillen; one-story auto building for Dreyer Motor Sales Co., Texarkana, Ark.; $15,000.

Little Rock, Ark.; John Schmeltzer; two-story brick auto building, 50x140; plate glass front, tile floors; display room on first floor, shop on second floor; electric elevator; for A. H. Scott Estate. Lessee, Universal Motor Co., 918 Main street.

New Britain, Conn.; W. H. Allen Co.; one-story service station, 55x100; for A. G. Hawker, 8 Elm street; $30,000.

Washington, D. C.; E. H. Mosher, Munsey building; four-story sales room and service station, 45x135, on L street, near Connecticut avenue, for Allan E. Walker Co., 818 15th street; $100,000.

Washington, D. C.; R. P. Whitty Co., Union Trust building; two to four-story garage and show room, at 14th and V streets; $75,000.

Washington, D. C.; Boyle Robertson Construction Co., Evans building; six-story show room and assembling plant, 27x72, at 14th and L streets, northwest; $200,000.

Washington, D. C.; George B. Millin Co.; two-story garage, 50x120.

Augusta, Ga.; Palmer-Spivey Construction Co.; one-story filling station, for Hollis C. Boardman; $5000.

Chicago, Ill.; A. Nelson, 7950 Princeton avenue; one-story filling station, 11x20, at 248 South Cicero avenue, for Sinclair Oil Co., 531 Conway building; $5000.

Chicago, Ill.; W. Knudson, care of Edison Keith Co., 24 South Michigan avenue; one-story garage, sales room and service station, 50x140, on North avenue, near Spaulding; $18,000.

Chicago, Ill.; Ralph Sollett & Sons Construction Co., 30 North La Salle street; one-story garage, 75x90, at 4848 North Clark street, for S. S. David Warehouse Co., 2616 Milwaukee avenue.

Chicago, Ill.; Louis Spinka, 3341 26th street; one-story private garage, 40x45, at 2613 Trumbull avenue; $4500.

Chicago, Ill.; B. & W. Construction Co., 10 La Salle street; one-story public garage, 120x175, at 23rd and Calumey avenue, for A. H. Gross, care of Zimmerman, Saxe & Zimmerman, 64 East Van Buren street; $60,000.

Chicago, Ill.; Martin Construction Co., 105 North Clark street; one-story garage at 729-733 Lake street, for H. Arnold, 660 West Randolph street; $65,000.

Chicago, Ill.; MacLean Construction Co., 76 West Monroe street; two-story service station at 32nd and Michigan avenue, for Murry Van Sicklen, 2837 South State street; $60,000.

Chicago, Ill.; MacLean Construction Co., 76 West Monroe street; one-story garage and sales room, 100x190, at 2848 Michigan avenue, for Indiana Truck Corporation of Illinois, 2595 Indiana avenue; $45,000.

Chicago, Ill.; Obronstein & Hill, 59 East Washington street; one-story garage, 75x120; $70,000.

Chicago, Ill.; B. & W. Construction Co., 10 South La Salle street; two-story sales room and service station, 50x120, at 2619-2621 Michigan avenue, for Joseph Buttas, 10 South La Salle street; $45,000.

Chicago, Ill.; McClauncey, 19 South La Salle street; two-story sales room and service station, 45x175, at 3130-3132 South Michigan avenue; $45,000.

Chicago, Ill.; Edward Cabel, 3125 Wilson avenue; one-story public garage, 50x125 at 4514 Kedzie avenue; $8000.

Chicago, Ill.; W. Brower, 848 West Madison street; one-story public garage 71x116, at 1415 West Van Buren street $15,000.

Chicago, Ill.; J. A. Lindstrom, 1455 Balmoral avenue; one-story public garage, 85x168, at 7032 North Paulina street, for C. W. Ferguson, Howard Theater building; $30,000.

Freeport, Ill.; J. T. Brandt, 157 Union street; one-story garage and repair shop, 63x110, for William Wright, 447 Stephanson avenue; $15,000.

Lena, Ill.; Herman Atterbern; one and two-story garage and shop, 50x144, for Wolf & Wright; $30,000.

Mt. Vernon, Ill.; Jones Brothers; one-story brick garage, 29x60, for Standard Oil Co.; $5000.

Springfield, Ill.; John Senil, 710 East Jefferson street; three-story service garage, 60x220, at Fourth and Jackson streets, for Jenning Auto Sales Co., 10th and Adams streets; $150,000.

Fort Wayne, Ind.; Indiana Engineering & Construction Co.; three-story garage and sales room, for E. W. Steinhart Co. 11th and Meridian streets, Indianapolis, Ind.; $160,000.

Indianapolis, Ind.; Bedford Stone & Construction Co.; one-story commercial garage, 98x150, at 445 Virginia avenue, for Wangelin Shop Co., 459 Virginia avenue.

Des Moines, Ia.; A. H. Newman, Hubbell building; two-story garage, 44x138, at 14th and Locust streets, for G. W. Jones, 1212 Locust street; $50,000.

Des Moines, Ia.; William F. Knutson & Son, Flynn building; two-story garage and sales room, 50x168, at 1304-1306 Locust street, for Dr. O. E. Lynch, Flynn building; $30,000.

Dubuque, Ia.; Anton Z. Wack, 1301 Clay street; one-story public garage, 90x100, for Peerless Garage, 13th and Clay streets; $40,000.

Topeka, Kan.; Barber & Anderson; two-story garage, 50x75, at 1013-1015 Kansas avenue, for George Seybold, 1015 Kansas avenue.

Baltimore, Md.; Joseph Selekmann, 1808 North Chester street; one-story garage, 60x200, at 814 North Hoster street, for Frederick F. Rob; $15,000.

Baltimore, Md.; W. E. Harn Co., 2314 Oak street; one-story garage, 60x100, for H. L. & E. L. Blum, 213 North Calvert street.

Baltimore, Md.; Federal Motor & Sales Co., 803 Lou street; two-story brick garage and show room, 106x141; $75,000.

Chestertown, Md.; W. G. Pippin; two-story garage, 42x200, for A. S. Turney & Son.

Boston, Mass.; Wilson & Tomlinson, 79 Milk street; one-story public garage and service station, at 805 Beacon street, for E. Kingsbury.

New Bedford, Mass.; F. E. Earle Co., 52 North Second street; one-story public garage, 79x90, at Mill and Cook streets, for Fred W. Greene, Jr., 25 Chauncey street; $8000.

Detroit, Mich.; A. W. Kutsche, 623 Ford building; four-story garage, 98x196, for Charles E. Smith & Co., care of E. R. Dunlap, Hammond building; $50,000.

Roscommon, Mich.; Henry Sachrider, Chesaning, Mich.; one-story garage, 50x75, for J. H. Dye; $15,000.

St. Paul, Minn.; W. I. Hoy Co., 700 Metropolitan building; one and two-story public garage and storage station, 50x100 each, on Cromwell, between Wabash and Myrtle streets, for Texas Oil Co.; $50,000.

Cape Girardeau, Mo.; Geehard Construction Co.; two-story garage, 50x144, for Norman L. Hely.

Kansas City, Mo.; C. C. Dalrymple, 301 Scarritt building; one-story filling station, 35x40, at southwest corner 19th and Baltimore avenue, for Southern Oil Corporation, Security building; $6000.

Kansas City, Mo.; Kansas City Construction Co., 822 Commerce building; one-story filling station 20x75, for Kansas City Refining Co., First and Troup avenues.

Kansas City, Mo.; J. E. Taylor, 308 Reliance building; one-story garage and repair shop, 32x48x52x150, at 32nd and Brooklyn streets, for L. H. Steckling, 2623 Bellefontaine avenue; $20,000.

Kansas City, Mo.; J. E. Taylor, 308 Reliance building; two-story garage, 35x50, and one-story, 50x125, at 302 Holmes street; $25,000.

Kansas City, Mo.; Max Morris, 3915 Charlotte avenue; one-story garage, 68x90, at 2911-2915 East 39th street, for H. L. Burnett; $5000.

Kansas City, Mo.; J. E. Taylor; two-story garage, 35x50, and one-story, 50x125, for E. C. Millhauser, 219 East 10th street.

St. Joseph, Mo.; Lehr Construction Co., 1712 Frederick avenue; two-story garage, 19x144, at 25th and Jones streets, for T. L. Richey; $10,000.

St. Louis, Mo.; A. Campbell, 6435 Wellsmer avenue; two-story sales room and garage, 100x134, at Harrison and Locust streets, for J. Hutschesen, 712 Olive street.

St. Louis, Mo.; Schleter Manufacturing Co.; one-story brick and reinforced concrete garage, 50x62.

St. Louis, Mo.; James Godfrey Construction Co., Wainwright building; one-story garage and shop, 40x50, for Standard Sanitary Manufacturing Co., 810 North Second street

Omaha, Neb.; J. E. Creedon; one-story garage, 100x135, at 5011-5013 Underwood avenue, for William G. Barber; $30,000.

Omaha, Neb.; Vaughn Construction Co., Peters Trust building; three-story sales room and service station, 144x161, southeast corner 28th and Harney streets, for O'Brien-Davis Coal Auto Co., 1814-1818 Farnam street.

Manchester, N. H.; William T. O'Neill, 272 Walnut stret; one-story public garage, at Union and Brooks streets; for J. T. Buckley, Wilton, N. H.; $15,000.

Atlantic City, N. J.; W. Potter & Son, 113 North Connecticut avenue; two-story public garage, 60x175; $40,000.

Atlantic City, N. J.; Dolinsky, 2 North Vermont avenue; two-story public garage, 60x175, for W. Potter & Sons, 113 North Connecticut avenue; $40,000.

Camden, N. J.; Mockett Construction Co., Sixth and Market streets; one-story garage, 10x20, for J. E. Hermitage; $8000.

Newark, N. J.; Isadore Rekoon, 61 Monmouth street; one-story public garage, 50x100, at 43-45 Lillie street, for Sigmond Becker, 36 Caverly avenue; $15,000.

Paterson, N. J.; Edward Carroccioli, 320 Grand avenue; one-story brick public garage, 50x178, southwest corner Madison and Market streets, for M. Botta Co.; $25,000.

Albany, N. Y.; Samuel Purrott, 92 Trinity place; one-story garage, 22x32, at 80 Catherine street, for Henry Byer, 57 Elizabeth street; $3500.

Albany, N. Y.; McCaffrey & Hughes, 646 Central avenue; one-story public garage, at 674 Central avenue, for William G. Shafer; $8000.

Brooklyn, N. Y.; Walzer Brothers Corporation, 44 Court street; one-story public garage, 81x110, at 143-157 Bedford avenue; $25,000.

Elmhurst, L. I., N. Y.; Louis Gold, 44 Court street, Brooklyn, N. Y.; one-story garage, 100x200, northwest corner Jackson avenue and 22nd street; $70,000.

New York, N. Y.; Jacob Bushlein, 561 West 189th street; one-story brick public garage, 100x175, east side South boulevard, south Longwood avenue; $40,000.

New York, N. Y.; Louis Gold, 44 Court street; five-story garage, 100x100, southwest corner 57th street and 11th avenue, for Battle Iron Truck Co.; $350,000.

New York, N. Y.; Richard Carvel Contracting Co., 401 West 59th street; two-story garage, 75x100, at 247-251 West 60th street, for Carman Realty Co., 400 West 59th street; $40,000.

New York, N. Y.; John T. Brady, 103 Park avenue; two-story garage and service station, 75x100, at 537-541 West 43rd street, for Park & Tilford, 529 West 42nd street; $60,000.

Niagara Falls, N. Y.; Charles Moyer & Son, 1222 Pine street; one-story brick and cut stone front public garage and sales room, 71x120, at northwest corner Spruce and Main streets, for Richard N. Pattison, 1719 Pierce avenue; $30,000.

Niagara Falls, N. Y.; Halliday & Morden, 335 First street; one-story public garage, 52x201.

Rensselaer, N. Y.; Zepf Brothers; one-story public garage, 54x100, at Broadway

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and Columbia street, for John G. Kapp, 836 Broadway; $15,000.

Richmond Hill, L. I., N. Y.; William F. Flannagan, 118 East 26th street, New York; one-story service station, 16x16; Metropolitan Hillside and Cottage avenues, for Texas Oil Co., 17 Battery place, New York; $10,000.

Schenectady, N. Y.; Layman J. Winter and William C. Crane, 1510 Union street; one-story public garage and show room, 100x150.

Utica, N. Y.; Harry Lancaster, Mayro building; one-story public garage, 50x150 at Second street and Broadway, for Broadway Truck Sales Co.; $20,000.

Charlotte, N. C.; Anderson Motor Co.; building, 99x150, on South Tryon street.

Greensboro, N. C.; Master Motor Co., Inc.; garage; $75,000.

Cincinnati, O.; J. A. Albrecht, 3751 Borden street; one-story garage and service station, 40x100, at 4131 Hamilton street, for North Side Motor Car Co., 4129 Hamilton street; $16,000.

Cleveland, O.; W. F. Forbes Construction Co., 4511 Euclid avenue; one-story public garage at 4601 Euclid avenue, for Glengariff Realty Co., Erie building; $18,500.

Columbus, O.; D. & D. Service Co.; two-story brick storage battery service station, 226 North Fourth street; $25,000.

Newark, O.; Reinbolt Refining Co.; one-story filling station at Fourth and Locust streets; $10,000.

New Lexington, O.; Hugh White, Corning; sales agency and garage.

Chickasha, Okla.; O. Coffman; one-story garage, 100x165, for F. C. Hall; $35,000.

Duncan, Okla.; H. F. Jobert; one-story garage, 50x125, for Mrs. Gamblin.

Frederick, Okla.; Robert H. Johnson; two-story garage, 50x140, for O. L. Phipps.

Oklahoma City, Okla.; A. F. Stewart Construction Co.; two-story reinforced concrete sales room for Wichita Motors Co., 601 West California avenue.

Oklahoma City, Okla.; Ben B. Dancy, 605 East 10th street; one and two-story garage, 40x140, at 219 West Second street, for J. G. Street, 3124 Classen boulevard; $17,000.

Tulsa, Okla.; Universal Motor Co., North Main street; addition to sales room and service station.

Watonga, Okla.; Grant Brothers; one-story garage and filling station, 35x66, for Norton & DeMoss; $8000.

Wewoka, Okla.; Witherspoon & Woods; two-story garage, 100x140, for J. W. Sortin.

Portland, Ore.; Ertz & Wegman; one-story garage, 90x100; $18,400.

Portland, Ore.; Joseph Pacquet; one-story garage; $17,500.

Mt. Union, Pa.; Mt. Union Planing Mills Co.; one and two-story public garage, 50x160, for Charles C. Huston & Brother, Three Springs, Pa.; $20,000.

Oakdale, Pa.; D. H. McWilliams, 422 Center road, Carnegie, Pa.; two-story commercial garage, 50x72, for Charles Beaumont & Son; $30,000.

Philadelphia, Pa.; H. F. Scott; one-story garage, west side Islyand road, north Chelwynde avenue; $1000.

Philadelphia, Pa.; Morris Yaknitz; one-story garage, 16x24, at 951 North Franklin street, for Bernard Blumberg; $1475.

Philadelphia, Pa.; Robert E. Lamb Co.; one-story garage, 65x124, west side Sawnson street, south Fitzwater, for Pennsylvania Warehousing & Safe Deposit Co.; $70,000.

Philadelphia, Pa.; William C. Wright; one-story garage, south side Coulter street, west Fox, for Frank H. Burpee; $3000.

Philadelphia, Pa.; P. M. Sax; one-story garage at 617 Hortler street, for E. M. Kaufman; $5000.

Philadelphia, Pa.; William Uhler, Jr.; one-story garage, northwest corner Broad street and Belfield avenue, for Crosstown Realty Co.; $32,000.

Philadelphia, Pa.; H. P. Werner; one-story garage, 32x90, at 1121 West Lehigh avenue, for S. Shapiro; $9000.

Philadelphia, Pa.; Jonathan Lomax; one-story garage, east side 61st street, north Hazel avenue; $2000.

Philadelphia, Pa.; J. Y. Loud; one-story garage at 3655 Camac street, for H. J. Hellinger; $8000.

Philadelphia, Pa.; Parrish & Jackson; one-story garage, 16x16, northwest corner Camac and Diamond streets, for Solomon tein; $1400.

Philadelphia, Pa.; Frank G. Stewart; one-story garage, 17x25, rear 1912 Spruce street, for C. R. Hinchman; $3200.

Philadelphia, Pa.; Edwin E. Hollenback; one-story garage at 3723 Walnut street, for C. C. Coolbaugh; $25,000.

Philadelphia, Pa.; Henry C. Dahl; two-story garage, 53x125, at 1517-1519 Vine street, for Milton Stern; $26,000.

Philadelphia, Pa.; William Freiling; one-story garage, 24x34, northwest corner Second and Chew streets, for F. Theller; $2900.

Philadelphia, Pa.; H. F. Dinkelaeker; one-story garage, 18x28, north side Malvern avenue, west 63rd street, for Joseph J. Bailey; $3000.

Philadelphia, Pa.; W. J. Gruhler; one-story garage at 44 West Upsal street; $1500.

Philadelphia, Pa.; A. Mariella; one-story garage, 16x24, at 4052 Parkside avenue, for A. Matison; $1000.

Philadelphia, Pa.; Samuel Stubbs; one-story garage at southwest corner A and Mentor streets, for Henry Barth; $5000.

Philadelphia, Pa.; Flynn & Coyle; one-story garage at 6717 Yocum street, for J. B. Anderson; $1150.

Philadelphia, Pa.; William F. Koelle Co.; one-story brick garage at 1203-1207 West Somerset street, for Gustav Kirchner; $6000.

Philadelphia, Pa.; Milton W. Young; one-story garage at 58th street and Overbrook avenue, for Walter Hayden; $3500.

Philadelphia, Pa.; T. F. Reilly; one-story garage at southeast corner Bryn Mawr and Overbrook avenues; $2300.

Philadelphia, Pa.; Robert D. Hamilton; one-story garage at 177-195 East Roosevelt boulevard; $10,000.

Philadelphia, Pa.; Potts Brothers & Cooperson; two-story brick automobile show room at 901-903 North Broad street for Louis J. Kolb; $70,000.

Philadelphia, Pa.; Automobile Repairs Co.; addition to repair shop, 2291 North 23rd street.

Philadelphia, Pa.; Wilmington Auto Co.; garage and show room; $400,000.

Philadelphia, Pa.; Fred C. Hoehn; one-story brick garage, east side Ninth street, south Cayuga, for William Wyant, Jr.; $1000.

Philadelphia, Pa.; Pottash Brothers; one-story garage, 40x60, southeast corner Swanson and Ritner streets; $5000.

Pittsburgh, Pa.; Howar Hysong, 7307 Kelly street; two-story garage, 43x66, for E. J. Bonner, 612 Homewood avenue.

Pittsburgh, Pa.; Ford Sales Garage Co.; three-story commercial garage, 67x135, at Baum boulevard and Enfield street $100,000.

Pittsburgh, Pa.; Toupet, Bell & Conley, Inc., 5814 Ellsworth avenue; one-story garage, 98x113x40x45, at 5305 Baum boulevard, for Schusler Motor Co., 6116 Station street; $25,000.

Reading, Pa.; Beard Construction Co., 658 Penn street; one-story garage and service station, 30x50, for William H. Luden, 216 North Eighth street; $15,000.

Wilkes-Barre, Pa.; John Curtis & Co., 1 Hickory street; two-story public garage, 45x225, for Gildersleeve Estate; $100,000.

Providence, R. I.; Maurice R. O'Neill; one-story public garage, 60x100, for Donohue Motors Co., 117 Dyer street; $16,000.

Chester, S. C.; G. W. Bryant; garage.

Columbia, S. C.; Columbia Motor Co.; sales room; $20,000.

Columbia, S. C.; J. H. Jordan; two-story sales room, for John H. Williams and Samuel R. Zimmerman; $120,000.

Florence, S. C.; D. W. Alderman, Jr.; sales room and garage.

Greenville, S. C.; McCrorey, Bates & Williams; two-story brick and hollow tile garage and storage station, 25x109; $10,000.

Sioux Falls, S. D.; Watson Automobile Co., Main avenue, north Seventh street; one-story sales room, 44x136.

Vivian, S. D.; Carl Hansen; garage, Main street.

Woonsocket, S. D.; Rozum Motor Co.; garage.

Nashville, Tenn.; J. E. Johnson; two-story brick and stone trim auto building, 50x100; mezzanine floor, including show room; for Nash-Robinson & Co.; $40,000.

Beaumont, Tex.; Thomas Gibson; two-story garage and storage station, 120x140, at Franklin and Pearl streets, for Ford Agency, 509-511 Colorado street; $88,117.

Dallas, Tex.; W. G. Langley, for Franklin Motor Co.; modern fireproof building, Harwood and Trinidad streets.

Elgin, Tex.; Morgan Smith, Austin, Tex.; one-story garage, 56x115, for Ben Fromme; $12,300.

Lufkin, Tex.; Severance Construction Co; one-story interlocking tile garage, 70x120, concrete floor.

Panhandle, Tex.; George W. Ernest, Amarillo, Tex.; one-story garage, 52x140, for F. L. Kelly; $15,000.

San Antonio, Tex.; Coleman & Jenkins; one-story fireproof garage, 105x200, for Ideal Auto Co., 404 Salidad street; $40,000.

Leesburg, Va.; Ives Eshleman; one-story garage and sales room, 50x100, for L. H. Frye.

Martinsville, Va.; E. L. Davis; one-story fireproof auto building, 42x180, for Martinsville Motor Co.; $10,000. Install repair tools and machinery; $2000.

Norfolk, Va.; Steffans & Co.; one-story garage and repair shop, 48x75, for M. I. Greenwood, 147 Granby street.

Norfolk, Va.; Baker & Brinkley, Dickson building; two-story sales room and service station, 100x105, at 218 De Bree avenue, for H. H. Johnston, 24th and Granby streets; $75,000.

Roanoke, Va.; J. P. Prettyjohn & Co., Lynchburg, Va.; two-story garage, 105x200, for Gibson & Packett; $86,000.

Central'a, Wash.; Ewing Motors; garage; corner Pearl and Locust streets; $20,000.

Colton, Wash.; F. W. Hoefel, Ritzville; improvements on J. L. Hockenberry garage.

Seattle, Wash.; Emery Tire & Rubber Co.; two-story and basement tire service and repair station, south side Pike street, near 12th avenue; $12,000.

Seattle, Wash.; Kelly-Springfield Rubber Co.; two-story reinforced concrete and steel building, Ninth avenue and Hubbel way; $40,000.

Clarksburg, W. Va.; Tanner & Bishop; fireproof service station and sales room; $25,000.

Parkersburg, W. Va.; T. B. Watterson; two-story brick and stone trim garage, 50x103, for the Motor Mart, Seventh and Green streets.

Anito, Wis.; W. H. Maxson; garage, 76x100, on Clermont street.

Kaukauna, Wis.; Kaukauna Farm Implement Co.; garage, 50x100; Second street and Crooks avenue.

Manitowoc, Wis.; Blake Construction Co., Appleton, Wis.; one-story garage and sales room, 60x120, for Major Auto Co., 911 South 10th street; $17,000.

Manitowoc, Wis.; Blake Construction Co., Appleton, Wis.; one-story garage and sales room, 50x120, for E. M. S. Motor Car Co., 823 South 13th street; $30,000.

Marshfield, Wis.; Krasin Brothers, 121 Central street; two-story public garage, repair and paint shop, 44x91, for Walter E. Minor; $30,000.

Milwaukee, Wis.; Walter G. Kasdorf, 106 Holton street; one-story garage, 60x100, at 1650 Green Bay avenue, for M. L. Kuehn & Sons, 1650 Green Bay avenue; $50,000.

Milwaukee, Wis.; American Automobile Co.; sales room and service station, Ivanhoe place and Prospect avenue; $85,000.

Milwaukee, Wis.; Achen Motor Co.; automobile sales room and service station, 120x150, at southwest corner Oneida and Jackson streets.

Sheboygan, Wis.; C. H. Ahnert; automobile accessories shop, 1113 North Eighth street.

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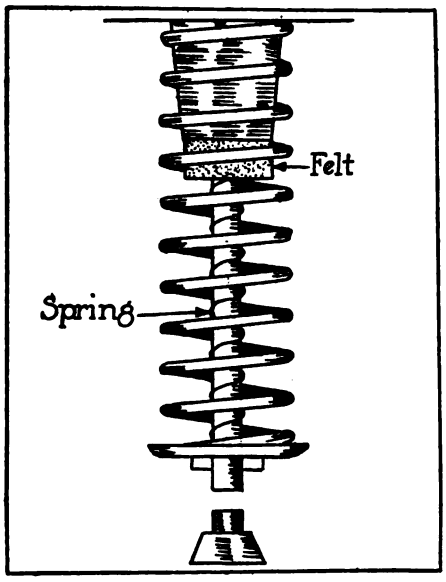
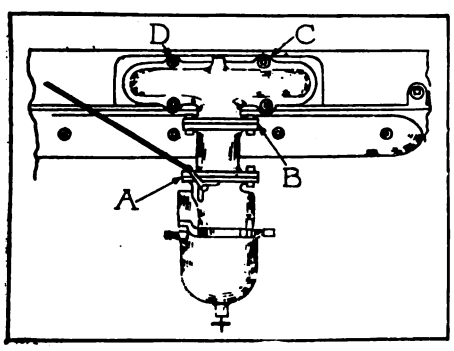
Remedies for Compression Leaks on Fords

The usual remedy for valve stem guides in the Ford engine that are worn and allow compression to leak, is to renew the bushing or ream out the guide and supply new valves with over-size stems. Another method is to fit felt washers at the bottom of the valve guide, holding them in place by an auxiliary spring, placed inside the regular valve spring. As



Method of Fitting Felt Washer Below Worn Valve Stem Guide.

this spring is smaller than the valve spring it should fit easily over the valve stem, with sufficient tension to hold the felt washers in place and not to interfere with the action of the valve spring.



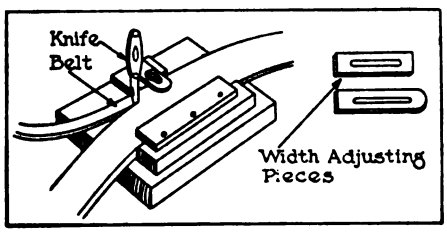
A, B, C, D—Points on Intake Manifold Where Air Leaks May Occur.

The felt washers can be obtained by cutting from the side of an old felt boot, or they may be made from washers that have become oil soaked.

Another method of holding the washers in place is by using light metal clips, which hook over the tops of the valve springs.

BELT CUTTING DEVICE.

A device for cutting different widths of leather belting or narrow strips for fan belts is made as follows: At one corner of the work bench fasten a narrow strip of straight edge board about 10 inches long and four inches wide. On this strip nail a half inch strip of board eight inches long and four inches wide, with one edge overlapping the lower board by one or 1½ inches. Figure the width of the stock which you are going to cut up and lay off the proper distance, say four or five inches; nail on a second strip about four by four inches and drill

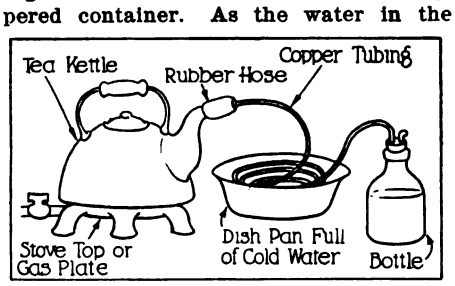


Handy Belt Cutting Device.

a hole through this board and the bench through which place a bolt with the nut at the top. A carriage bolt will do very well as the square shoulder of the bolt can be drawn into the under side of the bench and will keep the bolt from turning. Over this bolt fit a metal guide as shown in the illustration, having a slot cut in it, so that it may be adjusted for the width you may wish to cut the belt. Place a knife blade in the bench, point down, with the edge towards the belt, and draw the belt forward, against the edge.

MAKING DISTILLED WATER.

An arrangement is shown in the illustration that has been found very satisfactory for making distilled water for the storage battery on a small scale. The device consists of an ordinary tea kettle in which water is boiled, gas plate, pan, a coil of metal tubing and a bottle or container in which the distilled water collects as it condenses. Fill the tea kettle half full of water, light the gas burner under the gas plate, connect the metal coil by means of a section of rubber tubing, immerse the coil in the pan containing cold water and connect to the stoppered container. As the water in the



Apparatus for Making Distilled Water.

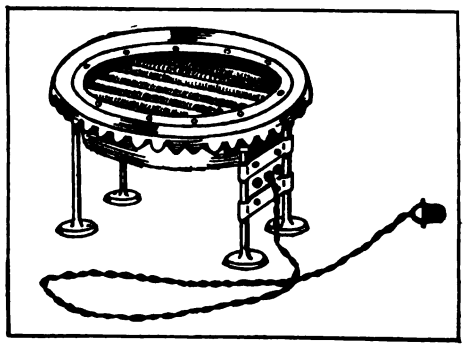
kettle boils the steam will rise into the spout, pass into the coil, become cooled and condensed by the cold water, and pass as distilled water into the bottle container, driving out the air through the short glass tube in the stopper.

LUBRICANT FOR SPRINGS.

In lubricating automobile springs the greatest trouble is found in keeping the lubricant from being squeezed out under pressure. A compound that obviates this is found in graphite and bees wax mixed to a paste and spread upon each leaf. Obviously, the spring must be taken apart to apply this lubricant.

TO MAKE AN ELECTRIC STOVE.

Many uses may be found for the discarded parts of a Ford car, among which is the making of an electric stove. The frame is formed from a discarded bevel gear from the Ford differential and the



Home-Made Electric Stove.

legs are valve stems. The stove is suitable for frying and toasting and is operated on a 110-volt alternating or direct current.

A section of heavy asbestos building material or very thick asbestos paper is fitted inside the bevel ring. The four valve stems, forming the legs, are threaded and screwed into the holes, which are already made in the frame. A nut with a washer is placed on each leg to support the asbestos, which contains a resistance coil composed of 25 feet of No. 20 nichrome wire wound in form of a spring. This is fastened down by a piece of brass wire wound over the spring and inserted in drilled holes in the asbestos support, under which the wire is clamped. Two strips of sheet brass stretching between two of the legs support another piece of asbestos having a hole drilled through the center, allowing the wires to pass through, connecting the stove by means of a cord and plug to the house lighting circuit. This stove may be attached to any ordinary electric light socket and consumes a small amount of current.

MISFIRING FROM AIR LEAKS.

Air leaks are a common cause of misfiring, though often overlooked, and may occur at either of the two joints of the intake manifold, at the carburetor or flange connection where the intake manifold joins the engine. A worn valve guide will allow enough air to be drawn into the cylinders to cause misfiring, at the same time permitting oil to leak out from the cylinders. If oil is discovered leaking out on to the valve stems, it is fair to assume that excess air is being sucked into the fuel charge.

BATTERY TERMINALS.

Occasionally an owner has the experience of finding that his car lacks power when the lights are turned on. The first thing to investigate in this case is the battery terminals, which will usually be found corroded or loosened.

This condition can be quickly remedied by carefully cleaning the terminals with sand paper. Apply a little vaseline before reconnecting and make them tight.

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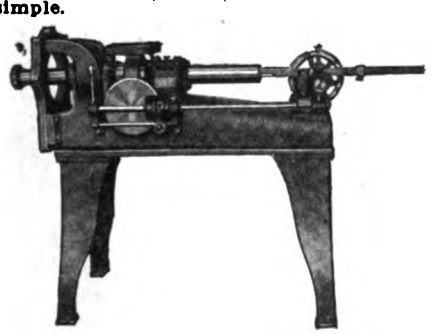
ACCESSORIES, EQUIPMENT AND TOOLS FOR THE GARAGE AND REPAIR SHOP

The Piston Clamp for Ford Cars is desirable when assembling the connecting rod to the piston, as a great number of connecting rods are twisted when they are assembled in the vise. This is due to the leverage and pressure to which the con-

necting rod is subjected when assembled in this manner. This device is also used for holding the piston while reaming bushings for wrist pin. It is lined with babbitt in order that the piston and rings cannot be marred and is of a size that will care for all over-size Ford pistons. Net weight, 15 pounds.

Sold by the Fairbanks Co., New York. Price, $10.

No. 5 Marvel Cylinder Reboring Machine is a tool for the service station, machine shop and garage. It comprises a power driven machine used for reboring automobile, truck and tractor engine cylinders, and is claimed to do the work in a more satisfactory manner than can be done by grinding or otherwise. The operation is simple.



Every working part is automatic and is designed for the purpose of making it possible for the operator to secure the best results. The automatic stop feature makes it possible to set the machine to any desired depth, both on the advance and return, and it will automatically stop without attention.

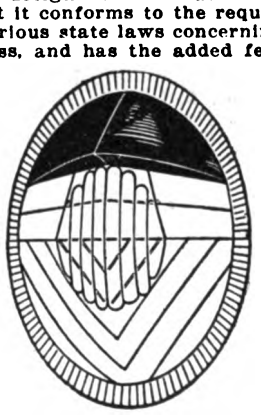
The friction disc feed makes possible any desired feed from 26 to 120 threads to the inch either with the advance or return of the bar. This feature is convenient for the operator, as a hurried roughing cut with the coarser feed and finish with a fine feed cut can be made, thus producing a perfectly smooth cylinder wall entirely clear and free of any foreign substances which might otherwise become embedded in the walls.

The machine calls for less mechanical skill than some machines of this type. Ample room has been provided between the face plate and front bearings to make it easy to make the necessary adjustments on the cutter head. Each cutter head is provided with a graduated scale to aid the operator to set it to the desired over size reboring.

It is claimed that the machine will rebore any gas engine cylinder within its range inside of the limits set by the Society of Automotive Engineers. According to the depth of cut, it is five to 20 times as fast as a grinder and equally as accurate, the maker states. This machine covers the whole range of automobile engine work within its range and will handle motorcycle or tractor engine cylinders with the same results, it is claimed.

Manufactured by the Marvel Machinery Co., 1301-7 South Third Street, Minneapolis, Minn. Prices on application.

The Violet Ray Lens is a headlight lens of unusual quality that is fitted to regular headlight frames by simply taking out the regular glass lens and replacing with the Violet Ray Lens. The lens is of a patented design and is made in such a form that it conforms to the requirements of the various state laws concerning headlight glass, and has the added feature of

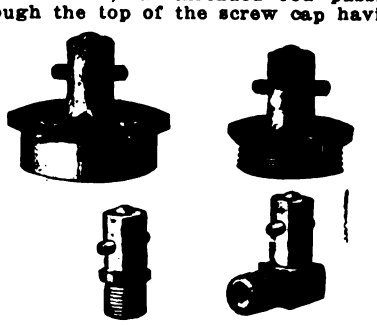


a colored glass of violet color which is pleasing to the eyes of motorists who meet cars equipped with it while driving at night.

It is stated that the light given by the Violet Ray Lens is similar to that of daylight, and the effect is gained by the manufacturer developing a glass of steel blue color that eliminates the bad effects found in using plain white glass.

Manufactured by the L. E. Smith Glass Co., Mount Pleasant, Pa. Price, $3 per pair, any size; $3.50 on the Pacific coast; $4 in Canada.

The Alemite Lubricator Grease Gun was designed to eliminate the disagreeable features of filling and turning down grease cups on spring bushing bolts, steering arm spindles, etc. The gun consists of a container holding the grease, a removable head that is screwed to the top of the container, a threaded rod passing through the top of the screw cap having



a handle attached at the upper end for easy manipulation and a leather-faced plunger at the bottom of the rod inside of the container.

Grease is supplied to the container by removing the screw top and plunger. A flexible tube is fastened to the threaded connection at the bottom of the container by a hexagon coupling, the other end of the tube terminating at a bayonet connection to which are attached the various caps fitting the grease cups of the car. The connectors are four in number, two fitting the tops of grease cups, a third fitting oil ways in steering spindles, etc., and the fourth, an offset connector, fit-

ting other small oil ways. The connectors are provided with a ball valve, which prevents the grease from working back out of the connector after the gun has been disconnected. It is stated that by giving the handle one-half turn the grease is forced into the bearing under 500 pounds pressure, reaching and lubricating every part, and that 30 bearings can be lubricated in 15 minutes with this device.

Manufactured by the Alemite Lubricator Co., 2641 South Michigan Avenue, Chicago, Ill. Prices and literature on request.

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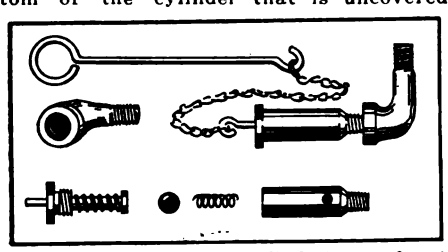
Casco Fan Belt Attachment for the Ford Car consists of a small guide that is fastened on each side to the crankcase flange by means of clamps, the larger bell-like opening fitting over the bell of the starting crank and close to the fan pulley. The purpose of the guide is, as its name implies, to prevent the fan belt from running off the face of the pulley. The guide is made entirely of metal and, it is stated, is easily installed in a minute's time, afterwards becoming a permanent part of the car.

Manufactured by the Casco Manufacturing Co., Thomasville, Ga. Price, 50 cents each.

"Casco" Oil Drain Cock for Ford Cars consists of a cast elbow and nipple that is screwed into either the upper or lower level petcock opening, as desired. Into the elbow is inserted a special formed cylinder, made of cast metal, into which is fitted a spring actuated plunger. A drain opening is provided near the bottom of the cylinder that is uncovered



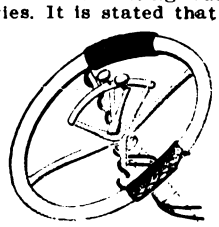
when the plunger is pulled forward. A chain connects the top of the plunger with a wire that passes through an opening in the running board skirt, terminating in a loop, by which the plunger is pulled forward when it is desired to test the oil in the base of the engine. The test cock is easily disassembled for cleaning the cylinder or plunger and may be as quickly assembled.

The principle of the oil drain cock is to enable the car operator to test the level of the oil in the base of the Ford engine without having to stoop or get under the car.

Manufactured by Casco Manufacturing Co., Thomasville, Ga. Price, $1.50 each.

The Automobile Wheel Warmer-Electric is designed to be used with either the direct current furnished from a regular equipped starting and lighting circuit, supplied by a storage battery, or with the alternating current magneto of the Ford engine.

For use with direct current, the wheel warmers are connected in multiple and with the Ford alternating current magneto in series. It is stated that the Wheel



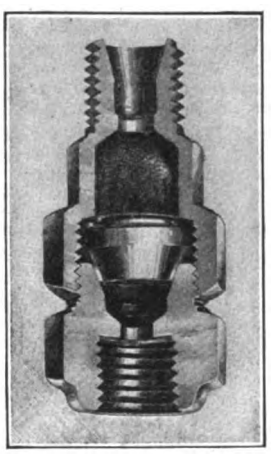
Warmers consume very little current, comparatively less than a head light, and that the expense to operate is practically nothing. The Wheel Warmers can be attached by the motorist in a few moments time, as full instructions accompany each outfit.

Manufactured by the Russell Electric Co., 140 West Austin Avenue, Chicago, Ill. Price complete, $3.

The Monkey Grip Tire Patch consists of a self-vulcanizing cold patch that can be applied while on the road. The heat and friction of the tires while the car is in motion vulcanizes the patch after it has been applied to the puncture. The tube and tire are ready for service immediately after the repair has been made, the operation requiring, the manufacturer claims, but three minutes. The company also makes a casing patch and puts out a combination kit containing both the casing and tube patches. It is stated that Monkey Grip tire and tube patches meet with a ready sale wherever shown.

Manufactured by the Moco Co. of America, Oklahoma City, Okla. Prices and literature on request.

Johnson Gasoline Strainer for the Ford Car is a device that is inserted into the fuel line between the main tank and the carburetor, usually adjoining the carburetor, and its use is to remove dirt or sediment that may have collected in the main tank, found its way into the feed pipe and would eventually reach the carburetor needle valve, causing carburetor



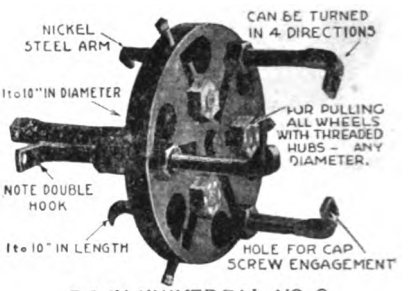
defects that might be difficult to locate. The strainer is easily uncoupled for cleaning by simply loosening the connection and unscrewing it. The strainer is especially adapted for the Johnson model A carburetor for Ford cars, but may be used with other makes of carburetors with equally as good results.

Manufactured by the Johnson Co., 515 Forest Avenue, East Detroit, Mich. Price, $1.25.

The F. & W. Universal Wheel and Gear Puller is specially designed for use on automobiles, trucks and tractors, for pulling wheels, gears and pulleys, straightening shafts and the multitude of pulling and straightening jobs that reach the service station. The puller is strongly made of the best of material and includes in the one unit many different combinations that can be used to advantage by the repair man.

The device No. 4 consists of a large cast disc by which various combinations may be obtained, three arms having hooked ends, threaded and supplied with two nuts each; one power screw, one press plate, three set screws and three hex blocks. With this outfit the repairer is able to handle practically all pulling work on automobiles, trucks and tractors.

Outfit No. 2 is a smaller size, but built equally as heavy, for Fords and other small cars and trucks and consists of a large cast disc perfectly machined, three arms having ends bent at right angles, threaded and fitted with two nuts each: one power screw, one hub ring, one taper ring and one truck ring.



F. & W. UNIVERSAL NO. 3

The Universal wheel and gear puller may be also used as a portable arbor for removing wristpins and bushings or work of like nature by means of the three arms, press plate, discs and power screw.

Full instructions accompany each outfit so that the repairer may easily understand the necessary combinations required for any special job.

Manufactured by the F. & W. Manufacturing Co., Inc., Indianapolis, Ind. Prices on request.

The Goodell-Pratt Valve Spring Lifter is a new device that has recently been added to the Goodell-Pratt line of fine tools. It consists of two arms, forked at the ends to fit around the valve tappet and the valve stem, and fastened at one end by means of a cross head forming a hinged joint. The expansion of the forked arms is accomplished by a slidable cross bar which fits between the arms, equipped with side plates, keeping the slidable block in position between the arms. The block is operated by a screw passing

through a threaded opening in the cross head and pivoted in the cross block. It is raised by turning the screw by means of the handle to the right, while turning the screw to the left expands the arms.

The tool is made from drop forged steel, light in construction and small enough to be used handily in tight places. The arms move on hardened rollers and the screw turns on ball bearings. With this device sufficient room is provided for the removal or insertion of the valve spring fastening pin when the arms are in the expanded position.

Manufactured by the Goodell-Pratt Co., Greenfield, Mass. Prices and literature on request.

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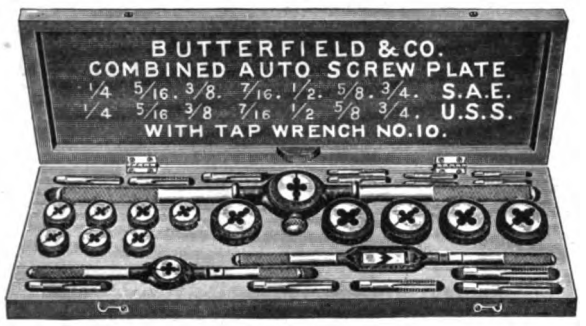
No. 3100 Derby Combination Screw Plates. Every garage and repair shop finds need sooner or later for a combined tap and die set. The No. 3100 Derby Combination Screw Plates, using both the U. S. and S. A. E. standard threads, are especially adapted for this class of work, including, as they do the proper sizes of



both taps and dies and the handles for the use of them.

They are put up in sets of sizes ranging from five, seven, eight, nine and 10, including the different threads 10, 14, 16, 18 and 20. The prices increasing with the number of sizes and the number of threads included in the set.

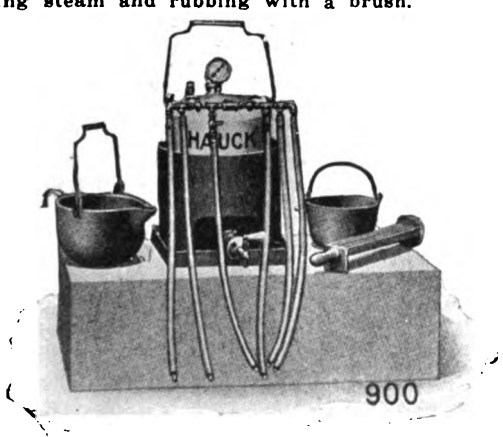
Manufactured by Butterfield & Co., Derby Line, Vt. Prices on application.

The Hauck Storage Battery Repair Outfit is designed for use in service stations where many storage batteries are sealed and unsealed during the day, and where time is an item of great importance.

The outfit consists of a 1½-gallon kerosene heating furnace equipped with hand pump; steam generator of 2½ gallons capacity, with gauge, safety valve, fittings, manifold and six 20-inch lengths of rubber steam hose; one melting kettle of 1½ gallons capacity for heating sealing compound; one lead melting pot of 35 pounds capacity, and one lead mold which molds bars 15 inches long by 5/16 inch in diameter.

It is stated that the Hauck storage battery steamer is capable of producing steam within seven minutes from the time of starting and that it will steam out the cells in storage batteries and permit the cell plates to be removed without any trouble, requiring from four to seven minutes to take out the plates in a three or six-cell battery.

The outside of the battery can be easily cleaned of all grease and mud by applying steam and rubbing with a brush.



The outfit is made throughout of the best of materials for the purpose, by mechanics of many years experience in making this class of goods.

Manufactured by the Hauck Manufacturing Co., 101-113 11th Street, Brooklyn, N. Y. Price, complete, $40.

The Stay Clean Timer for Ford Cars consists of a timer elevator that raises the timer above the oil and dirt at the end of a Ford engine and places the timer in an accessible position.

The timer elevator consists of a cast frame that is positioned in place of the regular Ford timer, extends upward and is

equipped with a drive shaft with bevel gear attached at the bottom of shaft. A second bevel gear is provided that is installed in place of the regular roller contact on the cam shaft and meshes with the gear on the elevator shaft. The Stay Clean Timer is placed at the top of the elevator, and the contact of the timer is fastened to the shaft at the top. Provision is made for fastening the timer case by an arm cast as part of the elevator, extending out at one side, having a spring attached. This spring acts as a tension on the timer case, positioning it with relation to the contact roller of the timer.

It is stated that the installation of the Stay Clean Timer is a very simple matter, requiring about 30 minutes, and may be done by anyone handy with tools.

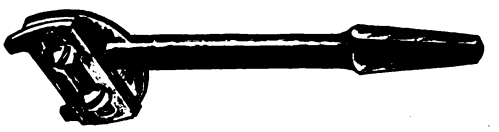
Manufactured by the Milwaukee Air Power Pump Co., 886 Third Street, Milwaukee, Wis. Price, $6.

"Protexall" One-Piece Overall Suits No. 116 feature exclusively the one-piece back design for a work suit, giving a garment which offers exceptional qualities of com-

fort. The material used in making these garments is government khaki, closely woven and fast color. Front pockets are set in similar to overall pockets, placed at the side and slanted sufficiently to make access to them easy. A combination pencil and watch pocket, two hip patch pockets, double stitched and reinforced, rule pocket and hammer hanger are also provided. The collars may be either open roll, loose or tight buttoned as desired. All seams and edges are double-stitched and felled, giving double strength with no raw edges. The garment is made for rough work about the garage, service station or for the motorist who does his own repairing and is designed for a very strong garment.

Manufactured by the Globe Shirt & Overall Co, Corner Main and Pearl Streets, Abingdon, Ill. Prices on request.

The Empress "Perfect" Valve Grinding Tool is designed for use in an ordinary bit brace and has a swivel head, which permits grinding the valves from an angle, while the jaws are adjustable to fit any valve with holes drilled in the top,



or may be removed entirely for a valve that has a slotted head. The jaws are made adjustable and care should be taken to have the projections equally distant from the center.

The "Perfect" valve grinding tool is of rugged construction and, it is stated, will withstand much abuse without breaking. The head is stamped from heavy sheet steel while the handle is made from steel rod.

Manufactured by the Bowen Products Corporation, Auburn, N. Y. Price, 50 cents.

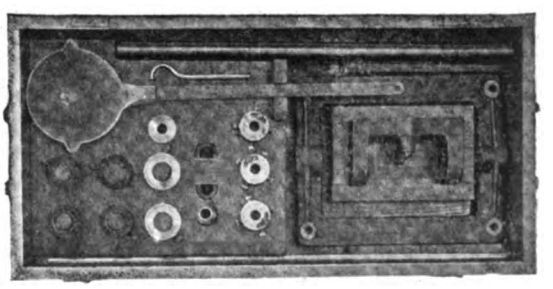
The "W. & B." Spark Plug Wrench is designed to easily reach the spark plug of automobile engines, removing them easily and quickly without danger of breaking the porcelain insulators of the

plugs. It is made of drop forged steel and is stated to be the most convenient wrench yet designed for its purpose.

The box end has a ⅞ inch opening for a ½ inch spark plug, while the open end accommodates the fire plug, ⅝ inch United States standard cap screw, ⅜ inch A. L. A. M. standard nut, ⅝ inch A. L. A. M. standard cap screw and 9/16 inch set screw.

Manufactured by the Whitman & Barnes Manufacturing Co., Akron, O. Prices on request.

The Martell Rebabbitting Fixture is a complete outfit for rebabbitting the main and connecting rod bearings of the Ford



engine. It consists of a frame for holding a line arbor for pouring babbitt into main or connecting rod bearings, stops or dams to keep the babbitt from 'spreading," a melting ladle and enough of the metal for a complete set of bearings.

The outlet is complete in every detail and by its use the repairer is able to run new bearings in the Ford engine, with very little practise. Simple, easily understood instructions are enclosed with each outfit.

Manufactured by Taft-Pierce, Woonsocket, R. I. Prices on request.

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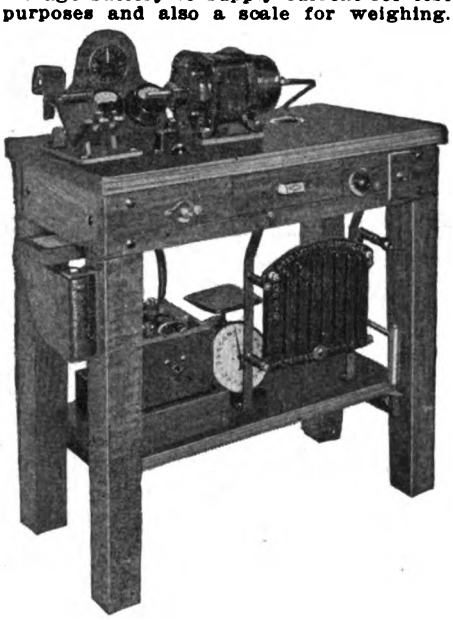
The F-B Test Stand for Locating Defects in the Ford Starting and Lighting Systems is designed primarily for service stations making a specialty of Ford repair work. The test instruments are mounted on a substantial wooden bench in plain view of the tester. A shelf is provided below the bench on which may be placed a storage battery to supply current for test purposes and also a scale for weighing.



Fastened to the front of the stand and supported by braces is located the rheostat or current regulator. The testing motor is mounted on the bench and is provided with an extended shaft to which may be connected the generator or motor to be tested. The device is amply provided with suitable instruments showing the amperage and voltage used and also a speed indicator showing the speed of the driving motor, thus enabling the tester to run the generator or motor being tested under the conditions as found in the car.

It is stated that the third brush location can be properly made with this equipment and that motoring speed and current draw of the generator is shown, as well as the torque and running speed of the motor. Shorts or grounds are claimed to be easily located with the telltale and test points provided with the stand.

Distributed by the Fairbanks Co., Administrative Offices, Broome and Lafayette Streets, New York. Price, $350 complete.

Connecting Rod Alignment and Straightening Jig for Ford and Fordson is a bench machine for aligning and straightening connecting rods of the Ford passenger car and Fordson tractor engines. The device is fastened to the work bench by two bolts, is made of the best grade of gray iron casting, is equipped with two arbors for Ford connecting rods, one for the

lower bearing and the other for the wristpin bearing, and two for the Fordson connecting rod lower bearing and one for the wristpin bearing. All four arbors have knurled ends, facilitating their insertion into the arbor holes. The arbors for the wristpins fit into recesses at the top of the device, the recess for the Fordson being a few inches higher than that for the Ford, as the Fordson connecting rod is longer than that of the Ford engine. Arbor openings are bushed with the proper size bushing, so that the arbors fit them easily. With this device it is possible for the repairer to quickly tell if the bearings fit and also whether the rod is straight; it also shows readily the amount of twist or bend in the rod or play in the bearing. Instructions which accompany the device tell plainly how to remedy these defects.

Manufactured by the Canedy-Otto Manufacturing Co., Chicago Heights, Ill. Price, subject to discount, $40. Net weight, 65 pounds.

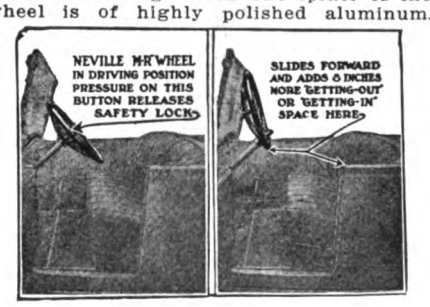
The "SE-CO" Connecting Rod for Ford Cars is designed for replacement purposes in the Ford engine, and combines three essential points, which are very important in connecting rod construction, namely:

Accurate centers, perfect alignment of bearings and hard anchored babbitt.

The "SE-CO" connecting rods are extra tested for strength and wearing qualities, the manufacturer states, and during these tests they must stand a 20 per cent. greater strain than when in actual use in Ford engines.

Manufactured by the Stacks Engineering Co., 216-220 West Ontario Street, Chicago, Ill. Price and literature on request.

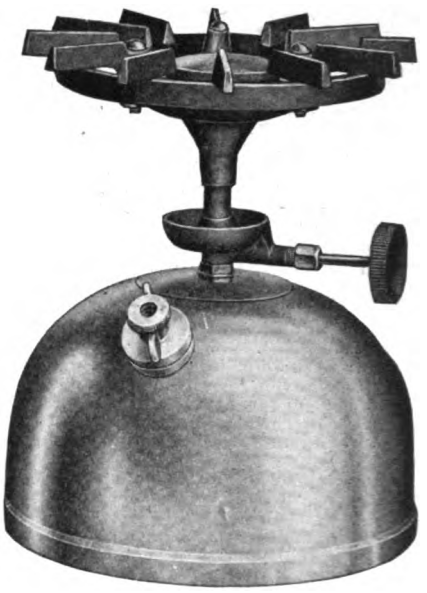
The Neville "More-Room" Steering Wheels are supplied as standard equipment in various models of Dodge, Haynes, Elgin, Liberty, Kissel, Roamer, Gray-Dort and Noma cars. The adjustable feature of the wheel, which is of the sliding type, provides eight inches additional room behind the steering wheel. The spider of the wheel is of highly polished aluminum.



while the rims are of solid walnut beautifully finished, with the inner rim corrugated, providing a good grip for the hands. The Neville may also be used as a replacement wheel for any make of car by simply removing the regular wheel and fitting the Neville wheel in its place. When the wheel is in position for driving it is held firmly in place by a safety lock that is released when a button is pressed, allowing the wheel to be moved forward and upward out of the way when the driver is entering or leaving the car.

Manufactured by the Neville Steering Wheel & Manufacturing Co., 139 Beaubien Street, Detroit, Mich. Prices: 17-inch wheel for Ford cars, $11.50; 17-inch wheel for other cars, $12.50; 18-inch wheels for other cars, $14. Discounts to dealers and jobbers.

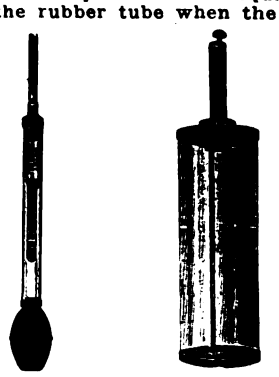
The American Kero-Gas Stove may be used either as a gas stove or heater as desired and has proved a convenient device for motorists, doctors, etc. The fount is made of brass, finished in nickel, has a capacity of one quart of either gasoline, kerosene or wood alcohol and, it is stated, will burn continuously for from six to eight hours.



The gas stove is regularly equipped with a tip for burning gasoline, an additional tip being provided so that kerosene can be used when desired. The stove is substantially built of the best materials obtainable and is guaranteed to do the work for which it is designed. The flame is regulated by means of a cut-off valve of the latest design. The height of the stove is eight inches, while the diameter of the fount is 6½ inches, the shipping weight being five pounds.

Manufactured by the American Gas Machine Co., Albert Lea, Minn., and New York City. Prices and literature on request.

The Luthy Non-Breakable Celluloid Filler is designed to fill the cells of storage batteries with either distilled water or solution. The filler is made of celluloid, which is claimed to be non-breakable, and automatically fills the cells with solution or water to the correct height. Each cell is supplied to the same height, and slopping or spilling of the liquid is prevented, it is stated. The container is cylindrical in shape, closed at the top, except for an opening into which a stopper is fitted. A metal tube is attached to the stopper, to the lower end of which is added a piece of rubber tubing. A button at the top end of the metal tube prevents the liquid from leaving the rubber tube when the tubing



and stopper are removed from the container, in transferring the solution to the battery cells. The device is claimed to be so simple that a child can operate it.

Manufactured by the Luthy Hydrometer Co., 97 Woodward Avenue, Detroit, Mich. Price on request.

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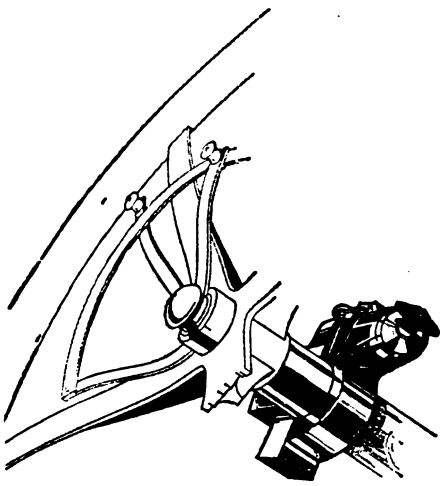
The "Theftproof Auto Lock" consists of a neat nickel plated ring attached permanently and rigidly to the steering post of the automobile. When the lock is in the closed position a strong case-hardened steel pin passes through the outside steering column into the steering tube, thus holding the steering gear so that the position of the front wheels cannot be changed. This prevents the car from being driven or towed, it is claimed.

The lock is self-adjusting. The driver simply closes the lever, turns the key and steps out of the car. The moment a joy rider or thief turns the wheel the pin snaps into position and the front wheels are locked in one position.

The lock is of the Yale type, having tumblers of varying lengths, and it is possible to have any number of combinations, so that no two locks are alike, the only keys fitting it, being those that come with the lock.



The device is easily attached in a few minutes time either by a mechanic or by a motorist handy with tools, as all that is necessary is to drill a ⅜-inch hole about three inches below the steering wheel, through the steering column and the tube, and about 3/16 of an inch deep into the tube or rod. The ⅜-inch hole in the steering column is reamed out to half an inch, care being taken to keep the reamed hole square with the first hole drilled, and not to ream out the hole in the steering tube or rod.

This device is claimed to be theft proof and to prevent a car from being driven, pushed, coasted or towed for any distance before it would come to a stop itself by running into a curbing or other obstruction. This device bears the approval of the Underwriters' Laboratories, as it successfully withstood all tests given by them.

Manufactured by the Hershey Manufacturing Co., Equitable Building, Denver, Col. Price complete, ready to attach, $15.

The Huskee Worm Drive Electric Valve Grinder is designed as a companion tool to the Huskee drill and they are designed to fill a long felt want in the garage or service station for two dependable tools for repairers of motor vehicles. In the Huskee worm drive electric valve grinder a worm and worm gear are used instead of a train of gears to drive the grinding spindle and the result is a slow driven grinding tool that is claimed to do better and faster work than can possibly be done by hand. The tool in operation is stated to be almost noiseless, absence of chatter or vibration being noticeable. The complete tool, including the motor, has but five moving parts: The armature, a nickel-steel worm, a United States standard phosphor-bronze worm gear, a nickel-steel grooved cam and the oscillating spindle. It is stated that gear noise is entirely eliminated by this type of construction, all moving parts being enclosed in a tight oil and grease proof case, which also keeps out the dust.

A novel feature of the Huskee worm drive tool is that nothing is attached to the lower gear housing. The entire power transmission is independent of the housing and the worm, the worm gear and

the cam all run on shafts (not studs). The lower housing can be taken off and the gear set in motion should it be desired to inspect them under power.

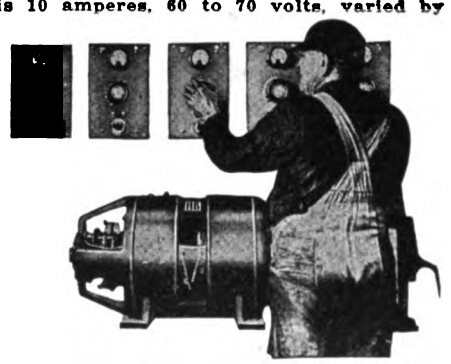
The "lightning" switch is located in the handle, under the finger tips, and is claimed to be the quickest and the most positive in action of any switch yet produced. The Huskee worm drive tool is guaranteed for five years under any and all conditions of use.

Huskee worm drive valve grinders are furnished complete, even to a strong wooden stand, on which the tool is placed when not in use. The tool is equipped with a universal motor adapted for alternating and direct current of either 110 or 220 volts. Specify which voltage is desired when ordering. Sold by all jobbers or may be purchased direct from the factory.

Manufactured by the Consolidated Machine Tool Co., 42-44 Southbridge Street, Worcester, Mass. Price, 110-volt, $52; 220-volt, $55.

The H B 500 Watt Battery Charger has ample capacity to charge one to eight six-volt batteries at one time, is equipped with the special H B automatic voltage control that enables the operator to recharge six, 12 or 24-volt batteries at the same time. The charger is self-starting, using city power, either alternating or high voltage direct current. The outfit is easy to install and operate, as it is self-contained and mounted on one base complete with switch panel and the necessary instruments.

The H B 500 watt charger is very compact, being only 26 inches high, 27 inches long and weighs 280 pounds. Its capacity is 10 amperes, 60 to 70 volts, varied by

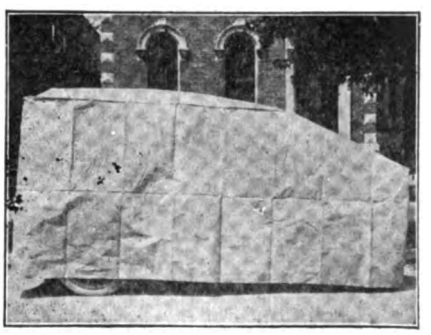


the number of batteries on charge. The switchboard is made of clear black electrical slate, equipped with ammeter, field rheostat, voltage lamp and two controlling switches. The armature of the motor and charger operate on SKF steel ball bearings that require lubrication only once in four months. Outfits of this type are easily purchased by service station owners on a plan which manufacturer will willingly explain on application, and entails small outlay to the purchaser, as by this plan opportunity is given for the machine to pay for itself.

Manufactured by Hobart Brothers, Troy, N. Y. Prices and literature on request.

Kennedy Auto Storage Covers are made of heavy, strong paper, reinforced to prevent tearing. They protect the car against dirt, dust and moisture and prevent the polished portions of the car from tarnishing, keep the car finish from checking in cold weather and also prolong the life of the tires by excluding sunlight.

Kennedy auto covers are ideal for storage purposes, and it is reported that garage men who adopt their use for customers' cars find that they are more and more

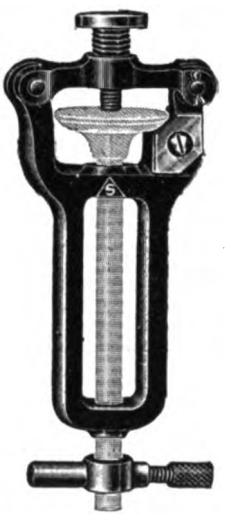


in demand each succeeding season. Many car owners keeping their cars in their own garages for the winter are also using these covers.

Manufactured by the Kennedy Car Liner & Bag Co., Shelbyville, Ind. Prices and literature on request.

The Ford Engine Valve Re-Facer is designed for the motorist who grinds his own engine valves and wishes to true the valve faces before regrinding them.

The device consists of a malleable iron U-shaped frame having openings through which the stem of the valve is passed, and a cutter at a suitable height which refaces the valve. The top consists of a hinged malleable casting, fastened at the ends by steel pins and cotter pins and a



set screw, spring actuated, which supplies the proper tension on the valve, while it is being re-faced. A handle, provided with a set screw, fits the valve stem at the lower end, affording a means for rotating the valve against the cutting tool.

The cutting plate is provided with two edges, so that when one edge becomes dull the plate may be turned, giving a new cutting edge.

Manufactured by Stevens & Co., 375 Broadway, New York City. Price, $1.

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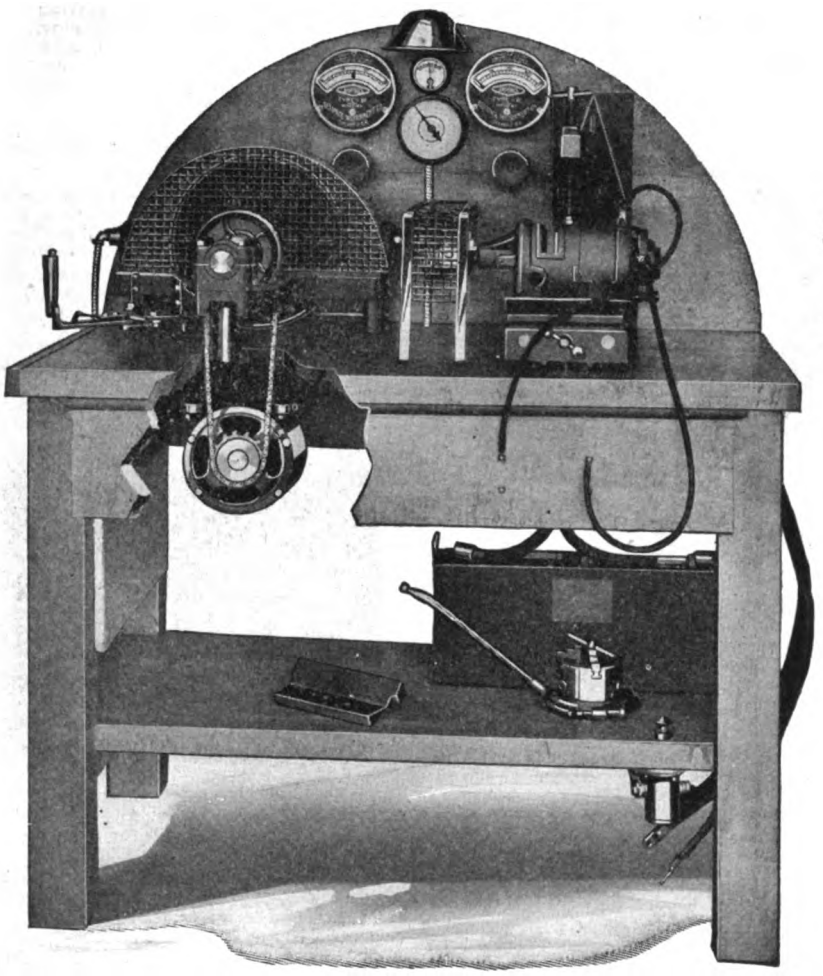


The Universal Test Bench is designed for testing all starting motors, generators and magnetos that are used in the modern automobile and truck. The patented universal vise holds any size, shape or make of magneto, starting motor or generator. Only one adjustment is necessary and there is no aligning to be done. The sprocket on the drive shaft of the transmission is moved along until the drive chain is in alignment and, it is stated, that making the complete set up requires only a few minutes.

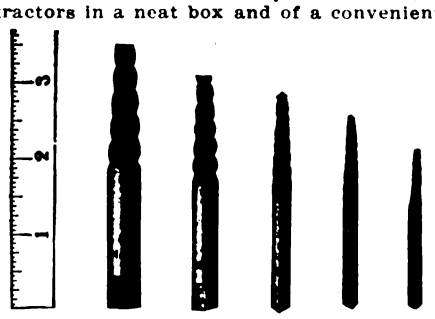
There is a variable speed friction drive transmission operated by a two horsepower motor, the speed being controlled by a lever with thumb release. The friction drive operates either forward or reverse and gives any desired speed. Two six-volt batteries are provided for testing starting motors and generators and two universal three-jaw chucks are furnished, one with sprocket for driving generator and one with prony brake for testing starting motors. The chucks take any size shafts in use today and sleeves are furnished for taking all standard tapered shafts.

The equipment includes an ammeter reading from 25-0-25 for testing generators and one reading from 0-600 for testing starting motors. A voltmeter indicates at what voltage the generator cuts in and a Van Sicklen tachometer shows the speed of the magneto or generator at all times. A sliding adjustable 12-contact plate varying from 1/32 to ½ inch gap is provided, which accurately indicates the spark for all cylinders at one time, and there is a detachable scale feeding up to 30 pounds which gives the exact food pounds exerted in the starting motor.

A double-throw switch gives either six or 12 volts for generator test. All moving parts of the bench are covered by safety guards and it is made of seasoned maple, 35 inches high, 28 inches wide, 48 inches long and a two-inch solid top. The height over all is 58 inches and the shipping weight is 800 pounds.

Manufactured by Becker Brothers, 23-25 North Jefferson Street, Chicago, Ill. Price on application.

The Ezy-Out Screw Extractor No. 15 Set consists of five sizes of Ezy-Out screw extractors in a neat box and of a convenient

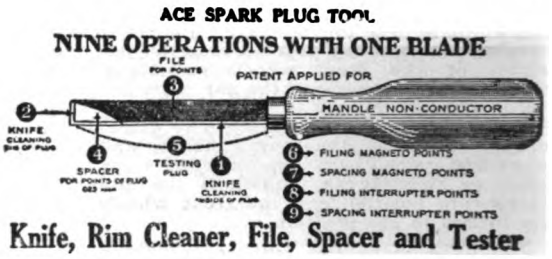


size for the tool room. The sizes are known as Nos. 1, 2, 3, 4 and 5, and are designed with particular reference to the needs of the tool room and the lighter type of machine shop work.

The Ezy-Out tool is made of high-grade steel, is shaped similar to drills, having a square end to which may be fitted a tap wrench. The lower end is provided with a coarse, left hand thread that is inserted into a hole drilled in the broken stud or set screw. Turning the tool with the tap wrench has a tendency to turn the screw in the direction which removes it from the threaded hole. It is stated that studs and screws may be removed very quickly by the use of this patented device. Made and sold in four sets of varying sizes for all classes and grades of work.

Manufactured by the Cleveland Twist Drill Co., New York, Cleveland and Chicago. Prices on request.

The "Ace" Spark Plug Tool, it is stated, is capable of accomplishing nine different operations with one blade, as follows: 1, knife used for cleaning inside of the plug;



2, end for cleaning rim of plug; 3, file for plug points; 4, spacer for accurately setting the plug points to .025 of an inch; 5, blade for short-circuiting plug; 6, filing magneto points; 7, spacing magneto points; 8, filing interrupter points; 9, spacing interrupter points.

The Ace spark plug tool is fitted with a non-conductor handle, providing insulation when testing plugs for short circuits, and is fitted with a highly tempered thin steel blade.

Manufactured by the Wallace Manufacturing Co., Inc., Newark, N. J. Price, 50 cents.

Permaseal One-Piece Piston Rings are designed for replacement purposes in automobile, truck and tractor engines where a reduction in gasoline and oil consumption is desirable. It is stated that the use of Permaseal rings in an engine will create a maximum of power and speed with a minimum amount of fuel; that they prevent leakage of oil and gas by the

pistons and convert a sluggish, powerless engine into one of high compression, powerful, smooth running and economical. Permaseal rings are of one-piece construction and are easily installed by the repairer. Full instructions accompany each set, showing the correct method of installation.

Manufactured by the Grundy Manufacturing Corporation, Detroit, Mich. Prices according to the size of ring.

Spencer Axle Shafts are designed for replacement purposes on many of the smaller cars, such as the Ford, Overland, Grant, Studebaker, Maxwell, Chevrolet, Chandler, Dodge and the Smith Form-a-Truck.

The axle shafts are made of .35-.45 carbon special alloy steel, hot rolled. The shafts are accurately machined and ground, are interchangeable and guaranteed by the manufacturer to be correct

as to size and workmanship. All shafts are carefully inspected, when finished, for flaws or imperfections, and those not up to the standard set by the manufacturer are discarded. The shafts are then carefully oiled and packed to prevent rusting and are ready for delivery.

Manufactured by the Spencer Metal Products Co., Spencer, O. Prices and literature on request.

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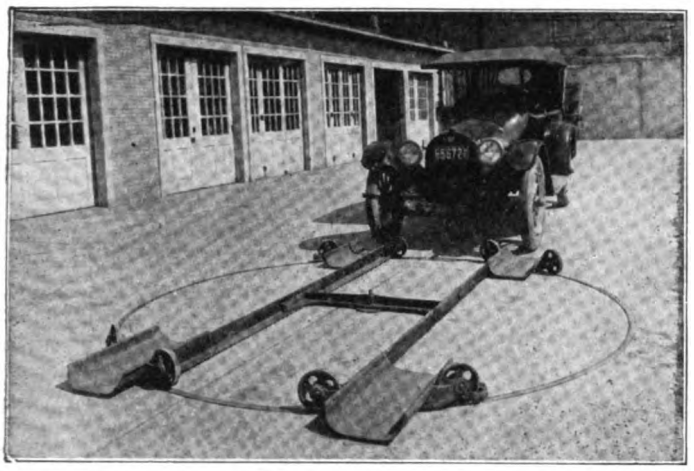
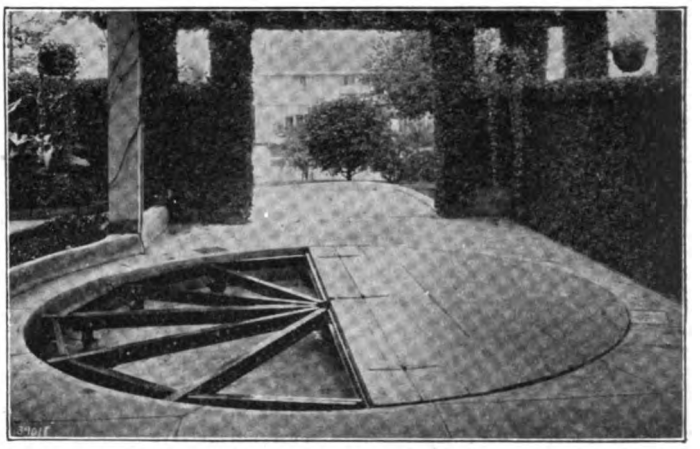




The R-W Pitless Ball Bearing Automobile Turn Table No. 363 is a simple, substantial and attractively made outfit, built entirely of steel and iron. The turn table is especially adapted for use in private garages, can be installed inside or in front of the garage as desired, it is claimed, and will accommodate all sizes of cars.

The weight of the turn table and car is carried on large ball bearing wheels, which roll on a circular steel track. Each wheel is mounted on two sets of heavy duty combination radial and thrust ball bearings, making the turn table very easy to operate. The outfit can be installed on either a cement or a wooden floor.

From the illustration it will be seen that a large pin fits the center of the cross member joining the two sides and the wheels of the turn table are held in position on the steel track by means of this center pin.

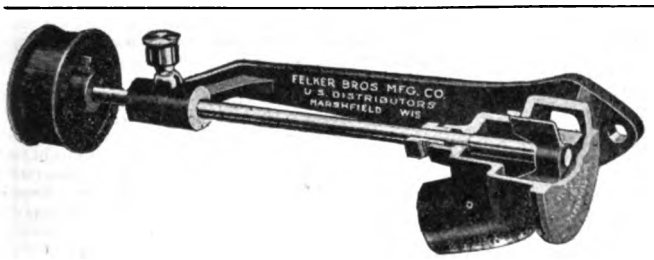
A feature of the device is that it can be easily taken apart and removed to a new location. The first cost is said to be low.

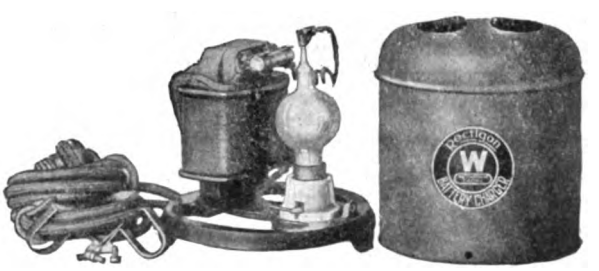
Manufactured by the Richards-Wilcox Manufacturing Co., Aurora, Ill. Prices and literature on request.

The R-W Pit Ball Bearing Automobile Turn Table No. 463 is of simple construction and particularly suitable for installation where a wide variety of cars approach the turn table from all directions. The ball bearing rolls operate on a circular steel track on the pit floor and are amply supported by heavy steel I-beams forming the circle and by cross beams equally spaced to the center. The turn table is covered with two-inch planking, made in two sections and hinged through the center, so that access may be had to the rolls for oiling or repairs.

This outfit can be placed either in the garage, in the cement runway in front of the garage, or in a runway at any convenient location about the grounds.

Manufactured by Richards-Wilcox Manufacturing Co., Aurora, Ill. Prices and literature on request.





Perfection Water Circulating Pumps for Ford Cars comprise a unit that is bolted to the side of the engine after the cast elbow that is fastened to the engine block and the short length of hose connecting it to the tube from the radiator have been removed.

The unit consists of a centrifugal pump, encased in a cast housing, equipped with a bronze bushing acting as a bearing that is adjustable for wear. The pump is connected to the pulley by a suitable length of shaft supported at the pulley end by a babbit bearing, supplied with a grease cup. The pulley face is crowning and the belt is kept in line by a fan pulley which is flanged at the sides. Water connection to the radiator is made by replacing the short length of hose, joining the pump and the water pipe, water being forced directly into the engine water jackets from the pump. It is stated that the water pump can be quickly installed by anyone handy with tools and that it is not necessary to bore new holes in order to fit it to the side of the engine, as the three holes used for fastening the elbow are sufficient for the fastening of the water pump.

Manufactured by the Felker Bros. Manufacturing Co., Marshfield, Wis. Price at dealer's or direct from the factory, $10.

Bull-Dog Transmission Liners for Ford Cars are made of red elm wood, claimed to be the toughest wood that can be obtained, chemically treated and saturated with a high test fire-resisting oil, which prevents burning or charring. It is guaranteed by the manufacturer to outwear three sets of any other type of liner. The wood liner has 31 vacuum cups, which hold the oil thrown off by the spinning drums of the gearset. As the band is clamped to the drum when applying the brake or the low or reverse speed pedals, the oil held in the vacuum cups thoroughly lubricates the surface between the band and drum, reducing wear and relieving the heating effect caused by friction between the parts. As the lining is of wood there are no cloth threads to work loose from the lining, to get into the oil and cause further trouble.

Manufactured by the Reardon Co., Inc., Peoria, Ill. Price, per set of three, $3.

Westinghouse Battery Charging Rectifier is a device recently placed on the market for the use of private car owners who wish to charge their storage batteries from an alternating current circuit. It is provided with a flexible extension cord and plug and can be connected to any house or garage lighting socket. The direct current leads are equipped with special clips for connection to the battery. The connections and operation are, it is stated, so simple that an inexperienced person can use the outfit without difficulty.

The charger is built rugged and at the same time of simple construction, has no moving parts, uses no oil or grease, and, it is claimed, is not affected by heat or cold. All parts are mounted on a circular cast iron base and are enclosed by a metal cover which is attached to the base by three screws. The top of the cover is shaped into a handle for easy carrying and when in use the outfit rests on three feet cast integral with the base.

The principal parts are a transformer and rectifier bulb. The transformer is mounted vertically on the base while a fuse for protecting the device is located on a small insulated block at the top of the transformer. The bulb is mounted in a socket, which is also mounted on the base in front of the transformer. The insulation of the bulb is simple, being screwed into the socket similar to a lamp and a wire lead clipped on the terminal projecting from the top.

The outfits are so designed as to give rated amperage at normal line voltage to three cells and about two-thirds of this current at normal line voltage to six cells. They are furnished in two sizes, one with a direct current rating of 1½ to 2½ amperes and a larger size with direct current rating of three to six amperes. The approximate net weight of the smaller outfit is 9¼ pounds and of the larger 21 pounds.

Manufactured by the Westinghouse Electric and Manufacturing Co., East Pittsburgh, Pa. Prices and literature on request.

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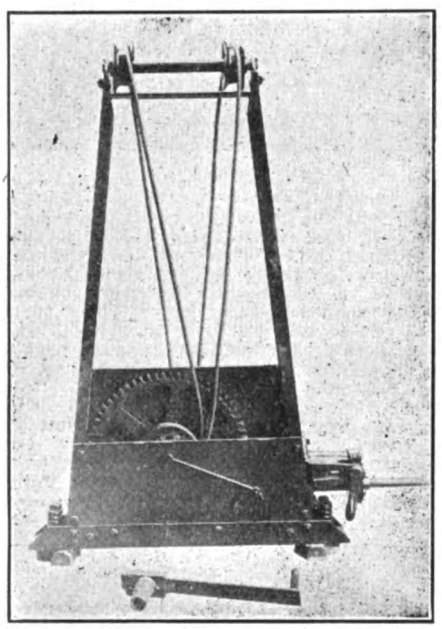
The Columbian Lightning Hoist is designed for lifting truck dump bodies, having capacities up to five tons, to an angle of 30 to 50 degrees, this being done with ease by one man. The hoist is operated by a train of spurs and bevel gears turned by a hand crank at the bottom of the hoist frame. A ratchet and pawl are provided on the hand crank shaft, which prevent the body from returning to its normal position until emptied of its load. Freeing the pawl from the cam allows the body to descend by its own weight to the chassis frame of the truck. The hoist



frame is constructed extra heavy from pressed steel, reinforced at the top and bottom with heavy cross sections of sheet steel. A worm is fastened to the inner end of the hand crankshaft, which meshes with a large worm gear, equipped with a drum at either side, on which the steel cables of the hoist are wound. Grooved pulleys of cast iron are fitted to a cross shaft, mounted in bearings at the top of the hoist, over which the steel cables pass from the ends of the dump body to the drums of the worm gear.

The hoist is firmly fastened to the frame of the car and is very compact, occupying a space eight inches wide behind the driver's seat. This arrangement is considered particularly efficient, as it permits the body load to be set forward, relieving the rear tires, springs, frame and axles of an excessive share of the load.

Another feature which is calculated to appeal to the truck owner is the light weight of this equipment. The Columbian is stated to be the lightest possible in weight consistent with proper strength, thus allowing the use of a dump body of a larger carrying capacity. It fits any chassis or frame and can be easily attached.

Manufactured by the Columbian Steel Tank Co., 1601-1621 West Twelfth Street, Kansas City, Mo. Write for prices and further information.

The "Michigan" Reboring and Burnishing Tool for Fordson Tractor and Ford Engine Cylinders is a tool with which it is possible to rebore and burnish the cylinders of a Ford or Fordson engine to a degree of smoothness comparable to new.

Two locating blocks are furnished with each tool, for centering the boring head accurately in the cylinder. These are slipped into position, one on either side, after the head has been placed on the head of the cylinder, being fastened thereto by bolts passing through the boring head into the cylinder head bolt holes. The tool is held at the bottom of the cylinder by a support which is slipped on the shank of the reboring sleeve and is bolted at the bottom of the block.

The reboring and burnishing tool can be turned by hand by a crank or operated by power through a universal joint suitable for any drill press. The illustration shows the method of hand operation. When boring the crank is turned clockwise, driving two internal gears and two pinions, which in turn move the feed screw and sleeve. The screw and sleeve, while operating in the same direction, turn at different speeds, which gives the proper feed action and at the same time produces the desired resistance of the tool during the strain of cutting. The ratio between the gears and pinions is such that while the sleeve is making one revolution the feed screw makes 1 1/12 revolutions, so that as the sleeve makes 12 revolutions the cutter will advance a distance corresponding to the pitch of one thread on the feed screw in the direction of the axle of the sleeve. This gives a feed of 1/64th of an inch a revolution.

In order to permit the quick return of the cutter to its original position at the top of the cylinder without affecting the bored cylinder, provision is made for disengaging the cutter from the work and returning it to the top of the cylinder rapidly and in a straight line. This is accomplished by shifting the crank to a second position, reversing the direction of its rotation, the sleeve remaining stationary while the screw operates, carrying the cutter rapidly to the top of the cylinder.

To burnish the cylinder the crank is set in a third position, the bottom support is removed from sleeve, the burnishing tool slipped on the screw and the crank turned in the same direction as when boring. The burnishing tool automatically feeds to the top of the cylinder. It is not necessary to use the bottom sup-

port with the burnishing tool, as the tool is self-centering. When the burnishing tool reaches the top of the cylinder, direction or rotation of the crank is reversed and the tool automatically feeds to the bottom of the cylinder.

It is stated that the cutter of the reboring tool is made of high speed steel and is capable of reboring from 20 to 30 cylinders without regrinding.

The tool can be furnished for reboring cylinders of the Fordson tractor, or those of the Ford engine only, or can be supplied with two sets of cutters, two burnishing tools and two sets of gauge blocks, making the one tool applicable for boring both Fordson and Ford engine cylinders.

The complete tool is securely packed in a tool chest with a hinged lid, which is designed for holding it permanently if found desirable.

Manufactured by the Michigan Machine Co., Detroit, Mich. Prices: Outfit A, Fordson tractor cylinder only, $150 f. o. b.; outfit B, Ford model T cylinders only $150 f. o. b.; outfit C, combination for reboring both Fordson tractor and model T Ford cylinders, $225 f. o. b. Detroit.

Peerless Automobile Specialties for the car consist of a line of dressings for mohair and leather tops, lining dyes, cushion dressing, lamp, engine and fender enamels, black gloss finish, air drying Japan liquid wax, body polish, mirroroid, acid proof battery box and anti-rust rim paints, touch-up black, carbon remover, tire paint, gasket shellac and a full line of color finishing paints. Color assortments may be obtained by the jobber and dealer in large or small sizes as desired, including catalogues, color cards, window

signs, etc. The material from which the goods are made is claimed to be of the best, nothing but the highest grades of oil, color and pigment entering into their composition.

Manufactured by the Columbus Varnish Co., Columbus, O. Prices, No. 1 assortment, $23.20; No. 3 assortment, $69.60.

Stow Portable Buffer and Grinder was originally designed for buffing bright surfaces, but since its introduction, it has been applied to many other uses, especially for light grinding. It finds a useful field in buffing tires, automobile parts and similar work. As a grinder it is particularly adapted to roughing small castings. The portable buffer and grinder can be furnished in three sizes complete with motor, flexible shaft, clamp and spindle attachment plug. The motor will

operate from a lamp socket and can be furnished for 110 or 220 volts direct current or single-phase, 60-cycle, alternating current as desired. Special motors can be supplied for currents other than those mentioned.

The motor is one-quarter horsepower, having a shaft ranging in length from 3½ feet to five feet, according to the number of the outfit, using a buffing wheel from two inches to four inches wide and a capacity from 2½ to four inches by ½ to ¾ of an inch, according to the number of the outfit. The speed of the motor is 3400 revolutions a minute on all outfits.

Manufactured by Stow Manufacturing Co., Inc., Binghampton, N. Y. Prices on request.

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The Heintz Vulcanizer operates on the steam electric principle. Electricity instead of gas is used for the heating unit and a steam chest embodied in the body of the vulcanizer gives the necessary steam pressure required to do the work. The Heintz Vulcanizer is capable of handling four tubes at a time and these may be of any size from the 30x3 tube of the Ford car to the largest size truck tubes of the large size truck cord tires.

The equipment consists of a vulcanizing stand equipped with four vulcanizing arms and separate spring tension for each arm, electric heating coil beneath the steam chest, steam chest and fusible plug that is designed to melt at a temperature equivalent to 125 pounds steam pressure. This feature is claimed to be superior to the old style safety valve. A steam pressure gauge shows the pressure of the steam in pounds and as this gauge is connected with an automatic electric cut-out the pressure maintained is even throughout the curing process of vulcanizing.

As the Heintz Vulcanizer is built to retain heat, rather than radiate it, after

the machine is once heated the current is turned off the greater part of the time so that the consumption of current is very small in comparison to the amount of vulcanizing accomplished.

The automatic gauge that controls the steam pressure and the flow of the electric current is simple in construction and does not readily get out of order.

The Heintz Vulcanizer is guaranteed for a period of one year from date of purchase, this guarantee being limited to the repair or replacement at Cleveland, O., of any vulcanizer or parts thereof which are defective.

Manufactured by the Jas. C. Heintz & Co., 2069 East Ninth Street, Cleveland, O. Prices on application.

Hudson White Metal Slip-On Running Boards for Ford Cars consists of an all-metal covering for the ordinary sheet iron running boards of the Ford car. They are made in such a manner that they may be slipped over the regular running board and fastened with little labor and in a few moments by anyone handy with tools. The metal of which they are made is said to be treated in such a manner that rust

will not form, nor will they become unsightly as they are not painted, but retain their bright appearance for the life of the car.

Manufactured by the Hudson Motor Specialties Co., Real Estate Trust Building, Philadelphia. Price, $6 for set of two.

The Hillmeter is a device for showing the percentage of grade encountered when a car is ascending or descending a grade. The Hillmeter is especially useful to motorists who wish to know the percentages of the various hills or grades that they

pass over when touring, and is also useful to the demonstrator when showing a car to customers.

The device is attached to the dash of the car by two screws and shows the percentage from 0 to 15 in either direction.

The Hillmeter consists of a glass tube, similar to a spirit level, formed in a curved shape, containing a bubble of air that determines the degree of angularity.

Manufactured by the Meteor Sales Corporation, 140 West 68th Street, New York City. Price, $1.

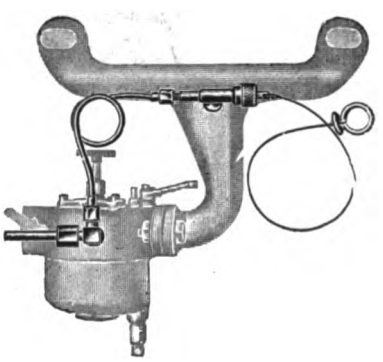
Norwesco Iron Cement is a chemically correct product, the manufacturer states, which will permanently repair cracks, blemishes and sand hollows in iron and steel castings and leaks in radiators,

pipes, threaded joints, etc. Norwesco cement is made in a powder form and manufactured under strict laboratory supervision, which insures a standard quality that will give the desired results. For the convenience of customers Norwesco iron cement is put up in three sizes of cans; six ounces, one pound and five pounds. To use, mix with water and apply according to directions.

Manufactured by the Northwestern Chemical Co., Marietta, O. Prices on request.

J. & B. Gasoline Injector for Ford Cars consists of a priming device that is attached to the intake manifold of the engine by drilling a hole in the manifold 1⅝ inches below the top of the Y with a 11/32-inch drill. Tap this hole with ⅛-inch pipe tap.

Shellac this hole and insert T connection for the injector and screw up tightly. Remove the elbow from carburetor fuel pipe and substitute in its place a three-way connection. Remake fuel pipe connection and connect in the copper tubing



from the three-way connection to the connection on the injector forming the tubing in a coil above the carburetor. From the injector a wire is run out and through the radiator and a ring is fastened to this wire so that the wire may be pulled with the finger.

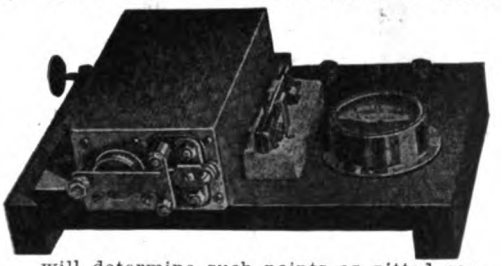
To operate the injector the wire is pulled forward and allowed to spring back suddenly and by so doing a charge of gasoline is drawn from the fuel pipe and forced into the intake manifold, insuring a priming charge for the engine when starting.

Manufactured by the J. & B. Manufacturing Co., Pittsfield, Mass. Price, $3.50.

B-W Coil Tester for Coils of the Ford Car is a simple device by which it is possible to test the coils of the Ford car under similar conditions as found in the car.

The coil tester consists of a wooden base on which is mounted a low reading ammeter and receptacle contact springs in which to place the coil to be tested and adjusted. Two binding posts are provided for connecting either a six-volt storage battery or four dry cells in series, an adjustable spark gap and a switch for making or breaking the circuit.

The coil to be tested is slipped into place so that the springs on the base touch the proper terminals of the coil and a battery is connected as per the polarity marked on the base. The switch is closed and the ammeter should give a fairly steady reading of about 1½ amperes and while this current is flowing a continuous flow of sparks should follow across the spark gap. The use of the B-W tester



will determine such points as pitted contact points, weak spring or too strong a spring, stuck vibrator or a coil that is exhausted.

It is possible to test a set of four coils in a few moments and properly adjust them, it is stated, and the tester will quickly pay for itself on the first few jobs.

Manufactured by the Ballman-Whitten Manufacturing Co., 4060 Forest Park boulevard, St. Louis, Mo. Price, $6.

Se-Ment-Ol Counter Display Stand clearly tells the purpose of the merchandise it displays. An actual reproduction of a leaking radiator holding one can of Se-Ment-Ol (powder) and one can of Se-Ment-Ol (liquid) with the familiar slogan "Se-

Ment-Ol" "finds the leak and fixes it." The display stand is made entirely of metal and is designed to give greater service without becoming soiled or damaged from use or handling.

It is stated that counter displays such as this have doubled the sales of many products, their appeal being wholly in their power of suggestion and impelling action.

Manufactured by the Northwestern Chemical Co., Marietta, O. Dealers interested in this stand may get further information by writing to the company.

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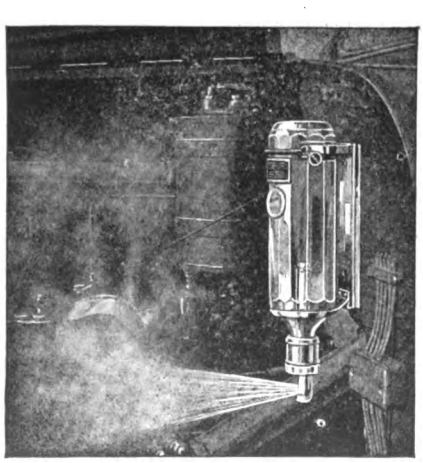
The R-W No. 364- 30-Ton Screw Press is designed primarily for garage and service station use, but may be employed wherever automobile or truck repairing is done. The press is made unusually heavy to withstand the work of pressing shafts out of gears, bending bars, straightening axles and other work of a similar nature.

The two sides or vertical uprights are fitted to floor brackets fastened to the floor by lag screws, and are made of hollowed steel. At equal distances holes have been drilled through the tubes for the insertion of pins, allowing the press block to be raised or lowered according to the length of the work. The tubes are joined across their tops by a trussed cross member and the vertical tubes are fastened rigidly to this cross member. The screw press is adjustable for handling devices of widely varied heights, while the press is powerfully constructed and designed to handle a wide variety of work. The left thread on the screw gives the advantages of a natural right hand movement, which utilizes economically all the power exerted.

Manufactured by the Richards-Wilcox Manufacturing Co., Aurora, Ill. Prices and literature on request.

The Boyce Fire Extinguisher operates automatically, yet can easily be removed from its bracket and operated by hand when necessary. The instant a flame starts under the hood the chemical is released by the extinguisher and sprays the engine with a most efficient yet harmless mixture, which extinguishes the fire automatically. It is stated that an overheated engine will not affect its operation, nor will the chemical in any way injure any part of the engine.



The device consists of a specially formed glass bottle or container that is positioned in a bracket hung from four screws in the dash. The container is fitted with a special nozzle that opens automatically in case the temperature is raised by a fire occurring near by, sprays the chemical on to the flame and, it is stated, effectually puts out the fire.

A large plant has been erected by the company and it is its intention to reach a daily production of 8000 extinguishers.

Manufactured by the Boyce-Veeder Corporation, Long Island City. Price, large size, $8 each; small size, $6 each.

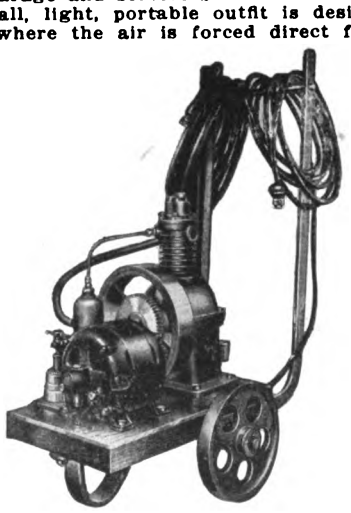
The Luthy Non-Breakable Hydrometer consists of an outer case made of high-grade celluloid, clear as glass, which is claimed to be non-breakable, and an inner case which floats in the electrolyte, made of the same material, provided with figures which indicate the specific gravity of the electrolyte.

A bulb is provided at the upper end of the outer case for filling with electrolyte, while a rubber tube is attached at the bottom through which the liquid is drawn from the battery.

It is stated that the celluloid is not affected by battery acids, is as clear as glass and that the device cannot be surpassed for accuracy.

Manufactured by the Luthy Hydrometer Co., 97 Woodward Avenue, Detroit, Mich. Price, $1.25.

The Curtis Style "Y" Motor Driven Portable Outfit is a newly designed equipment for garage and service station use where a small, light, portable outfit is desired, and where the air is forced direct from



the compressor to the tire to be inflated.

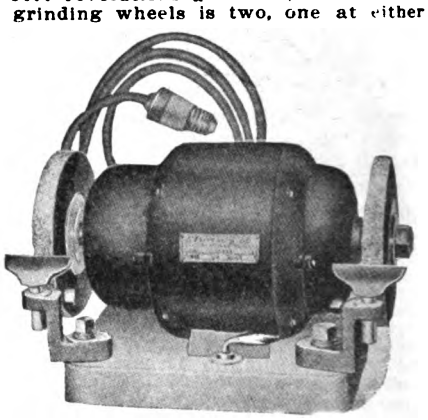
The outfit is self-contained, including the motor, direct connected to the air compressor, and includes hose and chuck to make the connections to the tire, as well as the necessary cord and plug to join to any lamp socket.

The air compressor is a model "B" type, controlled, splash oiled and air cooled, size No. 1, 1⅝ inches by two inches, with fan flywheel and guarded internal cut flywheel gear and motor pinion. The outfit is equipped with a ¼ horsepower alternating or direct current as desired, an approved combination switch for the motor and a relief valve for the expansion chamber, 20 feet of water proof cord with Edison base plug and 15 feet of best oil proofed air hose with tire chuck and air gauge. The outfit is mounted on a substantial hard wood base, supplied with large diameter, easy running wheels and a combination push bar handle, cord and hose rack.

Manufactured by the Curtis Pneumatic Machinery Co., office, 30 Church Street, New York; factory, St. Louis, Mo. Prices and literature on request.

Stow Bench Grinder No. 2 is designed to supply the demand for a light bench equipment to do tool grinding and fine grinding for manufacturing purposes. It will operate from any lamp socket. The motor is fitted with extra heavy bearings, which are protected from dust, as all parts of the motor are enclosed in an oil-tight case. The grinder is complete with tool rests, wheels, switch and lamp cord, ready to attach to any lamp socket.

The speed of the motor is approximately 3400 revolutions a minute, the number of grinding wheels is two, one at either



end of the armature shaft. The direct current machine weighs 40 pounds and the alternating current model 35 pounds. Wheels are six inches by one inch and ¾ inch respectively. The motor is wound for 110 or 220 volts direct current or single-phase alternating current, 60 cycles.

Manufactured by the Stow Manufacturing Co., Inc., Binghamton, N. Y. Prices on request.

The Wayne Bumper for the Overland Four is a new invention just being placed on the market. The most advanced ideas of bumper construction have been embodied in it and it is the result of the combined designing ability of two expert mechanics of the company manufacturing the device. Representatives of the Willys-Overland company, it is stated, have fully indorsed this bumper and state that it meets every requirement of strength and beauty. The bumper is of simple construction, strong and durable, looks neat and is easily attached, and gives a fin-

THE WAYNE BUMPER

ished appearance to the car. All of the bolts, braces, etc., are enclosed by the pan covering the springs and the impression is given that the bumper is an original part of the car.

The manufacturer is anticipating a large sale of these bumpers, judging from the interest shown by dealers and distributors who have seen the finished product.

Manufactured by the Wayne Bumper Co., Fort Wayne, Ind. Prices and literature on request.

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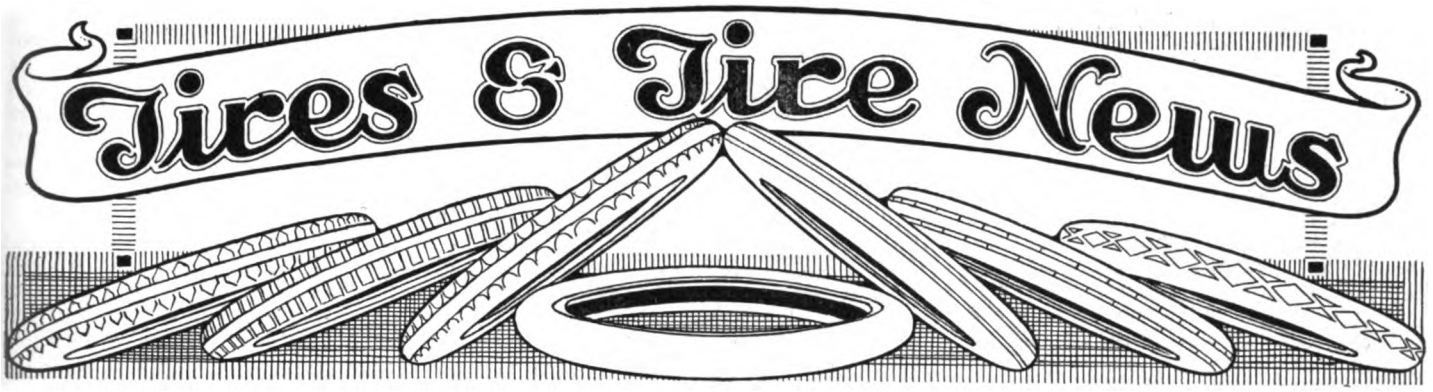


Activities of Portage Rubber Co.

Increasing business in Wisconsin and adjoining territory has resulted in the necessity for additional representation in that section of the Portage Rubber Co., Barberton, O. A branch has been opened at 450 Jackson street, Milwaukee, to aid in the greater distribution of Portage tires and tubes.

P. S. Manley, formerly salesman at the Portage Chicago branch, has been appointed branch manager. Mr. Manley has had considerable experience in the rubber industry, formerly being one of the leading salesmen of the Empire tire and later of the Brunswick. Six salesmen have been assigned to work out of this branch.

Announcement is also made by the Portage company of the appointment of F. N. Hammond as special representative of the sales department. Mr. Hammond is well known among tire men and has an extensive knowledge of the needs of the retail industry. He was formerly Goodyear branch manager in Cleveland for a number of years and later Kelly-Springfield branch manager in Detroit.

An important sales conference of Portage branch and district managers was recently held at the home office of the company, Barberton, O., at which the schedule of activities for the present season was received with interest and enthusiasm.

The first day was taken up entirely by the conference proper at which John W. Maguire, vice president and general manager, and Mr. Pasho, general sales manager, spoke. In the evening the branch and district managers and a number of the officers and heads of departments attended a dinner at the City club of Akron.

The second day the several department heads spoke to the conference, among the topics considered being "Credits," by R. J. Cole, assistant treasurer; "Our Advertising Policy," by C. S. Thompson, director of advertising; "Efficiency of Operation," by H. M. Kerr, comptroller; "Our Production Plans," by F. J. Johnson, factory superintendent, and "Our New Service Policy," by J. J. Dettling, manager of the adjusting department.

Those in attendance at the conference were: A. M. Fisher, Atlanta; C. E. Aldridge, Boston; W. J. Shea, Cleveland; J. V. Wedgwood, Chicago; G. H. Snook, Cincinnati; Jack Miller, Dallas; L. R. Vaughan, Des Moines; S. R. Waller, Detroit; F. L. Davies, Kansas City; P. S. Manley, Milwaukee; C. A. Johnson, Minneapolis; B. W. Perks, New York City; C. T. Anderson, Philadelphia; F. N. Hammond, eastern district manager, and Carl Hoag, special representative.

F. N. Hammond, Special Representative Sales Department, Portage Rubber Co.

Kelly-Springfield Annual Report

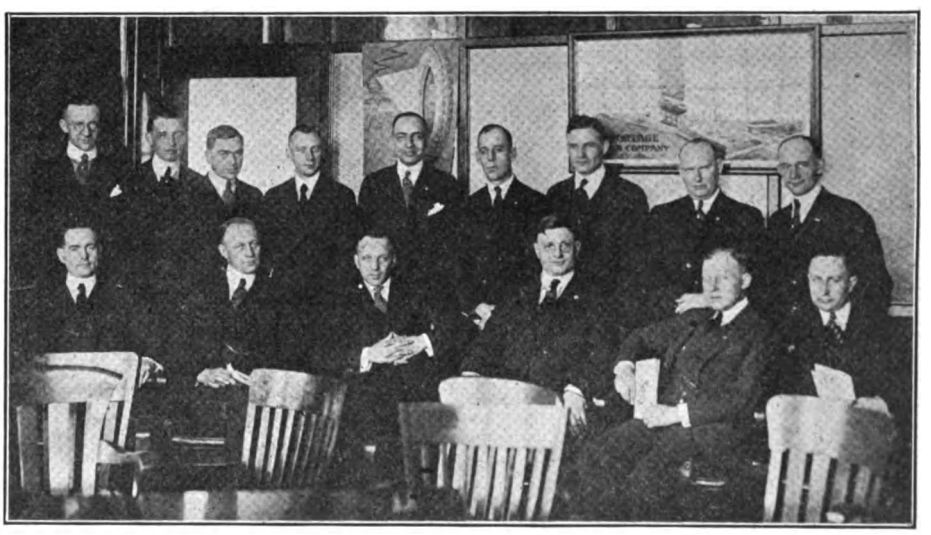
The annual report of the Kelly-Springfield Tire Co., New York City, for the past fiscal year shows gross profits of $7,034,284, as compared with a gross of $7,187,834 in the preceding year. After deducting administration expenses and appropriating $814,275 for estimated excess profits taxes the balance available for dividends was $2,422,522. This was the equivalent after preferred disbursements to approximately $39 a share on the $5,361,978 common stock outstanding at the close of the year.

In the preceding year the earnings were $1,707,735 after the payment of $2,657,492 for income and excess profits taxes. After deduction of preferred dividends the amount available for the common was equal to about $34 a share on the $4,907,200 common then outstanding.

Current assets total $12,225,647 and current liabilities of $670,197.

GOODYEAR'S DAILY MAIL.

The Goodyear Tire & Rubber Co., Akron, O., receives and answers from 16,000 to 18,000 letters a day, as much as would be handled in a city of 30,000 inhabitants. At this rate nearly 6,000,000 pieces of mail are received and sent out by this company every 12 months.



Branch and District Managers of Portage Rubber Co., in Conference at Home Office, Barberton, O.

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Goodyear Multiple-Wheel Truck

THE engineers of the Goodyear Tire & Rubber Co., Akron, O., have recently devoted considerable attention to the development of a multiple-wheeled truck which may prove to be a big step toward the solution of the problem of the ultimate tire equipment for heavily loaded commercial vehicles. The result has been the designing of a six-wheel model as shown in the accompanying illustration, which has been in operation for more than six months and has traveled more than 2000 miles over rough roads with heavy overloads. Actual demonstrations and close tabulation of results indicate clearly that this six-wheeler or tandem axle construction truck with four pneumatic-equipped rear wheels has steadier riding qualities, better traction, is less destructive to roads, decreases tire weight and cost, reduces axle weight, has greater braking capacity and permits greater operating radius.

Development of this type is due to the strong conviction of P. W. Litchfield, Goodyear factory manager, that the heavy tonnage truck of the future would be some form of multiple-wheeled vehicle, just as the multiple-wheeled freight car succeeded the single truck type for hauling heavier loads. However, the six-wheeler was not developed in an attempt to produce the ultimate motor truck, but to attempt to solve the problem of pneumatic tire equipment for heavy loads.

As tire cost and weight are perhaps the greatest factors of interest to truck owners, it will be interesting to note that instead of using the giant 48 by 12 pneumatics weighing about 398 pounds each on the rear of five-ton trucks, the tandem axle construction embodied in the new six-wheel truck allows the use of four 40 by eight-inch pneumatic tires weighing 119 pounds each, a reduction of 279 pounds in the weight the driver on tire changes will have to lift. In addition, the four smaller pneumatics cost one-third less than the larger tires.

As the same size of tire is used all around on the truck the eight-inch tire can also be used as a front wheel spare, still further reducing the tire investment and the number of spares necessary to insure continuous operation.

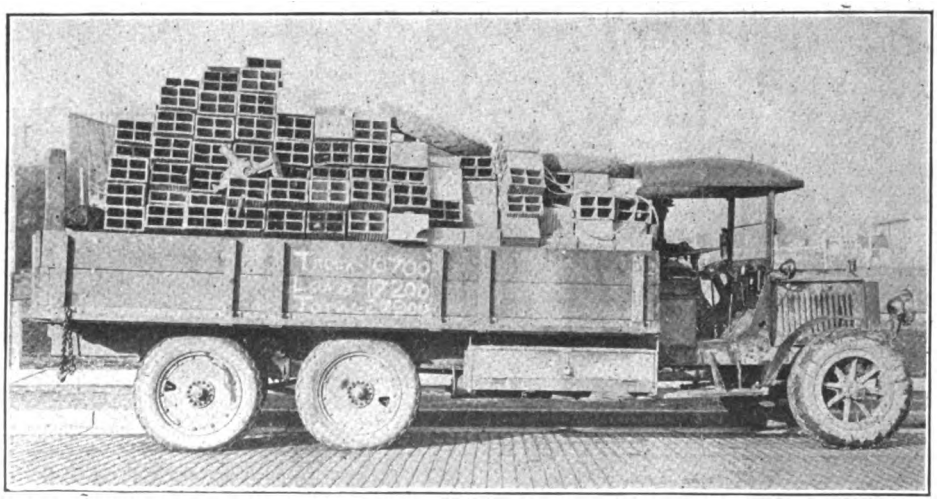
C. M. Wood, in Charge of Good Roads Bureau, Goodyear Tire & Rubber Co.

No more appealing feature can be found for municipalities than that of road saving demonstrated by the pneumatics-equipped six-wheeler. The average road has the maximum base practicable and begins to disintegrate under the excessive pounding of solid tires. With the truck weight distributed on four rear wheels, road and truck engineers estimate that the average road will withstand a load up to seven tons under this newly developed construction with no more destructive effect than that resulting from the 3½-ton load on two rear solid tires.

One striking advantage of pneumatics on the tandem axle construction is that they permit a much greater operating radius and steadier riding qualities. The six-wheeler seems to cling to the road and rider so steadily and with little vibration. With an area of road contact 27 per cent. greater than that of two 12-inch pneumatics, the four eight-inch tires showed much better traction qualities. This was especially noticeable in comparison with dual solids or pneumatics on highly crowned roads and in soft going where additional traction surface kept the wheels from sinking in deeply and the truck from stalling. Increased ease in handling seemed to be one of the truck's most prominent features.

With the large saving in tire weight by the use of smaller pneumatics as a large factor, the total axle weight is greatly reduced in the new type of truck. Greater braking capacity is also obtained by this construction, four brakes being used instead of two.

The chief objection expressed by engineers to the use of 48 by 12-inch tires has been the extremely high center of gravity, the truck load being raised to an extreme height above the ground. This objection is entirely overcome by the use of the four smaller tires.



Goodyear Six-Wheel Truck of Five Tons Rating, Weighing 10,700 Pounds, with Load of 17,200 Pounds, on 40 by Eight-Inch Pneumatic Tires.

WOOD ASSUMES CHARGE OF GOODYEAR GOOD ROADS BUREAU.

C. M. Wood, formerly sales engineer for the H. W. Johns-Manville Co., and a man of wide experience in road engineering and highway construction, has assumed charge of the Good Roads bureau recently established by the Goodyear Tire & Rubber Co., Akron, O., and will devote his entire time to the campaign of agitation inaugurated by that company for the furtherance of good roads and highway construction throughout the United States.

Mr. Wood is a native of Texas. Graduating from Cornell university as a mechanical engineer, he followed engineering work in Mexico and the South and Southwest for eight years, the next 2½ years being spent in sales engineering work for a Chicago cement company. Prior to his affiliation with the Manville company he acted as department manager for the Portland Cement association.

Briefly the functions of the Goodyear Good Roads bureau as outlined by Mr. Wood are: To distribute reliable data on good roads and highways; to take an active part in good roads movements wherever possible by means of lectures, personal calls and advertising; to collect and investigate state and national highway legislation; to support financially and otherwise local good roads organizations as may be deemed expedient; and to prepare and issue pertinent literature for public distribution, covering good roads, their advantages and the details of financing road improvement and highway construction.

The bureau also will assist wherever possible by supplying reliable information on tire effects on roads and to devise road construction material of greater durability.

L. L. Heidacher, manager of the Memphis, Tenn., branch of the Firestone Tire & Rubber Co., Akron, O., is authority for the statement that that company intends shortly to open a branch in Arkansas, probably at Fort Smith.

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Recent Promotions by Goodyear Co.

The following promotions have recently been announced by the Goodyear Tire & Rubber Co., Akron, O., in its sales organization: L. C. Gates has been made manager, H. E. Waldsmith branch manager at Akron, and K. H. Dresser branch manager at Newark, N. J.

Mr. Gates entered Goodyear employ in a clerical capacity in the assistant division of the automobile tire department in 1915, and in a short time was transferred to city sales work in the Philadelphia branch. His next step forward was to assistant manager at Philadelphia, followed in 1919 by an assignment as manager of the Dayton, O., branch, and his promotion to the management of motorcycle sales at Akron followed early in 1920.

Mr. Waldsmith's first connection with Goodyear was in 1915 as a special traveling representative in the bicycle and motorcycle tire department. In 1918 he was transferred to the automobile tire department, where he remained about a year. His next promotion was to the position of special representative calling on dealers and motorcycle manufacturers, and on July 1, 1919, he was given added recognition by his appointment as branch manager at Youngstown. In 1920 he was made branch manager at Akron.

Mr. Dresser first became connected with the Goodyear organization in 1912 as assistant manager of the mechanical goods department. A year later he was sent to Portland, Me., as branch manager, where he remained until April 1, 1915. His ability as an organizer was quickly recognized by his selection as branch manager at Springfield, Mass. In the summer of 1917 he was recalled to Akron to act as staff man on motorcycle tires. He was soon placed in charge of the cycle tire department and made so remarkable a record that on Jan. 1, 1918, he was sent to New York and the New England districts in connection with the company's second sale of preferred stock, in which he was exceptionally successful. Mr. Dresser was next attached to the manufacturers' sales department, with headquarters in New York, where he continued until he was made branch manager at Newark early in 1920.

GERHART WITH ARKANSAS RUBBER CO.

R. C. Gerhart, formerly of the Little Rock, Ark, branch of the B. F. Goodrich Rubber Co., has become financially interested in and one of the officers of the Arkansas Rubber Co., 614 Center street, that city. Mr. Gerhart went to Little Rock about two years ago and during his connection with the Goodrich Co. the business in that territory has shown a gratifying increase. The Arkansas Rubber Co. handles the Goodrich line of passenger car and truck tires.

Ajax Rubber Co. stockholders have ratified the plan for increasing the capital stock from $10,000,000 to $20,000,000.

L. C. Gates, Manager Motorcycle Sales, Goodyear Tire & Rubber Co.

STERLING TIRE CORPORATION DECLARES DIVIDEND.

At a recent meeting of the board of directors of the Sterling Tire Corporation, Rutherford, N. J., an initial dividend from the date of issue at the rate of eight per cent. a year was declared on the cumulative sinking fund, series B. preferred stock, par value $100, preferred as to assets and dividends; retireable at $110 and accrued dividends. Beginning with 1921, 10 per cent. of the net profits (after preferred dividends) will be paid into a sinking fund for retirement.

At the same meeting the regular quarterly dividend of 1¾ per cent. was declared on the seven per cent. preferred stock and one per cent. on the common stock for the quarterly period ending March 31.

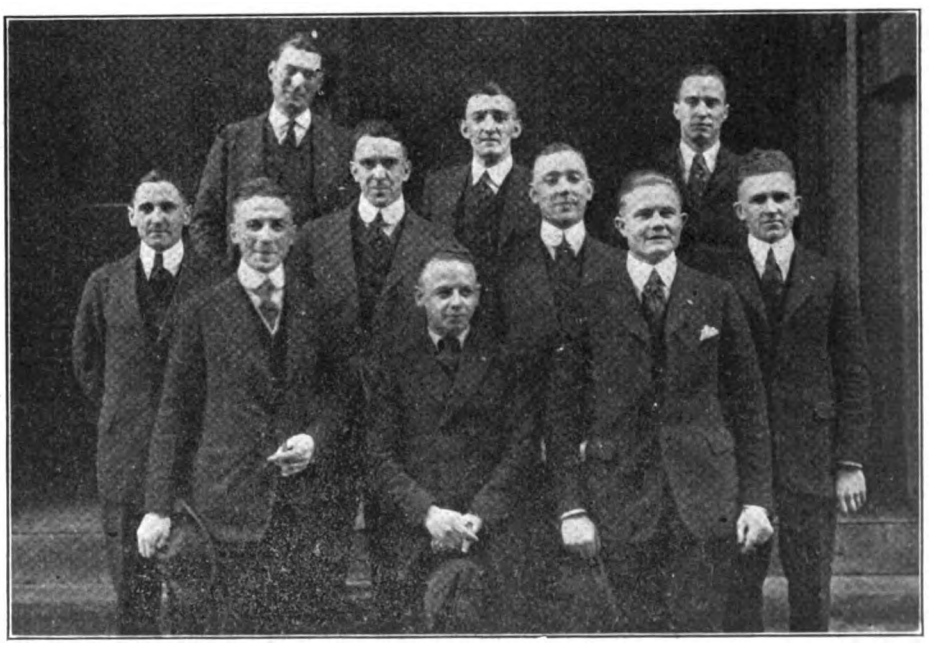
Visitors Welcomed at Goodrich Plant

THE B. F. Goodrich Rubber Co., Akron, O., believes that almost every person is a potential purchaser of Goodrich products and so confident is it of the efficiency of its manufacturing policies that it invites the general public to see for itself how Goodrich products are made and how scientifically the company treats its factory problems.

Ever since 1914 this company has been giving thought and attention to this feature of good will promotion. It realizes that a large part of the public is interested in acquiring facts about the various items of the every day merchandise it purchases. This information should be made easy for it to acquire. There are two ways in which the purchasing public can become informed, viz., by seeing for itself, or by learning from the retail seller.

The Goodrich company lays particular stress on the work of showing the dealer just how its product is made, so that he, in turn, may pass the information along to the ultimate purchaser. While all visitors are welcomed the Goodrich latch string hangs out particularly long to the dealer. Whether coming singly, in pairs, or in large groups—wholesale and retail merchants are always welcomed.

Thousands of visitors go through the Goodrich factories every year, a glance at the register showing names from Argentine, Brazil, Panama, Peru, Colombia, Hongkong, Calcutta, Calgary, Nome, Toronto, Ottawa, and in fact, from almost every country on the globe and from every state in the Union. Among the large groups which have recently made visits to the factory were the Foreign Trade commission, which recently made a tour of the United States; the Oklahoma Chandler dealers and the Cleveland Automobile Manufacturers.



Group of Guides at Factory of B. F. Goodrich Rubber Co., Akron, O.—Left to Right, Bottom Row: J. M. Grey, C. L. Carl, A. L. Jordan. Left to Right, Middle Row: E. J. Lutz, W. G. Dellabough, J. R. Beattie, C. R. Miles. Left to Right, Top Row: D. W. Fairleigh, J. J. Cregen, M. Kennedy.

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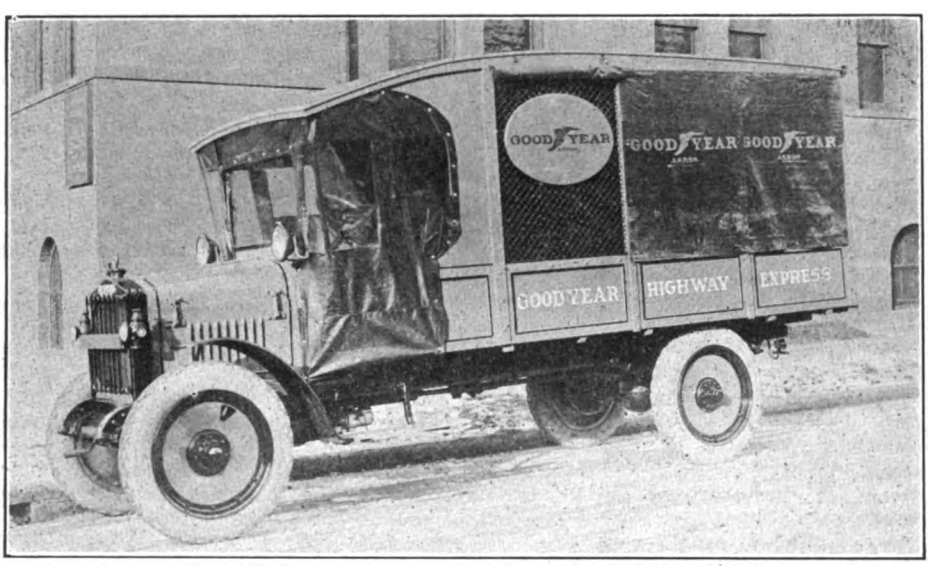
Goodyear Rim and Wheel Plant

In line with its policy of expansion, the Goodyear Tire & Rubber Co., Akron, O., has started on the construction of a rim and wheel plant at Akron, to have a capacity of 10,000 rims and wheels a day. The new factory will be a one-story brick and steel structure, 250 feet wide and 660 long, and will accommodate 500 workmen. It will be built on a portion of the 200-acre plat located on the Baltimore & Ohio railroad, so that it will have ample transportation facilities.

It is expected that the new rim factory will be completed about July 1, at which time the present rim department, which has a daily capacity of 600, will be transferred to it.

The remainder of the 200 acres will be used for storage warehouses and for the erection of large cantonment buildings, similar to those used by the United States government at Camp Sherman, Chillicothe, O., for the training of soldiers. Twelve cantonment buildings will be used as slepeing quarters, each building to accommodate 80 men. Other buildings will be used as kitchens, dining rooms and recreation halls. It is expected that these cantonments, built to house 1000 men, will be ready for occupancy by June 1.

The new rim plant and cantonments will be of the latest type of construction and when completed will give Goodyear one of the most modern rim plants in the country.



Acason 1½-Ton Truck, with Pneumatic Tire Equipment, Operated by the Goodyear Tire & Rubber Co., from Its Providence, R. I., Branch.

REMARKABLE GROWTH OF TIRE INDUSTRY.

According to the B. F. Goodrich Rubber Co., Akron, O., 85,000 tires a day—one every second—are now being made in that city, 25 per cent. more than a year ago.

During 1910 4,000,000 tires were manufactured in Akron. By 1915 the annual production had increased to 7,000,000, and by 1919 to 20,000,000. If the present production is continued throughout the year, 28,000,000 will be manufactured, approximately four tires for every passenger car and truck now in use.

The remarkable growth of the rubber industry has caused Akron to increase rapidly in size. In 1910, when the rubber industry employed 13,600 persons, Akron had a population of 69,067. Today the rubber companies employ 97,500 persons and the population of the city is estimated at 230,000.

Akron rubber manufacturers are making large additions to existing plants in the effort to bring production up to the demand, and when these extensions now under way are completed, the daily production will pass the 100,000 mark.

LONG-WEAR RUBBER CO., ELYRIA, EXPANDS.

The Long-Wear Rubber Co. of Elyria, O., has changed its name to Long-Wear Tire & Rubber Co., has increased its capital from $500 to $5,000,000, divided into $700,000 preferred and the balance common stock, and has absorbed the business of the Quality Tire & Rubber Co., Anderson, nd.

The general offices have been moved to Anderson and a large addition to the Elyria plant is being contemplated for making cord tires. Under the new arrangement the Elyria plant will have a capacity of 300 Long-Wear cord tires a day and the Anderson plant 1000 fabric tires and 2000 tubes a day, in addition to the complete line of Anderson Quality fabric tires and special brands for jobbers.

VON ALBERT LEAVES TIRE CO.

The Motor World Tire Co., manufacturer and distributor of Globe Cord-Fabric and Standard Four tires, inner tubes, accessories, etc., Grand Rapids, Mich., announces that A. P. Von Albert has severed his connection with that company and its subsidiaries.

Good Field For Repair Man

Giant pneumatics for trucks provide a lucrative field for the repair shop of the future, in the opinion of Firestone engineers who have been studying methods by which maximum mileage may be obtained from these big tires. Steadily increasing use of the pneumatic tired truck has created a need for adequate repair methods and tire men predict that in a short time the tire shop that is not equipped to handle this kind of work will be the exception. Already dealers are evincing a great interest in the progress that is being made because they realize that increased mileage made possible through economical and durable repair work will mean increased sales of pneumatic tires for trucks.

Equipment for work on the big sizes of tires has not been available in large quantities, but the tire companies and equipment manufacturers have been working hand in hand and assurance is given that a general demand for equipment soon can be supplied.

Firestone engineers have been experimenting on giant pneumatic repairs and see nothing to prevent effective results by any competent repair shop. The methods to be used are in no way a radical departure from those used in making repairs on the smaller sizes of cord tires.

For sectional repairs two general methods are considered practical:

Where the tread is only slightly damaged and the fabric not badly separated an inside cord patch and an outside tread patch will be found effective.

For large sectional repairs the outside should be built up in a manner similar to that used in building up a section of a smaller cord tire and the repair should be reinforced by an inside cord patch. If the tread is in good condition it may be laid back while the section is being rebuilt. If not, it should be replaced by a section of non-skid, semi-cured tread band.

For retreads, use of the semi-cured, non-skid retread band is recommended and the raised cure has been found to be effective.

Either sectional or dry cure molds may be utilized in vulcanizing the repair. The cure, in most cases, must be of longer duration than it is in repairing the smaller sized tires, the time depending largely on the size and nature of the repair.

555 TIRE & SERVICE CO.

Roy E. Stueber, manager of the 555 Tire & Service Co., has signed a lease for the two-story brick fireproof building being erected on the 140 by 150-foot lot on the northeast corner of Third and Broadway, Little Rock, Ark., by the Shoemaker-Bale Automobile Co., to cost approximately $100,000.

The 555 Tire & Service will maintain its present service station at 1100 Main street, in addition to the new building.

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Up-to-Date Methods of Vulcanization and Tire and Tube Suggestions

CAN your worn or injured tire be successfully repaired? To this vital question experts of the B. F. Goodrich Rubber Co.'s tire repair school answer "Yes." But if you asked these same experts whether the average tire is always efficiently and successfully repaired, the answer is immediately reversed.

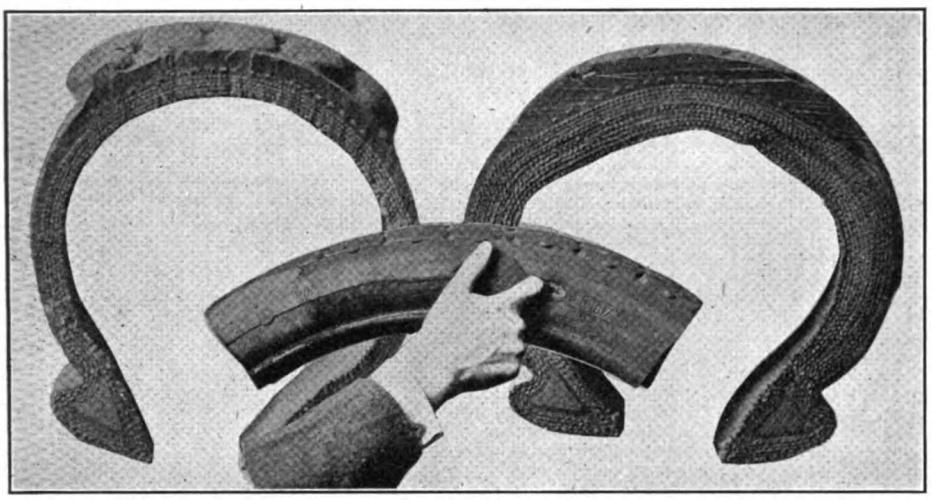
Careless and unscientific repairing, the Goodrich company points out, is responsible for the loss of hundreds of thousands of dollars to American car owners each year. And to this should be added the loss incurred by neglected repairs—tires thrown away whose life could have been prolonged.

What is the most frequent mistake made by repair men and how avoided? The reply is: Failure to remove worn fabric from injured portion of the tire and the practise of adding rather than replacing layers of fabric.

The accompanying illustrations tell the story. Here are shown three views of a four-inch, five-ply fabric tire which was repaired by adding eight plies of new fabric to the tire's five plies of worn fabric. After running a few hundred miles the tire blew out. The motorist went to the repair man, who said: "Why, the blow out occurred 15 inches from the repaired part. The tire originally was defective." The car owner then laid the blame on the manufacturer.

The truth is the repair man and not the tire was at fault. This is what actually took place: The eight plies of extra fabric was found, upon examination, to extend to the point of the blow out. In running a "hinge" was formed at the merging point of the five and 13-ply sections. The "hinge" constantly worked back and forth, thereby overworking and weakening the fabric. A blow out resulted. The eight added plies had formed a stiff unresisting section that refused to work in harmony with the rest of the tire.

The smaller picture shows a tire stripped back in the approved factory method of repair. All except enough fabric for a foundation has been removed. The fabric is removed by steps, thereby avoiding a sharp break between the old and the new fabric. New fabric replaces and is not added to the old, worthless fabric. Then the repair man should begin the process of building up, using the best materials obtainable, including high grade cements, sheets of raw rubber and new rubber impregnated with cotton fabric.



Left—Hand Sketch Is a Cross Section of Tire Showing Five-Ply Construction. On Right—After Repair, 13 Plies Instead of Five—Old, Worn Fabric Is Still in Tire. Center Sketch Shows Where Blow-Out Occurred—at Merging Point of Five and 13 Plies.

(From Goodyear News.)

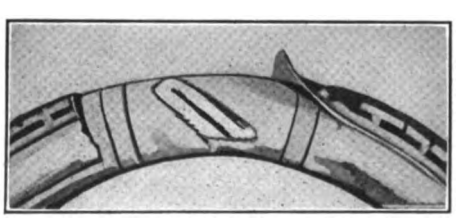
FROZEN TREAD STOCK CAN BE USED.

An Iowan asks if tread stock which has been frozen is still good for use. Frozen stock may be used satisfactorily by thawing it slowly in a warm room. The fact that it has been frozen should not in any way injure its quality. However, if the stock is old, freezing will have some effect and it will lose some of its tacky properties, perhaps causing it to bloom to some extent.

OLD CASING MAKES GOOD VULCANIZING BAG.

To solve difficulties experienced with sand bags used in third-circle vulcanizers for retreading, a Colorado firm took an old casing and stripped it down as one would in making a reliner and cemented the edges together with two strips of uncured fabric. These were cured on the tube plate and the ends closed by riveting or sewing. The bags were then filled with sand or ground cork.

The advantage in using this sort of bag is that it is the same size as the casing to be cured and fits snugly.



Section of Tire Showing Proper Preparation for New Fabric Layers.

SEVERAL REASONS FOR BULGING OF REPAIR.

A Massachusetts shop asks what is the cause of the repaired place on a job becoming larger than the rest of the carcass in a sort of a bulge. There are a number of possible causes for this condition and among these the most probable are: Dirty stock, undercuring, oil in gasoline or solvent or foreign matter in the casing itself.

SAVING THE HOLLAND.

Saving the holland which comes from the raw gum has been found practicable in a western shop. It is sent to the laundry and the starch washed out. The soft cloth makes an excellent cleaner for casings.

Holland also makes a good cover for the tube plate, prevents sticking and the rubber flows better, making a smoother job.

FORMULA FOR PAINT IN CASINGS.

A Michigan repair man asks what are the ingredients for a good paint for coating the inside of casings after they have been retreaded. One of the simplest is to mix soap stone, C-35 cement, gasoline or some other solvent and work to the consistency of house paint. Apply a thin coat.

TO PREVENT DISCOLORATION.

A query received recently asked what makes white tread tires turn black during vulcanization. The answer is that the sulphur is drawn to the outside by excess heat or the length of cure. The way to prevent this condition is to place a moist cloth over the surfaces to be cured.

PASTE FILLER FOR TREAD BUTTONS.

A Quincy, Ill., repair man writes for a pad or paste filler to use around the buttons on the retread band when working with a Wilkinson third-circle dri-cure machine in curing all-weather treads. The best pad is made of a paste of plaster of Paris and wood pulp.

TOBACCO SACKS FOR TUBE REPAIRS.

These can be made from small tobacco sacks filled with sand. They equalize pressure nicely and do not mark the tube as much as wood blocks.

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Stocks on New York Exchange

Securities and Crude Rubber Markets

Automobile and Tire Quotations

NEW YORK STOCK EXCHANGE.

Week Ended May 1, 1920.

Company	High	Low	Last	Change
Advance Rumely	40	35½	36½	—1½
Advance Rumely, pfd	65	63¾	63¾	—3¼
Ajax Rubber	70	65	66	—2
Allis-Chalmers	39½	34⅝	35⅞	—3
Allis-Chalmers pfd	79¼	79	79	—1¼
Am. Bosch Magneto	113	106	107	—5
Am. LaFrance Fire Eng	12½	11½	11¾	—¾
Auto Sales	11⅞	11⅞	11⅞	—¼
Bethlehem Motors	26¾	21¾	23	—1¼
Case, J. I. Co. pfd	95	95	95	—½
Chandler Motor	151	140¾	143	—6⅛
Emerson-Brantingham	21	21	21	—½
Fisher Body	132	125⅜	130	+4¾
Fisher Body, pfd	103	101	103	—3
Fisk Rubber	33⅞	31½	31⅝	—1⅜
General Electric	151	145⅛	145¾	—4½
General Motors	324	283	295	—3½
General Motors, new	32⅜	28⅜	29⅝	—⅛
General Motors, pfd	80	79	79	—1
General Motors, 7% deb	84	83⅜	83⅜	—⅛
General Motors, 6% deb	72½	71	71	—¼
Goodrich, B. F	68	64⅞	65¼	—¼
Goodrich, B. F., pfd	92¼	91	91¾	—¼
Gray & Davis	31¼	28½	28½	—3
Hendee Mfg	40¼	35	35	—2
Hupp Motor Car	20⅞	18⅛	18⅜	—1½
International Harvester, new	129¾	118	119½	—7½
International Harvester, new, pfd	111	110¾	110¾	—¼
International Motor Truck	120	106	107	—23
International Motor Truck, 1st pfd	79¾	78	78	—2
International Motor Truck, 2nd pfd	67	67	67	—1
Kelly-Springfield Tire	118	108	109¼	—7½
Kelly-Springfield Tire, 8% pfd	101¾	100	101¾	+2¾
Kelsey Wheel	73	70	70	—16
Keystone Tire & Rubber	34½	30	31	—2⅝
Lee Rubber & Tire	36¼	30¼	31	—4
Maxwell Motors	29⅝	28	28	—1¼
Maxwell Motors, 1st pfd	51⅛	50	50	—3½
Mullins Body	42	38¼	38¼	—2¼
Pierce-Arrow	64⅜	54⅜	56½	—6⅞
Pierce-Arrow, pfd	99½	97	94	—1
Republic Motor Truck	43½	42	42	—2
Saxon Motor	15¼	13	13⅞	—1⅜
Stewart-Warner	45	41⅜	42	—1⅞
Stromberg Carburetor	85¼	72	73	—8
Studebaker Co	113½	106¾	108	—2
Studebaker Co., pfd	98	97¾	97¾	—¼
U. S. Rubber	104¼	97	98½	—3¾
U. S. Rubber, 1st pfd	109¾	108¾	108¾	—1¼
U. S. Steel	99⅛	93⅝	94⅞	—1⅝
U. S. Steel, pfd	110¼	109¼	109¼	—1
White Motors	59	54¾	55¾	—2¼
Willys-Overland	22½	18	18½	—3⅛
Willys-Overland, pfd	84¼	81½	81½	—2¾

CRUDE RUBBER, NEW YORK PRICES.

	Apr. 5 Cts. Per Lb.	Apr. 21 Cts. Per Lb.
Para—Up-river fine	.41½ @ .42	.42 @ —
Up-river medium	.40½ @ —	.40½ @ —
Up-river coarse	.31½ @ —	.31½ @ —
Caucho ball	.33 @ —	.33 @ —
Islands fine	.42 @ —	.42 @ —
Islands coarse	.21½ @ —	.22 @ —
Cameta	.20¾ @ —	.21½ @ —
Ceylon—Smoked sheets, ribbed	.46 @ —	.44½ @ —
Smoked sheets, plain	.45 @ —	.23 @ —
Madeira, fine	.44 @ —	.44 @ —
Knapsack	— @ —	— @ —
First latex pale crepe	.46½ @ —	.45 @ —
Amber crepe	Nominal	Nominal
Clean brown crepe	— @ —	— @ —
Rio Nunez string	— @ —	— @ —
Palembang	.13 @ —	.13 @ —
African	.33 @ —	.33 @ —
Prime Surinam sheets	— @ —	— @ —
Centrals—Corinto prime	.32 @ .32½	.32 @ .32½
Esmeralda, prime	.32 @ .32½	.32 @ .32½
Balata, sheets	Nominal	Nominal
Guayule, wet	.27 @ —	.27 @ —
Balata, block, Panama	.57 @ —	.57 @ —

AKRON RUBBER PRICES.

	April 1 Bid	April 1 Asked	April 13 Bid	April 13 Asked
Amer. R. & T. com	88	95	88	91
Amazon Rubber	..	101	..	101
Firestone, com	168	170	183	188
*Firestone, 6 per cent	92	93	95½	96½
Firestone, 7 per cent pfd	96½	97½	97	98
General, com	600	..	600	..
*General, pfd	90½	100½	100	100½
B. F. Goodrich, com	69	71	69	71
B. F. Goodrich, pfd	94½	95½	94½	95½
Goodyear, com	390	400	385	395
*Goodyear, 1st pfd	99½	100	99½	100
*India Rubber	185	200	185	200
Kelly-Springfield	128	132	131	133
Mason, com	30	..	30	..
Mason, pfd	..	75	..	75
Marathon, com	50	55	50	53
*Miller, com	188	193	183	188
Mohawk, com	..	335	..	335
Portage, com	96	99	95	98
*Portage, pfd	95	88	..	86
Republic, com	3½	4½	3½	4
Republic, first pfd	..	65	..	65
Republic, second pfd	35	50	35	40
Rubber Products	110	125	110	125
*Star Rubber, com	350	..	200	300
Swinehart, com	75	90	80	90
*Swinehart, pfd	..	90	..	90
Phoenix Rubber, com	..	23	...	23
Phoenix Rubber, pfd	..	90	..	90
Standard Tire, com	175	200	200	225

*Ex-dividends.

DIVIDENDS.

Company	Rate	Period	Payable	Stock of Record
Auto Car	40	Stock	.....	Mar. 31
Cleveland Auto	2	.....	Apr. 1	Mar. 21
Eisemann Magneto, pfd	$1.75	Quar.	May 1	Apr. 20
Federal Motor Truck	3	Month	Apr. 1	Mar. 24
Fisher Body	$2.50	.....	May 1	Apr. 20
Fisher Body, pfd	1¾	.....	May 1	Apr. 20
Fisk Rubber	75c	Quar.	Apr. 1	Mar. 15
General Motors	½	Month	May 1	Apr. 17
General Motors, pfd	1¾	Quar.	May 1	Apr. 17
Goodrich, B. F., Rubber	$1.50	Quar.	Aug. 16	Aug. 5
Goodrich, B. F., Rubber, pfd.	1¾	.....	July 1	June 21
Hodgman Rubber, pfd	2	Quar.	May 1	Apr. 15
Hood Rubber, pfd	1¾	Quar.	May 1	Apr. 21
Hupp Motor Car	2½	Quar.	May 1	Apr. 15
Int. Harvester, pfd	$1.75	Quar.	June 1	May 1
Kelly-Springfield Tire	$1.00	Quar.	May 1	Apr. 17
Kelly-Springfield Tire	3	Stock	May 1	Apr. 17
Kelly-Spring. Tire, 8% pfd.	$2.00	Quar.	May 15	May 1
Keystone Tire & Rubber	3	Quar.	Apr. 1	Mar. 15
Lee Rubber	50c	Quar.	June 1	May 15
Manufactured Rubber, pfd	15c	Quar.	May 1	Apr. 27
Martin-Parry	50c	Quar.	June 1	May 17
Nash Motors, pfd	1¾	Quar.	May 1	Apr. 20
National Carbon, pfd	2	Quar.	May 1	Apr. 20
Packard Motor Car	2½	Quar.	Apr. 30	Apr. 15
Parish & Bingham	$1.00	Quar.	Apr. 20	Apr. 10
Pyrene Manufacturing	25c	Quar.	May 1	Apr. 21
Stewart-Warner Speed	$1.00	Quar.	May 15	Apr. 30
Studebaker Corp	33 1-3	.....	May 5	Apr. 19
U. S. Rubber	2	Quar.	Apr. 30	Apr. 15
U. S. Rubber, 1st pfd	2	Quar.	Apr. 30	Apr. 15
Westinghouse Elec. & Mfg.	2	Quar.	Apr. 30	Apr. 2.
West. Elec. & Mfg., pfd	2	Quar.	Apr.15	Apr. 2
Willys Corp., 2nd. pfd	$1.75	Quar.	Apr.1	Mar. 21
Wire Wheel, pfd	1	Month	May 10	May 1

MEETINGS.

Company	Date Held	Books Close	Books Open
Ajax Rubber	May 18	May 3	.....
Allis-Chalmers	May 6	Apr. 15	.....
Fairbanks Co	June 10	May 19	.....
General Electric	May 11	Apr. 6	May 12
International Harvester	May 13	Apr. 23	.....
International Motor Truck	June 7	May 14	June 8
Westinghouse Electric	June 9	May 22	June 10
White Motor	May 1	Apr. 16	.....
Willys-Overland	May 11	Apr. 23	May 12

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FISK CORD TIRES

THE commercial advantage in being able to deal *direct* with the manufacturer is instantly plain to any dealer who enters into relations with Fisk; and the advantages arising from the fact that there is a Fisk Branch within *quick* reach of any dealer are also seen immediately by any dealer who studies the field.

The *completeness* of the Fisk line frees the dealer from the necessity for carrying "fill-ins."

The Fisk Ideal is: "To be the best concern in the world to work for, and the squarest concern in existence to do business with."

Next Time—BUY FISK

Time to Re-tire?
(Buy Fisk)

(When Writing to Advertisers, Please Mention the Accessory and Garage Journal.)

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Function of Auto Motor-Generator Brushes

(From the National Carbon Co., Cleveland, O.)

PERHAPS the least understood of any of the parts of the starting and lighting equipment are the brushes. The brush is the connecting link between the stationary and revolving elements of both motor and generator. The generator is directly connected to the automobile engine and, therefore, the armature revolves continuously as long as the motor engine itself is in use. The brush on the generator is, therefore, subject to wear continuously as the automobile engine operates. In the case of the starting motor, which is used intermittently only a few times a day, the brush is subject to wear only during such intervals. The current delivered by the generator averages between eight and 10 amperes, so that the carrying capacity is not so important as the characteristics required of the brush. On the other hand the brush on the starting motor must withstand a current density of at least 150 amperes for short intervals.

There are several other qualifications on different kinds of motors and generators which call for specific grades of brushes with definite physical and electrical characteristics. Carbon brushes answer the general requirements for a brush for the lighting generator or for the starting motor, but depending upon the type of machine and the conditions under which it is used, the manufacturer is able to recommend just the right kind of brush to be used. Carbon has a low coefficient of friction, and can be made with a negligible amount of abrasive material so that the wear on the commutator is practically nil. In order to carry the high current required for starting, the brushes on this unit should be made of part metal and part graphite. Copper brushes with a very small percentage of graphite are usually used, and answer the general requirements.

The motor and generator that has a single unit system offer a considerably different problem as far as brush manufacture is concerned. In this unit we must combine carrying capacity with low friction and low contact drop in order that the brush may fit the requirements of generating a small current continuously and also be capable of carrying the high current required for starting. Metal graphite brushes answer the general requirements for the single unit system as well.

The National Carbon Co., Inc., manufacturing the Pyramid brand automobile brush, has made an exhaustive study of the brush requirements of the various types and makes of electrical systems for the motor. There are nearly as many types and makes of starting motors and lighting generators as there are different types and makes of automobiles. Consequently in order to supply brushes for all makes and types of starting and lighting equipment it was found that approximately 350 brushes of slightly different design were necessary. Many of these brushes are made with shunts attached which fit only one particular style of starting motor or lighting generator. As a general rule the brushes intended for box type motors are fitted with shunts, while those intended for the arm or clamp type motors do not require shunts. Each brush manufactured by the National Carbon Co., Inc., is stamped with the Pyramid trade mark wherever physically possible.

In order to facilitate the garage, repair man, or the electrical dealer who handles automobile equipment, including the sale of motor or generator brushes, the National Carbon Co., Inc., supplies various assortments of brushes in neat containers. These assortments vary according to the clasisfication of popular cars which are to be found in different parts of the country; hence, if a dealer knows just what cars his trade is coming in contact with, he can order in assortments which very nearly fit his requirements.

All that is necessary for the dealer to do is to refer to the chart on the back of each assortment, which gives the name of the car, the starting motor or lighting generator used, and the number of the brush which should be supplied for renewals. In view of the large number of cars on the market and the fact that Ford cars are now equipped with starting systems, everything points to a very large field of business in supplying brush renewals.

ALL-WAY OILER DISTRIBUTED BY FAMASCO CO.

The Famasco Distributing Co., 694 Main street, Buffalo, N. Y., is marketing the new All-Way oiler, which is designed especially to make readily accessible the places that are hard to get at with the ordinary oiler. It has a flexible spout which is claimed to be practically unbreakable and can be bent to reach places that cannot otherwise be properly oiled. At the same time it has a patented cleaning device that keeps the spout from clogging up with grease and dirt. By pressing the spout downward a wire protrudes through the nozzle, making a clean passage for the oil. It is stated that only the very best flexible steel tubing is used, built up on a base of asbestos. The spouts are treated with a solution that positively prevents rusting. It is also said that not only is the All-Way oiler more useful than the ordinary oil can, but is more durable, being built to last a life time.

JAMES SUPPLY CO. ENTERS ACCESSORY BUSINESS.

The James Supply Co., 1104-1112 Market street, Chattanooga, Tenn., has recently entered into the automobile accessory business on a strictly jobbing basis in a large and systematic way, having been appointed refiner's distributor for Wolf's Head oil, among other automotive accessories and equipment.

ADPASCO PREPARED PAPER FOR GASKETS.

The Advanced Packing & Supply Co., 20 North Franklin street, Chicago, Ill., is finding a ready market for its Adpasco treated gasket paper. This is a sheet product, 36 by 40 inches, and of substantial weight, about 12 ounces to the sheet. It is guaranteed to be water proof and oil proof to the highest degree. Its use does away with make-shifts in the form of wrapping paper, etc., and also relieves the mechanic from resorting to the expensive habit of using asbestos packing instead of looking around for suitable paper packing. The Adpasco prepared paper saves both time and money for its users.

Another quality product being marketed by the Advance Packing & Supply Co. is Tenax compressed asbestos sheet packing. The company points out the impracticability of shop owners trying to keep a stock of gaskets on hand, with new sizes appearing on every new engine.

Tenax has been on the market for 20 years and has enjoyed an increase in sale in proportion to the increase in the use of automobiles, tractors, trucks and gas engines. It is said to be practically indestructible, resisting temperatures that turn iron to a thin liquid and stands up permanently against the action of commercial acids, superheated steam, oil, etc.

It is due largely to the Tenax standard of quality that the mechanic has developed confidence in his own hand-made gasket. Tenax not only stands up indefinitely, but also trims easily, requires no following up and does not squeeze out of the joint or "fry" under extreme heat.

Tenax is made in sheets 50 by 50 inches and in thicknesses of 1/32 to 1/8 inch inclusive. Also a 1/64 inch sheet, black graphited, is supplied. The standard color is blue and it is known under the slogan "The Original Blue Sheet."

DEATHE REPRESENTS FULTON CO. IN EAST.

The Fulton Co., Milwaukee, Wis., manufacturer of automotive equipment, announces that it has secured the services of Harry M. Deathe, Oxford, Pa., formerly of the Hill-Smith Metal Goods Co. and J. H. McCullough & Son, as a selling representative in the East calling on the trade in the states of New York, Pennsylvania, Maryland, the District of Columbia and the New England states.

BROWN CO. ERECTING BUILDINGS.

The Brown Instrument Co., Philadelphia, Pa., maker of pyrometers, thermometers, tachometers, indicating and recording instruments, etc., is erecting two new buildings, one for the exclusive manufacture of recording thermometers, the second to house the research department, at a cost of $100,000. These increased facilities will enable the company to materially augment the output of Brown pyrometers and recording thermometers.

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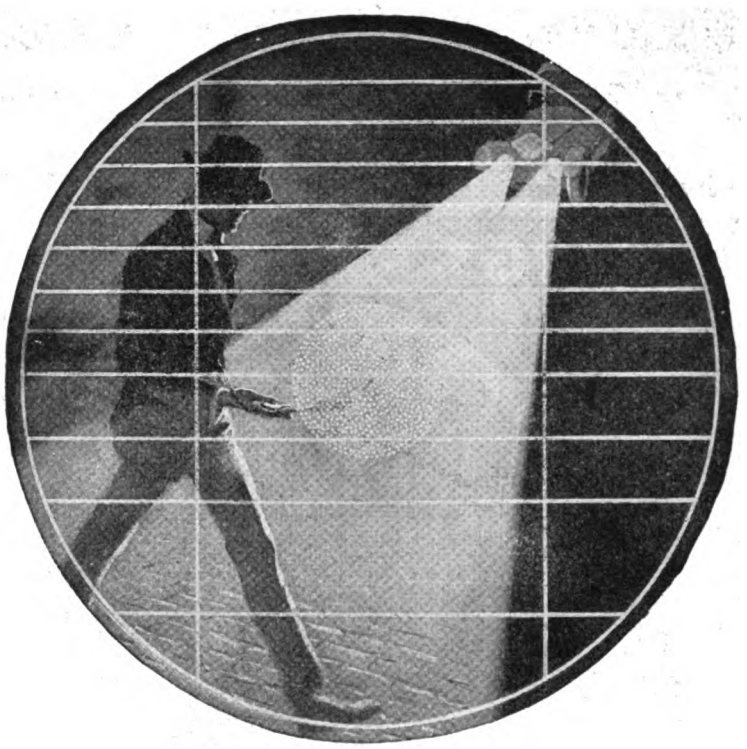


Take Care of That Glare

And Make the Road Safe for Others as Well as Yourself

The Osgood Lens does a lot more than merely stop glare; it gives you a brighter, clearer light and more of it—out onto the road ahead of you *and downward*, right where you need it.

THE NEW

OSGOOD LENS

CRAVATH LONG DISTANCE TYPE

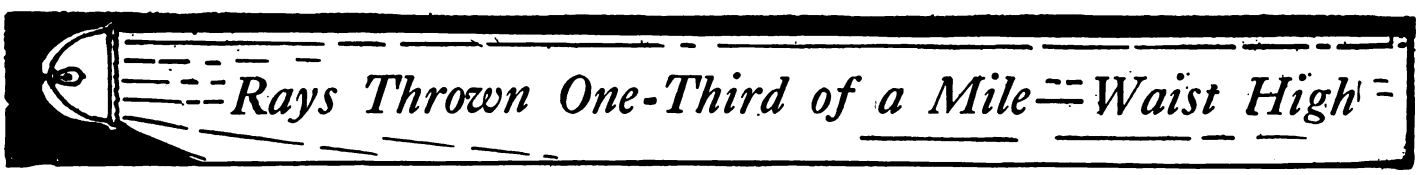
throws a powerful light one-third of a mile ahead of the machine and never more than waist high. It makes the road just as safe for others as it does for you and solves absolutely the safety-problem of night driving. Another thing, with the Osgood Lens, there is absolutely no need of dimmers.

DEALERS: There's more lens-profit in handling the Osgood, than in all the rest of them put together, and you get rid of having to carry all sizes of other lenses. Osgood outsells them all, because they do the business. Complete stocks of all sizes now ready for instant deliveries. Write us today.

Prices $2.90 to $4.50 According to Size.

OSGOOD LENS & SUPPLY CO., Manufacturers

Harris Trust Bldg., Chicago



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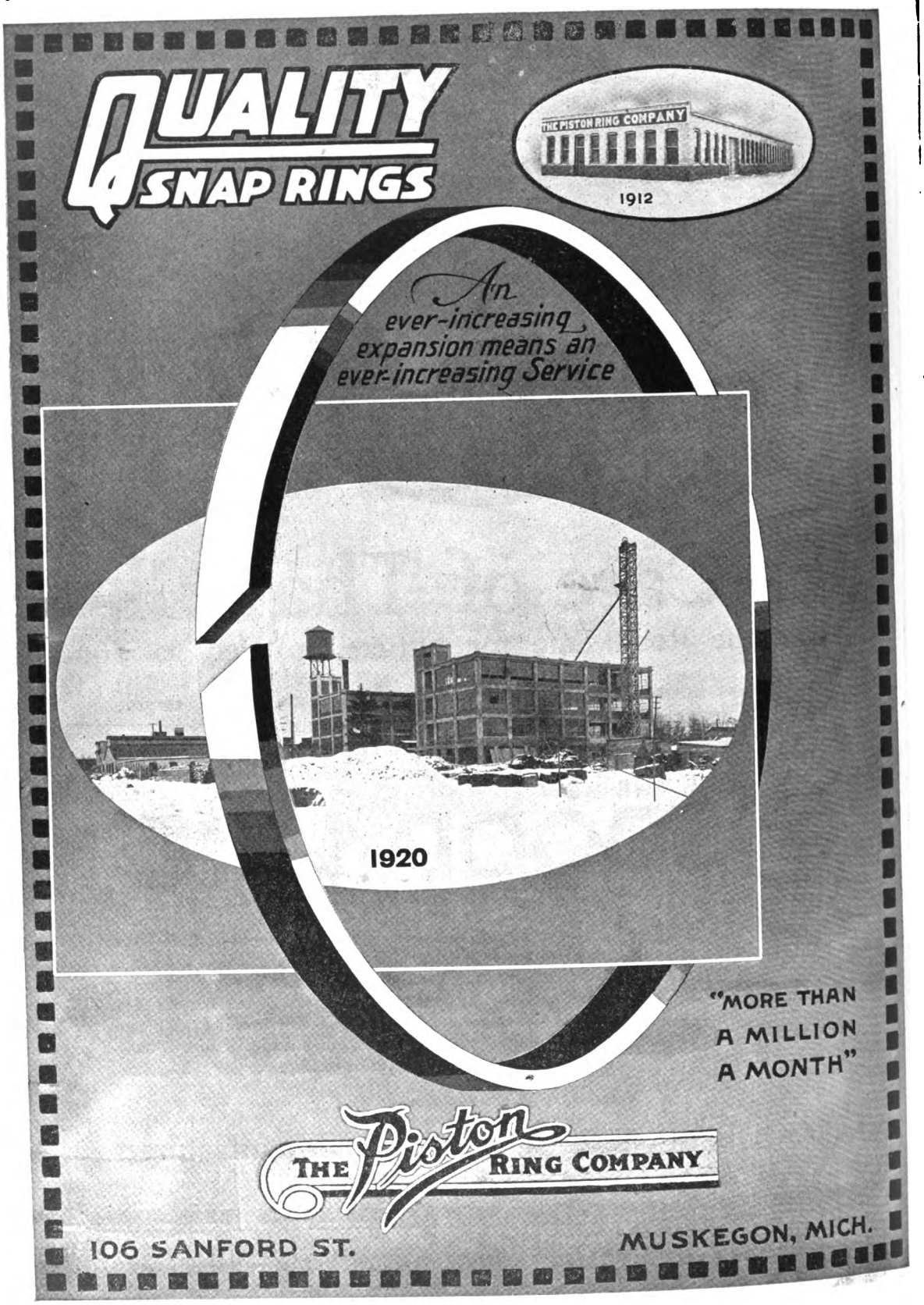

(When Writing to Advertisers, Please Mention the Accessory and Garage Journal.)

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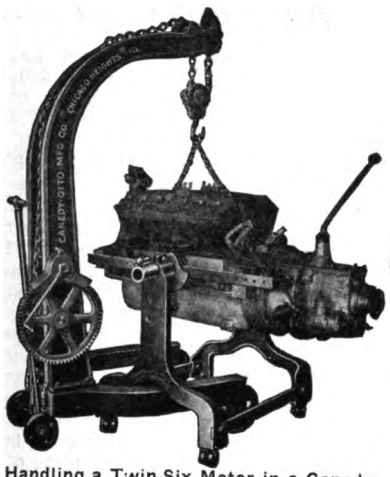
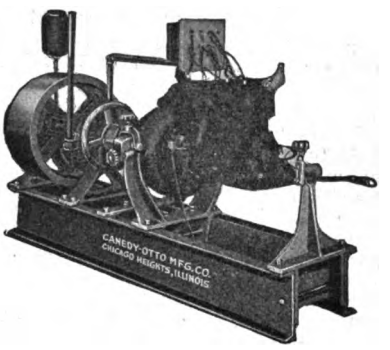
CANEDY-OTTO MFG. CO.



Handling a Twin-Six Motor in a Canedy-Otto Motor Stand with a Canedy-Otto Portable Floor Crane.

Canedy-Otto Screw Cutting Engine Lathe.



Bearing Burning-in Machines.

One of the best investments you can make. Write us today.

Maximum production efficiency demands absolutely dependable equipment.

For the Garage Repair Shop and Service Station

The selection of right tools answers to a large extent the problem of increased production. It is not good judgment to experiment with unknown or untried lines—confidence should be placed where confidence belongs. CANEDY-OTTO equipment represents favorably known and thoroughly tested value for durability, lasting quality, beauty of finish, and accomplishment of purpose.

Manufacturers of

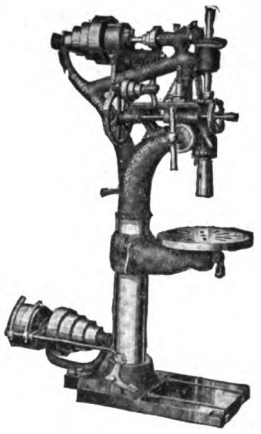
Radial Drills, Sensitive Drills, Engine Lathes, Punches, Shears, Shrinkers, Counted Shafts, Upright Drills, Post and Wall Drills, Grinders, Buffers, Forges, Blowers, Tuyere Irons, Blast Gates, Bearing Burning-in Machines, Straightening Presses, Connecting Rod Straightening Jigs, Motor Test Stands, Arbor Presses, Portable Floor Crane, Piston Clamps, Rear Axle Test Stands, Tractor Tools and Special Machinery for Ford and Fordson.

For Light and Rapid Drilling.

Royal Steel Forge No. 37.

Eventually, of course; but why not now? Let us know your needs. It may pay us both to get together. Won't you start it with a letter today?

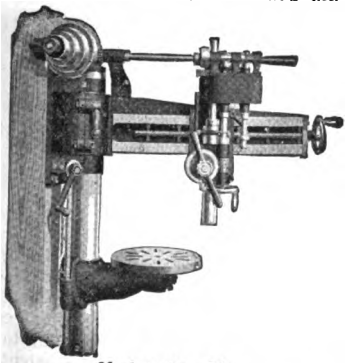
Just investigate—that's all.



No. 36 Canedy-Otto Power Drill.

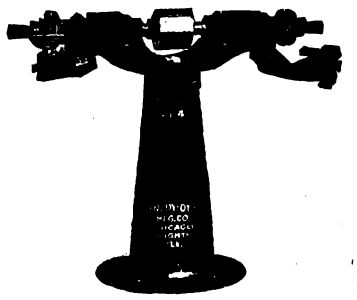
Your inquiry or trial order is solicited. You will make no mistake by ordering now.

FOR SALE BY ALL Wholesale Accessory Jobbers, Heavy Hardware and Machinery Dealers.



Model No. 51. No. 51 has Power Feed and Automatic Stop.

Our Attractive catalogue should occupy a prominent place in your files. Yours for the asking.



Grinding and Polishing Machine.

General Offices and Factory

Chicago Heights, Ill.

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NIEHOFF CO. INCREASING PRODUCTION FACILITIES.

Paul G. Niehoff & Co., Chicago, Ill., has again found it necessary to extend its production facilities to meet increased demand, and has taken over the plant of the Northern Machine Co. with its entire equipment at 341 East Ohio street, Chicago, and has leased the premises, in addition to its present location at 232-242 East Ohio street.

The Niehoff Co. is going rather extensively into the production of a new line of various kinds of electrical testing instruments and garage equipment for the automotive trade. Some of these instruments are already well known, such as the Defectometer for testing magnetos, Generometer for locating shorts and grounds in the generator and starting motor armatures, Test Kart, a novel and portable outfit which will make a complete test of every known electrical system; Test Bench for the testing of magnetos, generators and starting motors under the same condition they would be subjected on the car, Ford Mag-Charger, for recharging Ford magnets on the car as well as for making tests on other electrical equipment.

ANNUAL MEETING OF DURSTON GEAR CORPORATION.

At the annual meeting of the Durston Gear Corporation, Syracuse, N. Y., R. M. Bean, sales manager, and A. C. Bryan, factory manager, were elected directors and vice presidents of the corporation, both men having been associated with the concern since 1913.

This company is the outgrowth of the Lefever Arms Co., which made the Lefever shot gun. In 1916 the gun business was sold to the Ithaca Gun Works, Ithaca, N. Y., and the company was reincorporated as the Durston Gear Corporation. The following, who were the sole owners of the old Lefever Arms Co., were re-elected to their respective offices: President, A. H. Durston; first vice president, M. H. Durston; secretary and treasurer, J. F. Durston.

The Durston Gear Corporation is now operating its plant with a day and night shift and employs 400 men, which number will shortly be increased to 600.

A REAL FORD STABILIZER.

The Green Sales Corporation, 99 State street, Boston, Mass., is marketing the D & O Safety Steering Control, which is manufactured by the D & O Co., Boston. With this device attached to the steering mechanism of the Ford car a perfect shock absorber is afforded, which is stated to relieve all driving strain, and is guaranteed by the designer to overcome all steering danger and difficulties. It is claimed that by holding the front wheels in alignment, the steering control effects a very material saving on tires, bearings and steering parts.

The beneficial action of the D & O Safety Steering Control is due to the coil springs, which form a principal part of the device.

Representatives of G. Norman Baughman Co. In Convention at Tampa, Fla.

THE G. Norman Baughman Co., which is stated to be the largest exclusive jobber and distributor of automobile supplies south of the Mason and Dixon line, with main offices at 610-620 Tampa street, Tampa, Fla., and branches at Jacksonville and Miami, recently held a well-attended and successful five-day convention of its salesmen and customers. A number of prominent northern manufacturers were also present as special guests of the Baughman Co.

The first day, Thursday, was customers' day and the 1500 dealers representing the company in Georgia, Florida and Cuba received invitations and attended to the number of about 500. Practical demonstrations were given of the various lines of equipment which the Baughman Co. represents, among them being the Globe Manufacturing Co., air compressors; the Stromberg Manufacturing Co., carburetors: Champion Spark Plug Co; American Ever Ready Works, flash lights; Weaver Manufacturing Co., garage equipment; Johns-Manville Co.. J-M brake lining and other products; McQuay-Norris Co., piston rings; Starr Tire Co., Shaler & Haywood, vulcanizing equipment; Tide Water Oil Co., Veedol oils; Las-Tik Patch Manufacturing Co., tire patches; Long Distance Spark Plug Co., Sharp Spark Plug Co., and Edgar C. Guthard Co., Billmont wrenches.

Thursday afternoon the Baughman Co. entertained its guests at the Tampa fair and in the evening at a banquet at Garcia's.

The second and third days were devoted especially to manufacturers, and the programme included brief addresses by the following: Mr. Rurack, Champion Spark Plug Co., Toledo, O.; William Cooper, Casco Manufacturing Co., maker of "Hold-'em-in-the-Road;" J. P. Coyne, American Ever Ready Co.; Mr. Whaley, Weaver Manufacturing Co.; A. J. McLean, Johns-Manville Co.; L. A. Safford, McQuay-Norris Manufacturing Co.; M. E. Haywood, Haywood Vulcanizing Co.; R E. Stuntz, Stromberg Manufacturing Co.; S. A. Fulton, Fulton Co.; V. V. Casey, Northwestern Chemical Co.; Charles H. Hathaway and John Colley, Badger bumpers and Apco accessories; William Hooker, Sharp Spark Plug Co.; T. S. Stinson, National Carbon Co.; F. W. Wilbur, Globe Manufacturing Co.; E. C. Hart, American Chain Co.; G. L. Bourveau, Paul Niehoff and Jefferson Electric Co. on electrical equipment; E. L. Canton, Tide Water Oil Co.; Walter Jarrett, Miller Rubber Co.; E. B. Byerline, Las-Tik Patch Manufacturing Co.; Tom Alford, Long Distance Spark Plug Co.; H. Witherspoon, Edgar C. Guthard Co.

Friday evening a banquet was given at El Boulevard cafe for the manufacturers' representatives.

Sunday, the fourth day, all employees of the Baughman Co., the manufacturers and their wives were conveyed in 22 automobiles to the country place of Dr. St. George Fechtig, known as St. George's, near Sutherland, Fla., on the west coast. The accompanying picture was taken here in an orange grove just before the annual dinner. The luxurious tropical vine shown is known as the Bignonia. The principal speakers at this dinner were George W. Perkins, formerly vice president of J. Pierpont Morgan & Co., and Dr. L. A. Bize, president of the Citizens-American Bank & Trust Co. of Tampa. In the afternoon the party enjoyed a dip in the gulf at Clearwater and at night a party of about 30 left St. Petersburg for a fishing trip in the gulf Monday.

Representatives and Guests of G. Norman Baughman Co. at Annual Dinner at Sutherland, Fla.

This is reported to have been one of the most enjoyable and helpful get-together events in the history of the industry in the South.

SECURITY AUTO LOCK.

The Security Auto Lock Co., 410 North Paulina street, Chicago, announces that its suit against the Berry Auto Lock Co. and Ira D. Perry in the Federal court has been won, and that according to the decision of Judge Landis, the patents of the Security Auto Lock Co. are valid. and that it is entitled to damages, royalties, profits and costs due to infringement.

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An Auto Fuse Service That Makes Friends of Your Customers

Quick and correct service is always appreciated by your customers—that's why so many accessory dealers are now specifying the

Killark No. 700 Banner Auto Fuse Assortment

"A Complete Auto Fuse Department In One Unit"

Here are ten reasons why you, too, should sell Killark Banner Fuses:

1. 100 best selling fuses packed in eleven small cartons. Amperage marked on each carton
2. Attractive cardboard counter display container holds the cartons.
3. Complete directory, showing fuse requirements for every car, on cover of container.
4. Each fuse is electrically perfect. Strong—accurate—dependable.
5. Assorted in sizes to meet every demand
6. All live sellers—no dead stock.
7. No need to buy fuses in large quantities. Extra fuses can be ordered in any quantity.
8. Insures quick and accurate service to customers.
9. Only small investment required.
10. Liberal profit for the dealer.

If your jobber hasn't Killark No. 700 Banner Auto Fuse Assortment in stock, send us his name with your order.

KILLARK DISTRIBUTORS.

ALVA D. STEIN, 156 Purchase St., Boston.
L. L. FLEIG & CO., INC., 212 W. Austin Ave., Chicago.
L. L. FLEIG & CO., INC., 406 Caxton Bldg., Cleveland.
ALEX HIBBARD, INC., 1710 Glenarm St., Denver.
SCHOEN BROTHERS, 321 Boston Bldg., Louisville.
WILL. C. CAFFRAY, 253 S. Broadway, Los Angeles.
THE C. L. S. HOLMES CO., 532 Boston Block, Minneapolis.
HATHEWAY & KNOTT, INC., 117 West St., New York.
MYERS & SCHWARTZ, 75 New Montgomery St., San Francisco.
GEORGE H. MAIRE, 910 First Ave., South, Seattle.

KILLARK ELECTRIC MFG. CO.
SAINT LOUIS.

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POWER!

Dealers Will Find Ready Profit and Quick Sales By Handling the

Controlled from a handsome dial on dashboard.

PRICE: 4 cylinder type $7.50 with money-back Guarantee.

"ALSOP-ALL-SPARK"
SIMPLE-SAFE-SURE

It eliminates the cost of new plugs, by causing old, cracked, carbonized and oil soaked plugs to give powerful sparks, which retards carbon, saves gas, develops greater power, and insures continued driving without misfires.

Control is from a handsome dial on dashboard, so that a low voltage hot spark can be used for starting.

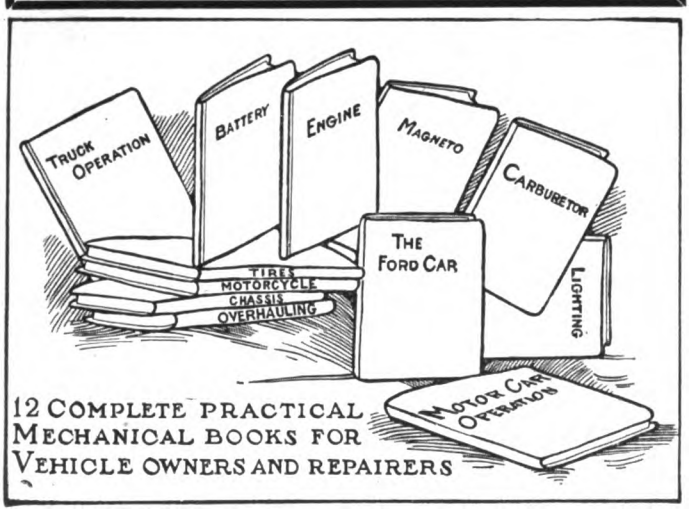
NOTE:—This device does not contain DANGEROUS EXPOSED SPARK GAPS, which may SET YOUR CAR AFIRE and make your engine HARD TO START.

WRITE for our great Catalogue of GOVERNMENT TESTS.

DEALERS—AGENTS—SALESMEN—WANTED

ALL-SPARK IGNITION CO. Inc.

13-J Water St., New York



12 COMPLETE PRACTICAL MECHANICAL BOOKS FOR VEHICLE OWNERS AND REPAIRERS

Engine	35c	Chassis	25c
Magneto	35c	Lighting	50c
Carburetor	35c	Operation	50c
Battery	35c	Overhauling	50c
Tires	25c	Motorcycle	35c

Home and Shop Care and Repair Model T Ford Car

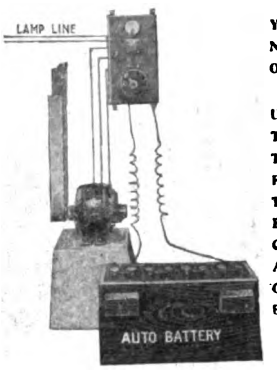
Price $1.00

Automobile Journal Publishing Co.

Times Building, Pawtucket, R. I.

BATTERY CHARGING

MAKES MONEY EASIER THAN CAR REPAIRING



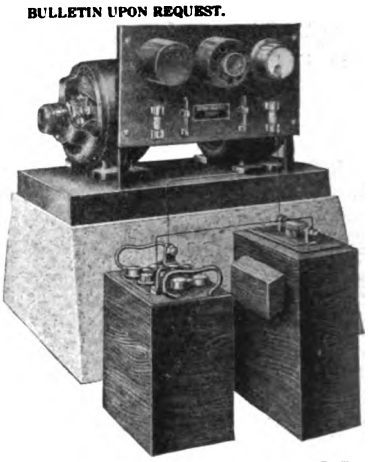
IF YOU DO NOT OWN A BATTERY CHARGING SET YOU ARE LOSING THE CREAM OF THE GARAGE BUSINESS. DON'T PUT IT OFF ANOTHER YEAR. ORDER ONE OF THESE EFFICIENT SETS TODAY.

OUR BELT-DRIVEN SETS ARE DESIGNED FOR USE WHERE A.C. CURRENT IS NOT AVAILABLE. THE SMALL TOWN AND COUNTRY GARAGE. (THE TYPE X SET SHOWN HERE LISTS AT $59.) WRITE US FOR YOUR DISCOUNT. IT WILL CHARGE FROM ONE TO FIVE, SIX-VOLT BATTERIES WHICH IS A LARGE ENOUGH SET FOR THE AVERAGE SIZE GARAGE. REQUIRES ONLY ONE-HALF HORSE POWER TO OPERATE IT. BELT IT TO YOUR LINE SHAFT OR GAS ENGINE AND YOU ARE READY FOR BUSINESS. IT CAN BE USED TO FURNISH A FEW LIGHTS.

BULLETIN UPON REQUEST.

We also manufacture Motor-Generator Sets of various capacities for garages where A.C. current is available. The set shown here has a capacity of one to five six-volt batteries. Motor is for 110 volts, 60 cycle, single phase current. The switchboard is equipped with reverse current relay which opens if the A.C. power fails. When power comes on again set starts to charge automatically. Outfit is complete and ready to operate. (LIST PRICE $140.) Write for your discount.

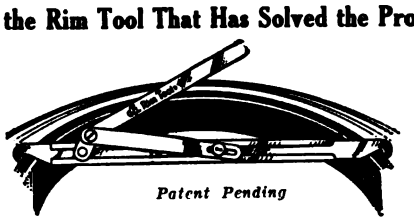
We have Belt-Driven Farm Lighting Plants and 32-Volt Motors in stock. Send us your inquires.



SUPERIOR ENGINEERING CO.

332 THIRD AVE. PITTSBURGH, PA.

Here Is the Rim Tool That Has Solved the Problem



Theim Push and Pull Rim Tool

You don't have to remove tires from rim when using the Thiem Rim Tool. **IT REMOVES THE RIM FROM THE TIRE.**

Requires but a very few SECONDS in the entire operation.

Very substantial all steel construction, durable, simplest, easiest, quickest to operate. Most practical Rim Tool on the market. Made to fit any size split rim. Simplest of adjustment—but one screw to adjust.

Demand a Thiem and be sure you get it. Sells for $3.50.

METAL PRODUCTS MFG. CO., Minneapolis, Minn.

The Automobile Journal

Is the oldest Automobile magazine published in America devoted wholly to owners of passenger cars.

A quality magazine, with prestige and circulation that brings results to advertisers.

TIMES BUILDING PAWTUCKET, R. I.

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PURITAN

ELECTRICAL SUPPLIES.

STARTING—LIGHTING—IGNITION.

LIGHTING GENERATORS.

Guaranteed—New.

Autolite Type G. H.—6 volt. These are standard Autolite Generators with standard base and shaft. Can be fitted with timer. Will fit Chevrolet, Briscoe, etc. While they last.....**$25.00**

Gray & Davis—6 volt. Frame No. 609. Standard Gray & Davis Generators, equipped with cut-out. Will fit Briscoe and many other popular cars. While they last.....**$35.00**

Menominee—6 volt Generators—complete with Ward Leonard Controller for Fords and other light cars..**$23.50**

STARTING MOTORS—Guaranted—New.

Autolite—6 volt, Type M. E., complete with Bendix drive.....**$25.00**

Gray & Davis—6 volt, frame No. 51 ..... **25.00**

6 Volt Detroit—with Bendix drive **15.00**

6 Volt Bijur—with Bendix drive.. **15.00**

Connecticut Distributors—4 cylinder, model 16..... **6.50**

ELECTRIC HEAD LAMPS.

Nickel finish. 10-inch face, single connection, with fender brackets—per pair.....**$9.50**

ELECTRIC STARTERS FOR FORDS.

Your chance to get the famous A. B. C. Starting and Lighting Systems, designed especially for Ford motors. Systems are absolutely complete. Storage battery included. Price complete...**$75**

ELECTRIC LIGHING SYSTEM FOR FORDS.

A complete electric lighting system. Includes electric side and tail lamps, generator, storage battery, all brackets, wiring, switches, etc. Price complete **$17.50**

REPLACEMENT COILS FOR ALL CARS.

Brand new guaranteed coils for any make car.....**$8.50**

ELECTRICAL EQUIPMENT REPAIRED.

Quick repairs to all makes starters, generators, ignition syestems, etc.

Send it to the Puritan—We'll fix it.

Puritan Machine Co.

44 Puritan Bldg., Detroit, Mich.

Eastern Branch

245 W. 55th Street, New York City.

AUTO PARTS.

50% to 90% Off List.

24 Hour Service. Unlimited Stock.

Pope-Hartford, Columbia, Reo, Overland and 200 other makes.

Motors,	**$20.00 up**	E. Presto Tanks,	**$4.00**
Magnetos,	**$3.50 up**	B. Presto Tanks,	**$4.75**
Cylinders,	**$3.00 up**	Bearings,	**50c up**
Springs,	**$1.00 up**	Rims,	**$1.00 up**

1000 Other PARTS Bargains.

If you want any part not listed here, **Write Us—We Have It.**

Conn. Auto Parts Co., Inc.

18-20 Morgan St., Hartford, Conn.

FORD TRUCK UNITS.

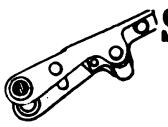
With a Consolidated Truck Unit any Ford Chassis can be converted to a 1½-ton truck in less than 2 hours. A high grade, practical unit. Best of material and standard design. None better. A real and enduring proposition from every viewpoint.

Dealers' Price, $225.

Immediate delivery. Write today.

CONSOLIDATED TRUCK UNIT WORKS.

2967 S. La Salle St., Chicago, Ill.



Superior Parts and Brushes

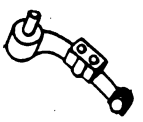
FOR ALL

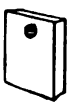
Ignition and Starting Lighting Systems

Used for Years by the Best Repair Shops Everywhere

"They Last Longer but Cost Less"

Write for Catalogue





Specialty Manufacturing Co.

637 Massachusetts Ave., Arlington, Mass.

Send it to Detroit

MAGNETOS.

Bosch DU4 Variable spark	$30.00
Bosch DU-4 set spark	25.00
Bosch D4 and Dr4	25.00
Bosch D6 and Dr6	30.00
Splitdorf 4 cyl. Dixie, high tension	25.00
Splitdorf 4 cyl., Models A, T, X and D	10.00
National 4 cyl. low tension	8.00
Briggs 4 cyl. low tension	8.00
Remy 4 cyl., type R L	15.00
Simms SU4 high tension	22.00

GENERATORS.

Deaco 6 volt	$12.00
Auto Lite 6 volt	15.00

COILS.

Splitdorf T S type	$10.00
Splitdorf box type	6.00
Bosch type A	10.00
Remy box coils	6.00
Remy type LC and LE	8.00
Briggs box coils	6.00

DETROIT MAGNETO REPAIRS ARE BETTER.

WE REPAIR any make magneto, coil, lighting generator or starter and give 24 hours service. Member Detroit Automobile Trade Association.

Detroit Magneto Exchange

192 Grand River Ave. Detroit, Mich.

MAGNETOS

Overhauled and Guaranteed

New DU4 Variable	$37.50
DU4 Bosch Set Spark	25.00
DU4 Bosch Variable Spark	27.50
DU6 Bosch	35.00
DR4 Bosch	20.00
DR4 Bosch 2 spark	65.00
DR6 Bosch	25.00
D4 Bosch	15.00
D6 Bosch	17.50
D6 Bosch 2 spark	60.00
NU4 Bosch	15.00
ZR6 Bosch	50.00
ZR4 Bosch 2 spark	85.00
New ZK Bosch 2 spark	50.00
Eisemann Dual	15.00
Remy Model RL & D	7.00
Dixie Mags	12.00
New Sims H T	18.00
Mea	10.00
New Splitdorf Type E	12.00

COILS

Bosch Type A	$7.50
Bosch Duplex	4.00
Eisemann	4.00
Splitdorf	4.00
Silent Starter and Generator Chains; all lengths and sizes.	
New 8-cyl. Delco distributors	$10.00

WARSHAWSKY & CO.

Largest Car Wreckers in the World.

1915 South State St., Chicago, U. S. A.

Phone Calumet 7315.

Every Ford owner should read "Transforming the Ford." Tells how to secure smooth, positive brake action that no car can excel. A little "transforming" and your car will glide to a quick, quiet stop without the annoying, irritating clatter that you now experience. It will go into low or reverse without jumping or jerking, and you can pick up speed with all the smoothness and ease of a high-priced car. All accomplished without additional expense and the result is a clear saving of 75 per cent. in one direction alone. "Transforming the Ford" tells how it's done. Send for your copy this very minute. 10c stamps or coin. **CORMACK CO., Dept. 57, 500 Fifth Ave., New York City.**

Majestic Quality Storage Batteries Guaranteed for One Year.

Special 12 Volt

MAJESTIC QUALITY BATTERIES

No Rebuilts! All New! For Dodge or Maxwell

$27.50

Write for prices on other sizes.

MAJESTIC MFG. & SPECIALTY CO.

1355 S. Michigan ave., Chicago, Ill.

AUTO SAVE 50-90% FOR 400 CARS PARTS

POPE, PACKARDS, PIERCE, BUICK, STEVENS-DURYEA, KNOX, OVERLAND, ETC.

Motors,	$25.00 up	Presto Tanks,	$4.50 up
Magnetos,	4.00 up	New Spotlights,	2.00 up
Carburetors,	3.00 up	Generators,	10.00 up
Rear Axles,	15.00 up	Gears,	1.00 up
Front Axles,	5.00 up	Bearings,	1.00 up
Cylinders,	5.00 up	Radiators,	10.00 up

$12 Diamond Bumpers.....$6.50

Jobbers in Bankrupt Auto Supplies.

BRIGHTMAN AUTO EXCHANGE

321 Windsor Ave., Hartford, Conn.

Lozier Owners—Why buy counterfeit repair parts? We have all **Original Parts.** Made from original patterns. **Order from headquarters.**

LOZIER MOTOR CO., Detroit, Mich.

Service Stations—E. A. Cornley, Inc., 1445 Bush St., San Francisco, Cal. Lozier Motor Co., 47th St. and 11th Ave., New York City.

FOR SALE.

Extra heavy Copper Stills especially adapted to distilling water for automobile batteries. One gallon capacity. Shipped C. O. D. $22.50.

STANLEY PHARMACAL CO.

105 W. Monroe St., Chicago, Ill.

Dept. A 1.

Auto Mailing Lists

Send for our free complete Price List covering Auto Dealers, Owners, Ford Dealers, Truck Dealers and Owners, Garages, Auto Mfrs. and etc., any state.

A. F. WILLIAMS, Mgr. of List Dept.

166 W. Adams St., Chicago. Franklin 1128.

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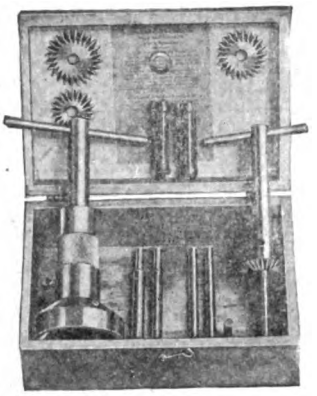
WHEN YOU THINK OF SHOP EQUIPMENT THINK OF H. G. PARO COMPANY

One of Our Leaders

The Fosnacht Valve Reseater



The Garage Man's Friend.

The most accurate, quickest, best known and oldest valve reseater on the market. An outfit that has stood the test.

Makes money and saves money for every garage man.

This compact, dependable outfit will be your right hand friend for years—and it will pay for itself over and over again.

Remember the name—

"Fosnacht"

Get acquainted with our "money-making" specialties. If your jobber does not handle them, write us for name of nearest jobber who does.

H. G. Paro Co.

1412-14 South Michigan Boulevard, Chicago, Ill.

A. Schrader's Son
Brooklyn N.Y.
Kindly hurry that order for Inflating Valves. We had no trouble with our Free Air Station as long as we used this Valve but when we had to put in another make,—the fun began.

EXTRACT FROM ACTUAL LETTER RECEIVED.

Gardner "Thermostat" Carburetors

New Model - $12.50 for Fords

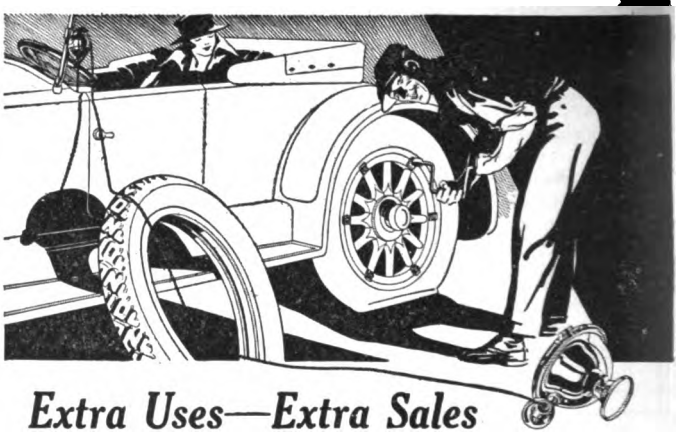
More Power—

Correct Carburetion

Dealers—Write for special agency proposition

Gardner Auto Products

23-25 WEST HANCOCK, DETROIT, U. S. A.

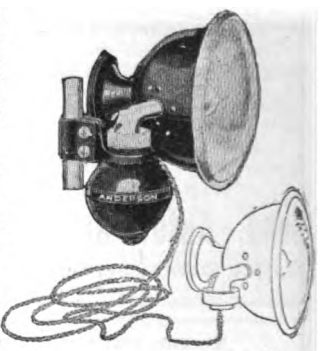


Extra Uses—Extra Sales

The Handy Spotlight On a Reel

Autoreelite is a convenient and powerful spotlight with the added advantage of a self-winding cord on a reel. By two twists of the thumb and finger, Autoreelite can be reeled out to a distance of twelve feet.

There is a ready market for this combination spotlight and trouble-light. Motorists appreciate its usefulness for making repairs on the road at night. And Autoreelite is priced no higher than ordinary spotlights.



Write for Catalog AG-301

Anderson Electric & Equipment Co.
Formerly Anderson Electric Specialty Co.
118-124 South Clinton Street, Chicago, Illinois

Autoreelite

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THIS Year, Sell Reflex Spark Plugs
because of what they HAVE done.

—because of the business and profit they meant for Reflex dealers throughout 1919.

BUSINESS, due to such service as the above illustrated plugs delivered in a rough-road-going truck. And "without attention," writes the user—a mid-west trucking establishment.

PROFITS, because prices, discounts and guarantees to you are right.

Simply drop a card for complete information, such as prices, the Reflex advertising campaign, dealer helps, etc.

The Reflex Ignition Co.
1352 West 106th St.,
Cleveland, U. S. A.

REFLEX SPARK PLUGS
KEEP THE CAR ON THE GO!

SERVICE STATIONS

GARAGES and REPAIR SHOPS, everywhere are building large and profitable coil replacement business with JEFFERSON IGNITION COILS, the 100% line — a few standard coils which fit all cars and bear this

TRADE MARK

Jefferson Electric Mfg. Co.
429 S. Green St. Chicago, Ill.

Electric Auto-Lite Generators model GD-1001 with cutout. Will fit Overland model 83 car and other cars. Price, each.....$25.00

Electric Auto-Lite Starting Motors, model MC-1070 with Bendix drive. Fits models 83 and 85 Overland. Can be installed on other cars. Price, each....$22.50

Remy model 231-B Lighting Generators, 6 volt. with model 264-A relay regulator, model 284-B coil, model 219-D, 6 cylinder distributor, complete. Price, each $37.00

Remy model 303-B starting motor, 6 volt. with Bendix drive. Price, each.....$30.00

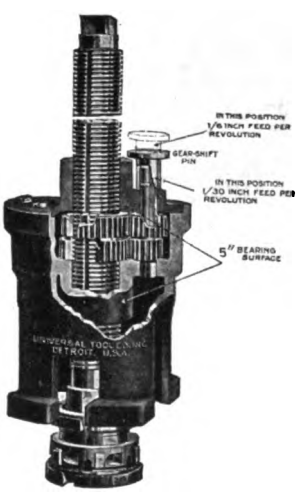
U. S. L. 6 volt 90 amperes Starting and Lighting Batteries, model AD-313-DF. Height, 9 inches; width, 4¼ inches; length, 20⅜ inches. Will fit many Overland models. Price, each.....$22.00

No. 202 Seubert single row Bearings, Norma type. Price, each..... $1.00

No. 288 Roller Bearings for rear wheels of all Dodge cars. Price, each..... $1.65

Better prices in quantities.
We sell to the trade only.
Send for complete list.

S. BREAKSTONE
1326 Michigan Ave., Chicago, Ill.



Tests Have Proved It

The Universal Cylinder Reboring Tool has been tested by the manufacturers of America's leading cars.

Today, knowing that it is a perfected machine, they endorse, recommend and use it.

See current issue Auto Trade Directory and Chilton's Directory for list of jobbers carrying stock. Write for Catalog.

TRADE MARK UTCO REGISTERED PENDING
UTCO PRODUCTS

The Universal Tool Company, Inc.
435 Woodward Avenue Detroit, U. S. A.

Manufacturers Universal Cylinder Reboring Tools for all Automobile Motors and Main Bearing Replacement Equipment for Fords and Fordsons

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GARDNER AIR PUMPS

Result of 50 years manufacturing experience.

An inefficient air pump makes your air service expensive. It hurts the quality of your service.

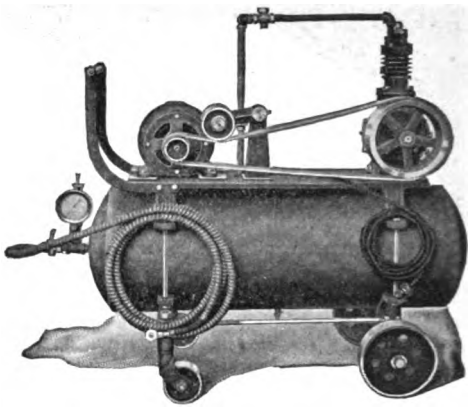
Makes a customer dissatisfied and hurts your business generally.

Install a GARDNER

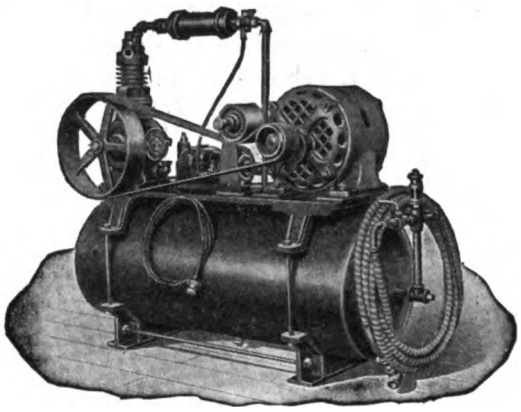
It will pay for itself in a short time.

It is simple, rugged and efficient.

The fact that many filler stations supplying hundreds of car owners daily use the Gardner air pump is proof that experience had demonstrated it is economical.



GARDNER AIR WAGON



GARDNER AUTOMATIC UNIT

Made in Single and Two Stage Types

Variety of sizes *Prompt shipment*

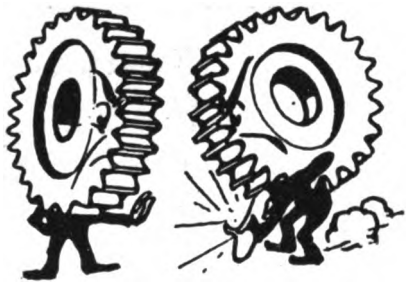
There is a Gardner Air Pump to meet the demands of every garage no matter how large or small.

Ask your jobber for prices.

THE GARDNER GOVERNOR COMPANY

138 Williamson Street, Quincy, Ill.

Garage Department



Keep Gears Young

A car is as old as its gears. Worn gears rob a car of pep and power.

DIXON'S GRAPHITE Transmission and Differential LUBRICANT

helps to postpone the day when your car just drags along. It saves "gas"—reduces upkeep and makes smoother and easier miles.

Write for Booklet No. 49-G.

Made in Jersey City, N. J., by the

Joseph Dixon Crucible Company

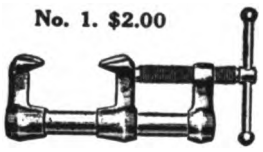
Established 1827.

Keep Springs Greased

Knowlson Spring Spreaders

Squeaking Stopped and 100% Easier Riding

No. 1. $2.00



Nickel-plated and polished.

No. 3. $1.50

Gun metal yoke, screw and handle nickel.

Spring Breakages Eliminated.

Both Guaranteed. Either or Both Delivered. Your Money Back if You Want It.

Don't Ruin Your Springs by Neglecting Them!

They Fit Any Spring. Easy to Operate. Both Drop Forged. Use a Heavy Grease (not oil) for Real Results.

At your Dealers, or Sent Direct.

SPRING LEAF LUBRICATOR CO., Dept. 4, Ann Arbor, Mich.

METZ Master Six

The car of the Year **A New England Product**

Honest through and through

$1895 F. O. B. factory FULLY EQUIPPED

We are now extending our agency list

Information at request

METZ SALES CORPORATION

BOSTON, MASS.

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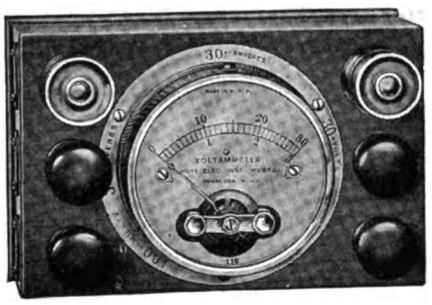
HOYT'S Rotary Meter Multiple Tester

Hoyt Instruments are the dependable Electrical Testing and Recording Machines the world over.

Use a Hoyt Multiple Tester to save time, insure accuracy and to eliminate the necessity of many expensive instruments. One machine performs practically all tests.



Size 4½x3⅜x2⅜ and costs but
$23.00 with a 300-ampere shunt

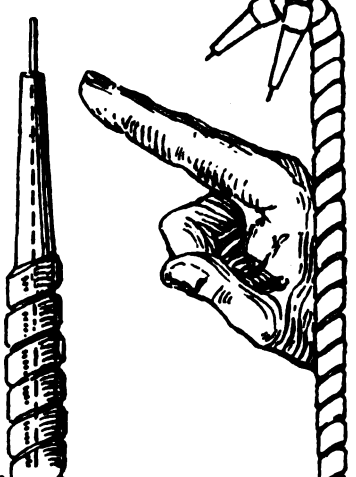
Send for Hoyt Book "Hunting Down Electrical Troubles." Tells the quickest, most accurate way to find Electrical troubles and explains the use of the Hoyt line.

A POSTAL BRINGS IT

BURTON-ROGERS CO.

Sales Department
HOYT ELECTRICAL INSTRUMENTS
Boston Office — 755 Boylston St.
Factory — Penacook, N. H.

If it hasn't the flexible cleaning device — it isn't an **"ALL-WAY"**



There is only one genuine. Press the spout downward — if the flexible cleaning device protrudes through the nozzle, it's an "All-way."

Made of finest quality flexible steel tubing — it will outlast the ordinary oiler many years.

No. 13—⅛ pint 7" spout	.75
No. 14—⅛ " " "	.85
No. 15—1 " " "	.90
No. 32—Oil Gun	1.50
No. 33—Combination oil and grease gun	3.50

Order promptly from your jobber or direct from

FAMASCO DISTRIBUTING COMPANY
Sole U. S. Agents
694 MAIN STREET
BUFFALO, N. Y.

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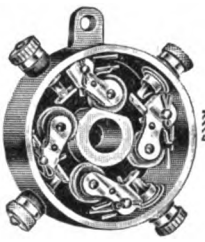
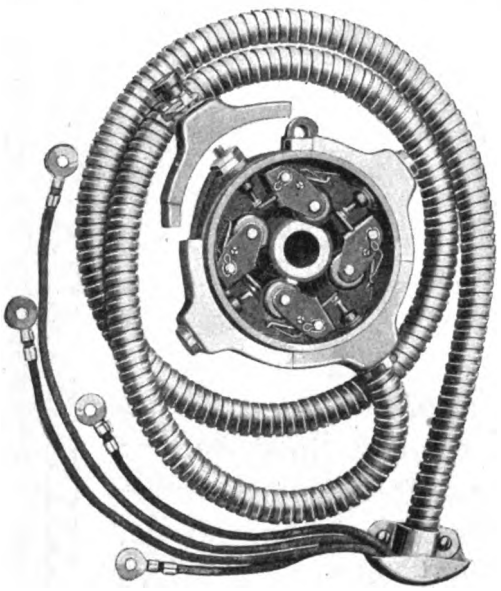


Everlastingly Guaranteed *To Always Make Good*

DUNTLEY MAGNETO BREAK TIMER



Showing Guard and Timer Combined.

Every time a cylinder misses fire 25% of the gas goes out the exhaust unused and wasted.

The Duntley puts a positive stop to this unnecessary loss, for the Duntley never misses.

SAVES GAS *ADDS POWER*

The constant make contact and the clean break of this super-timer shoots a big, strong flaming spark over the wires into each cylinder that ignites every particle of gas.

Its supreme performance not only means a saving of gas, but a tremendous increase in power.

Wire and Terminal Guard

Although the timer operates at a maximum of efficiency, broken wires, loose connections and short circuits utterly destroy the efficiency of the entire ignition system.

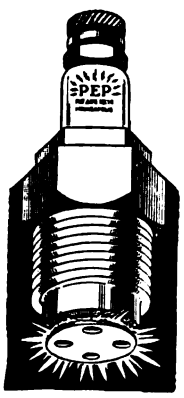
POSITIVE PROTECTION *ALL THE TIME*

The Duntley wire and Terminal guard entirely eliminates the trouble makers, for it affords absolute protection to the most vital part of the ignition wiring system.

By its use the wires from the coil box to the timer are encased in a flexible metal conduit and the timer is protected by metal armor.

DEALERS: Write us today our proposition is interesting.

J. W. DUNTLEY, 1003 Michigan Ave., Chicago



Retail for $1.00.

Far More Sparking Surface

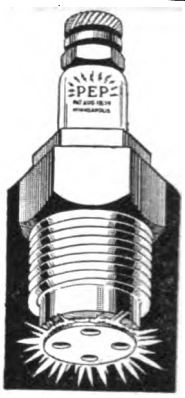
BETTER combustion, easier starting, snappier motor action, result from the ring of fat hot sparks yielded by the Pep plug. The perforated disk covering the lower end of the Pep plug gives two inches of sparking surface.

This is just one of the features which make users boost for Pep Spark Plugs giving dealers better turnovers and better profits. Let this fast moving plug add to your business.

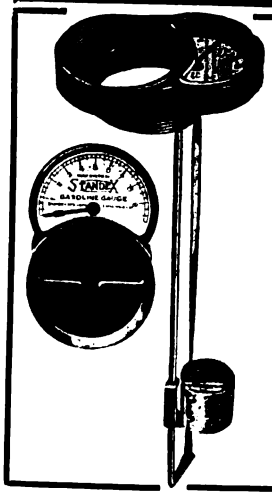
"Your Money Back If You'll Take It." No strings to this guarantee.

PEP SPARK PLUG COMPANY

237 South Sixth Street Minneapolis, Minn.



Retail for $1.00.



STANDEX

GASOLINE GAUGE
FOR
FORDS and CHEVROLET

ACCURATE TO THE DOT

Installed in a minute, need never be removed.

Exceeds the sale of all other gauges combined.

$1.75

At Dealers and Jobbers.

STANDEX, INC.
339 E. Ohio Street, Chicago.
Makers of Precision Gauges.

GUARANTY Spark Intensifire

Stops ALL Ignition Troubles

Saves 25% Gasoline

Increases power and mileage. Positive firing on all cylinders, regardless of condition of spark plugs. One intensifire for each cylinder. For any make of car.

$1.00 each.

GUARANTY MOTORS COMPANY
CAMBRIDGE 39, MASSACHUSETTS.

(When Writing to Advertisers, Please Mention the Accessory and Garage Journal.)

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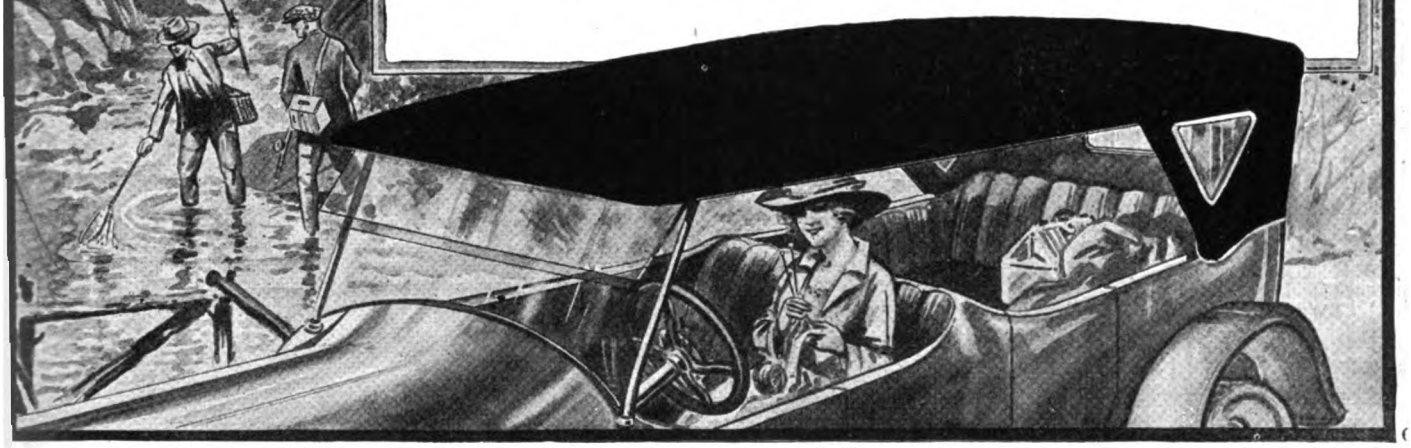
TRADE
DRIDEX
MARK
REG

THE MOST REMARKABLE
AUTOMOBILE
TOP MATERIAL

Light in weight, will not blister or crack.

Send to Dept. B for Samples and Prices
L. J. MUTTY COMPANY, Boston 9, Mass., U.S.A.



Your Prospective Customers

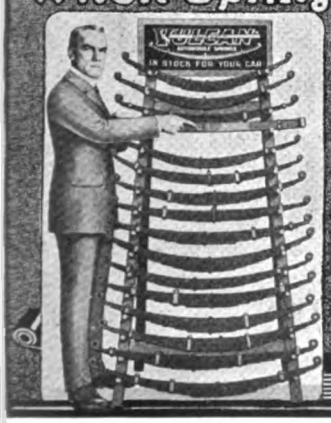
are listed in our Catalog of 99% guaranteed Mailing Lists. It also contains vital suggestions how to advertise and sell profitably by mail. Counts and prices given on 9000 different national Lists, covering all classes; for instance, Farmers, Noodle Mfrs., Hardware Dlrs., Zinc Mines, etc. *This valuable reference book free.* Write for it.

Send Them Sales Letters

You can produce sales or inquiries with personal letters. Many concerns all over U. S. are profitably using Sales Letters we write. Send for *free* instructive booklet, "*Value of Sales Letters.*"

ROSS-Gould
Mailing
Lists St. Louis

When Springs Break, put on



VULCAN
The Replacement Spring

Our metal nameplate is on every genuine VULCAN spring for your protection.

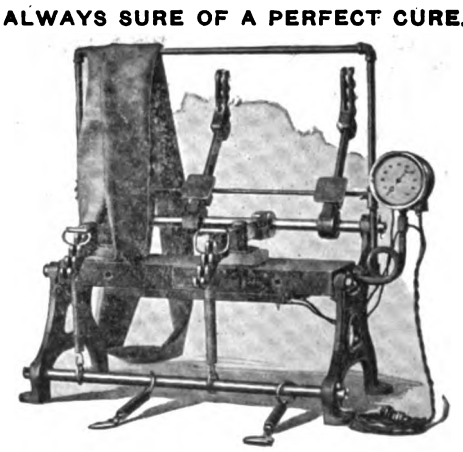
If your jobber cannot supply you, write us—today.

JENKINS VULCAN SPRING CO.
Richmond,
Indiana.

Heintz Automatic Electric-Steam Vulcanizer

Generates steam by electricity, eliminating all fire and flame. When the desired amount of steam is generated the current is automatically turned off, then on again when the pressure falls a pound or two, in this way maintaining a perfect uniform working temperature.

ALWAYS SURE OF A PERFECT CURE.



USED AND RECOMMENDED BY THE LEADING TIRE MANUFACTURERS AND TIRE REPAIR SCHOOLS.

Write us for descriptive data.

JAMES C. HEINTZ and COMPANY
2069 East 9th St., Cleveland, Ohio.

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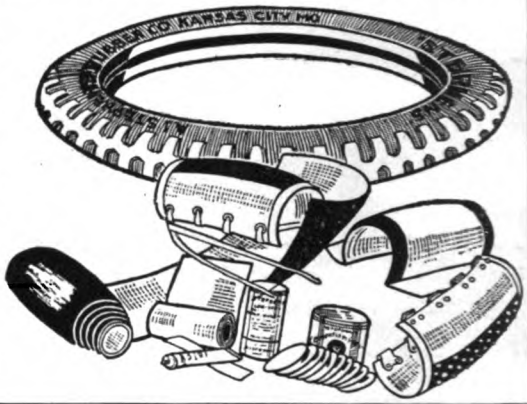
A. J. STEPHENS
President
A. J. STEPHENS RUBBER CO.
Capitalized $1,5000,000.00

DEALERS—My New Selling Plan
Will Increase Your Daily Profits $50 or More

No matter where you are located, nor how much competition you have, I can show you a most extraordinary selling plan that will actually add from $1,000 to $1,500 monthly profits to your business. This is no experiment. Hundreds of enthusiastic dealers throughout the country are using my selling plan and enjoying big profits. *J. W. Neal of Sedalia, Mo., sold over $6,000 worth of Stephens Products in less than a month. F. F. Swinson, Pratt, Kans., made $400 profit in 5 days. Reinhart Motor Co., Ottawa, Kans., sold over $2,000 worth of Stephens Tires in 10 days. McDavid Bros., Excelsior Springs, Mo., made over $300 profit in 4 days.* I can refer you to hundreds of other dealers who have done as well. This is the best proposition ever presented to you.

I Will Bring a Steady Stream of Customers Into Your Place of Business

By using big advertisements in your local paper, showing your name as distributor for STEPHENS TIRES and accessories, I will bring you business that you never hoped to get. My plan is to do this advertising without cost to you. My plan is to increase your business without increasing your overhead, in other words, to *positively guarantee* the sale of our products. Not a cent is required until I prove my claims to you. Write me today for all information. Learn the facts, then judge for yourself as to the money-making possibilities.

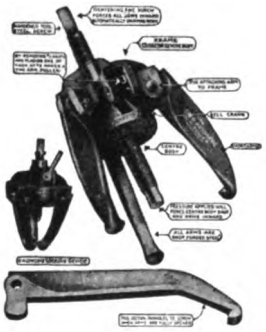


A. J. STEPHENS RUBBER COMPANY

1405 Chestnut Street **Kansas City, Missouri**

GREB AUTOMATIC GRIP PULLER
BEACH PATENT

"The One Best Bet" in Wheel, Gear and Bearing Pullers. Combinations of two or three jaws. Quick, Strong, Durable, Efficient and Simple. Positive Grip, cannot unhook and adjust to work instantly.



Greb Automatic Grip Puller

East of Rockies

Greb Arbor Press Base—designed to be used with the three long jaws of No. 1 Puller. Comes complete with two V Blocks and one V cap. Makes desirable equipment for pressing off gears, bushings, bending pipes, straightening shafts, etc. It is a good Bench Plate. Width 14 in., Depth 8 in., Diameter of Center Opening 3 1/2 in. Weight approx. 60 lbs. **Price complete $15.50**

No. 1 Senior Size—designed for heavy work—a one man Puller with a locking device. Capacity 3 to 18 in. Complete with two sets of jaws, 7 in. jaws open to 10 in., and 12 in. jaws to 16 in. Screw of hardened steel, 1 in. diameter, 16 in. long. (See Arbor Press Base Attachment.) Shipping weight 30 lbs. **Price complete $25.00**

No. 2 Junior Size—designed for all types of motors. Will remove magneto and pump shaft gears, couplings, etc. An efficient tool for all small work. Capacity 1 to 7 in. Complete with two sets of jaws 3 1/4 in. jaws open to 4 in. and 6 in. jaws to 7 in. Screw of hardened steel, 9/16 in. diameter, 2 1/2 in. long. (See Bearing and Race Attachment.) Shipping weight 4 lbs. **Price complete $12.00**

No. 3 Intermediate Size—designed to pull the average motor gears such as timing, pinion, transmission, differential, and crank shaft gears, gudgeon and universal joints, pulleys, and for general work. Capacity 1 to 12 in. Complete with two sets of jaws, 5 in. jaws open to 8 in., and 9 1/2 in. jaws to 12 in. Screw of hardened steel, 7/8 in. diameter, 10 in. long. (See Gear Attachments.) Shipping weight 15 lbs. **Price complete $18.00**

Greb Bearing and Race Attachment for No. 2 Puller has a Knife edge and can be forced behind magneto, electrical generator and self-starter bearings and races where it is impossible for the jaws of any Puller to be attached. This attachment when used back of small gears and bearings not only saves them but the ends of the Puller jaws as well. Capacity—Bearings and Races up to and including 2 in. **Price complete $4.00**

Greb Gear Attachment for all sizes of Greb Pullers has a 1/8 in. edge and can be forced behind gears where there is little or no room. This attachment when used back of small gears furnishes something for the jaws to get hold of and as it lays flat against the back of the gear it permits an even pull. Made in two sizes. Small size has capacity to take gears up to 3 in. on its front and 4 1/2 in. on its back. **Price complete $5.00**

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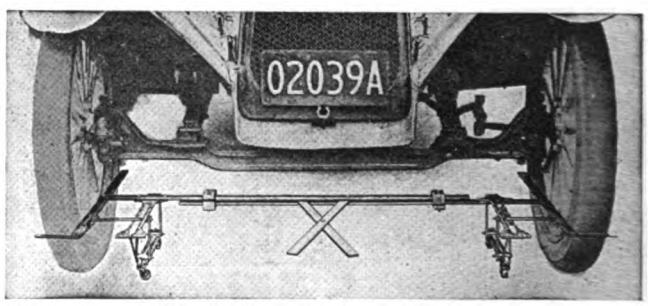

at your watch and done almost as quickly.

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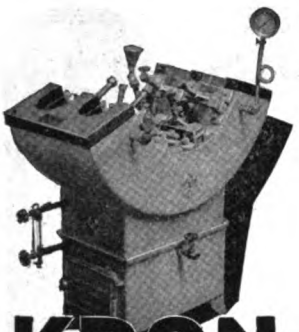

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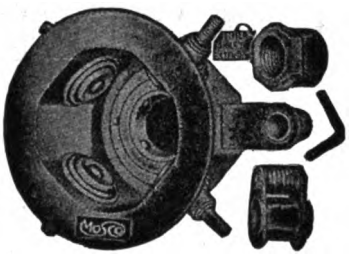

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The IDEAL TIMER because form of contact is the only one which is correct both electrically and mechanically. This is made by a hardened tool-steel brush coming in contact with steel balls which are kept in proper position by means of a spring with plug on the end pressing against them. The impact of the brush causes the balls to turn so that a fresh surface is presented for each contact. The brush comes in contact only with the four balls, touching no fibre or insulation. The balls are so located that each has a track of its own on the brush, this insuring a maximum amount of wear.

Price, $3.00.

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Manufacturers
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This compact equipment is put up in a mahogany finished cabinet 11x6x4 inches and is furnished complete with all necessary wire leads, which have slip and clip terminals. Order one today. **It will pay for itself in a month's time.** Write for special distributor's offer.

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Indestructible Radiator for Ford Trucks.
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IN ONE HOUR

Don't attempt to scrape a bearing to crank pin that has worn oval and don't pay a machine shop $15 to $25 for a lathe job. Get the extra profits yourself. Send for an

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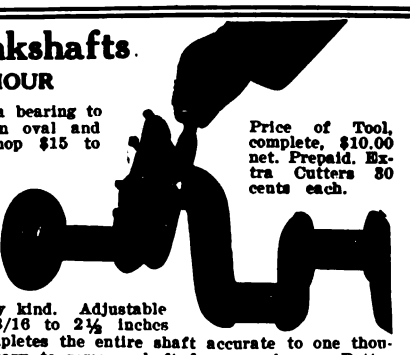

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ARE IDEAL FOR PRIVATE GARAGES.

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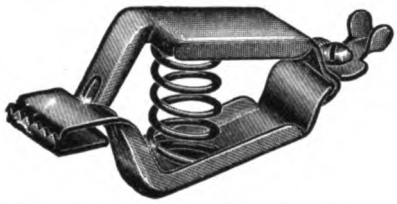

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Sample mailed postpaid for 15c in stamps.
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Steam $180.00

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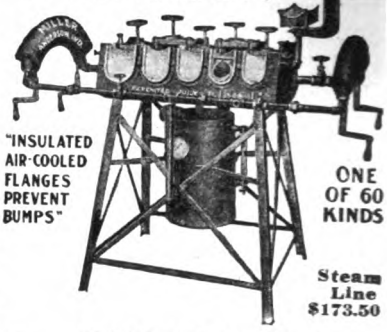

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B	1¼	½	12	3½
C	1½	⅝	12	5
D	1¾	¾	12	7
E	2	1	12	8½
F	2¼	1¼	12	10
G	2½	1½	12	11½
H	2¾	1¾	12	12¾
I	3	2	12	13¾
J	3¼	2¼	12	15½
K	3½	2½	12	17
L	4	3	12	21
M	4¼	3¼	12	20

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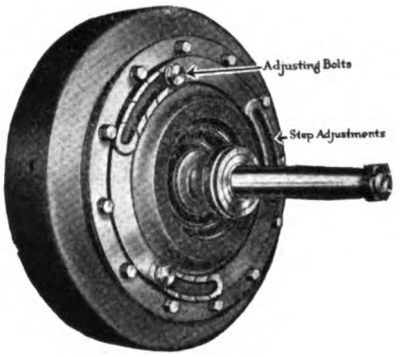

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It is simply constructed, smooth in operation, durable and moderately priced.

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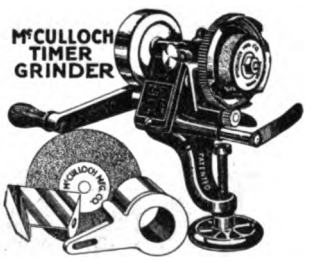

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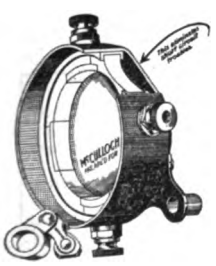

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A well made, accurate and simple timing device made right and perfect in every detail. The arrow points to the real feature.

Territory is open for McCulloch Timer Grinder. Dealers and Jobbers write for prospectus.

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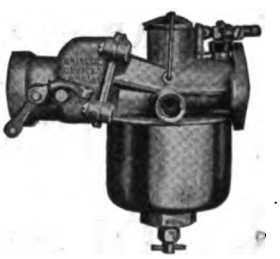

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More than that, they are actual boosters and send new customers to the dealer.

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This carburetor embodies no new or untried principles.

Its makers simply recognize the fact that speed and power and smoothness are all dependent upon a correct mixture, and have devised simple means to provide a correct mixture—not sometimes, but ALL the time.

Let us send you a Scoe on 30 days' trial. Pay half the net—$4.25—on receipt of Carburetor. Put it on a customer's machine and check its performance for 30 days.

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ARE THE ORIGINAL REPLACEMENT COILS

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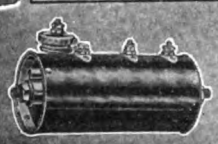

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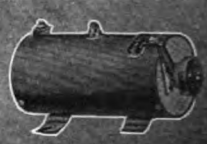

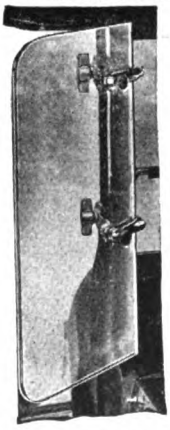

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Equip your Garage with the

Weston **Model 441**

"Fault Finder"

and give your customers the kind of service they demand. It means business for you.

The "Fault-Finder" is a Voltmeter and an Ammeter mounted in a durable, compact and convenient carrying case. The Voltmeter ranges of 0.2-0-3 and 2-0-30 volts enable the user to test out every part of the electrical equipment for practically every trouble. The Ammeter range of 30-0-30 amperes is right for determining charge and discharge rates for adjusting relays, etc. The Ammeter is protected against burn-out by a standard automobile type fuse accessibly located. Long rubber-covered flexible cables with spring clip terminals are used for making connection between the instrument and the apparatus under test. A complete Instruction Book accompanies each instrument.

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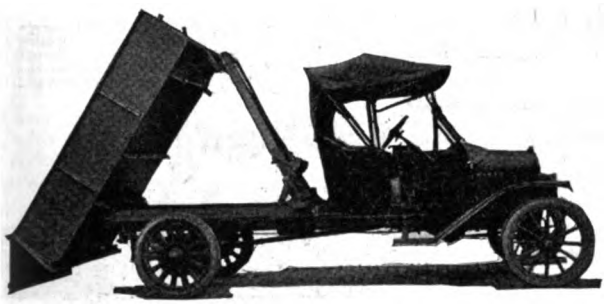
THE PEERLESS HAND HOIST

Single Cable Quadruple Worm Gear Drive

For Any Make or Type of Truck.



A wonder in efficiency and speed. It will fit any chassis and body. Weighs but 200 pounds. Simple, fool proof, wholly dependable and will last for years in the hardest service.

Any one that can drive a truck can hoist the heaviest load to 30 or 50 degrees in the longest body in less than two minutes. The smaller the body and load the quicker the action.

But two gears are used, quadruple worm and gear (both machine cut) and housed to protect from dirt and dust. The single cable makes an even pull. Compact and can be installed without drilling holes in chassis frame. The body hitch is also furnished.

We specialize in building all-steel bodies for any need.

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Made to a quality that affords superior results.

Leather Top Dressing	**Tire Paint**
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Sold in varying sized container or bulk with unconditional guarantee of replacement if in any way defective.

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Stop that rattling Steering Wheel on Your Ford

The steering column brace eliminates all vibration of the wheel and holds it solid. Other cars use one - *Fords Need It.*

Sold by dealers everywhere, or prepaid on receipt of price.

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Put In One Wrench Instead of Five—Put In a Wizard

Not alone because it shows a saving in cost and space in the tool kit, but because it will prove so satisfactory to the buyers of your car or truck that it will serve as a permanent "good will" offering, an ever-present reminder of the care and thought put into every part of the product you build.

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Wrench Manufacturers for Over 30 Years.

Lightning Quick Adjustment to Ten Sizes

Just lift jaw side to desired size and drop into mesh.

Ten openings: ¼", 5/16", ⅜", 7/16", ½", 9/16", 19/32", 11/16", 25/32", ⅞".

Every opening absolutely positive. No knurl adjustment. No back lash.

WAKEFIELD **WIZARD WRENCH** ADJUSTABLE OPEN END

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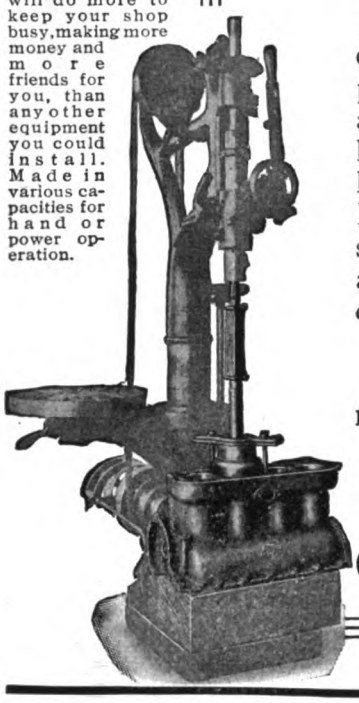
Put This MONEY-MAKING EQUIPMENT to Work in *Your* Garage

Storm Standard Reboring Machines will do more to keep your shop busy, making more money and more friends for you, than any other equipment you could install. Made in various capacities for hand or power operation.



It Will Earn Its Cost the First Year

PUT your garage on a big-business basis with Storm Tools. You don't need experienced men to operate them. These practical machines will add to the efficiency and output of your shop. They solve the labor shortage problem—more work can be handled in shorter time.

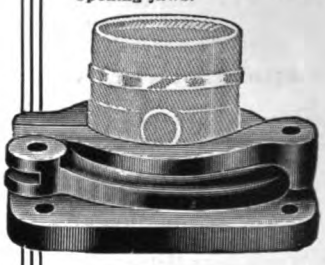
Don't send your reboring jobs to other shops. ***You*** can handle them yourself with a Storm Cylinder Reboring Machine and double your profits.

Write us for further information

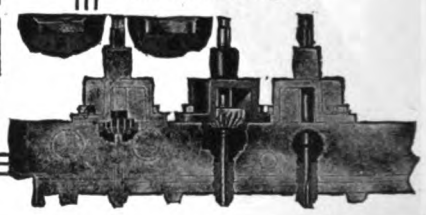
STORM MFG. CO.

Dept. P **Minneapolis, Minn.**

The Storm Piston Vise, for 3 11-16 to 4 inch pistons, inclusive. Saves time and labor—gives firmer grip without danger of damaging parts. Quick action is insured by eccentric leverage and self-opening jaws.

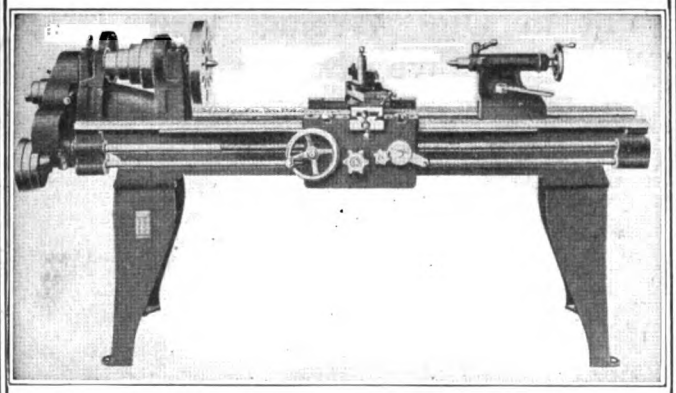


The Storm Valve Port Renewing Tool renews the valve system completely—removes the old wide, irregular face—enlarges the port—produces new narrow seat and new accurate stem guide.



STORM

MOTOR REPAIR EQUIPMENT



UNION LATHES

MANUFACTURED BY

UNION LATHE WORKS, York, Pa., U. S. A.

This lathe is especially designed for garage and machine shop work. It is well constructed and can be obtained at a moderate price.

Obtainable in various sizes with equipment of large and small face plate, follow rest, tool post, center, double friction counter shaft (see cut) rod and screw feed and all necessary change gears, wrenches, etc.

Write for complete descriptive literature and prices.

THE UNION LATHE WORKS

York, Pa., U. S. A.

ALUMINUM SOLDER

For filling defective aluminum castings, mending crank cases, engine bases, aluminum pattern work, or soldering aluminum parts.

Requires no flux or acid, and is used with an ordinary soldering iron or blow-torch.

Flows at a low melting point and machines up perfectly.

Hundreds of the largest manufacturers all over the country are our regular customers of many years standing.

With our ten years experience in manufacturing Aluminum Solder, our facilities for immediate shipments of your orders; and our reasonable prices; coupled with a record of having never received a single complaint against our material, we can assure you of satisfactory service.

Write us for quotations on your requirements.

(Sample 1-lb. package, $1.00)

NATIONAL PRODUCTS COMPANY.

Care P. O. Box-3. KOKOMO, INDIANA.

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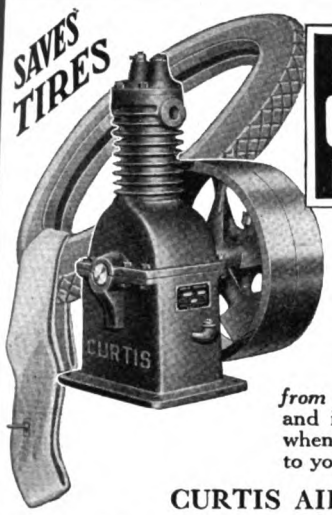


FREE
CURTIS AIR
FREE FROM OIL

Make More Money

Secure new patrons—increase your sales and profits by installing a CURTIS Air Compressor. Car drivers know that Curtis Air—*free from oil*—preserves inner tubes and increases tire mileage—and when they need air they will come to you to supply their wants.

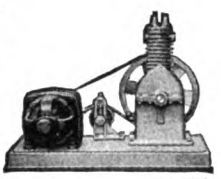
CURTIS AIR—Free From Oil

Curtis Air Compressors have an exclusive, patented, controlled splash-oiling system that prevents oil from being forced into the air line. They are built of the highest quality materials—are dependable—and economical to operate and maintain.

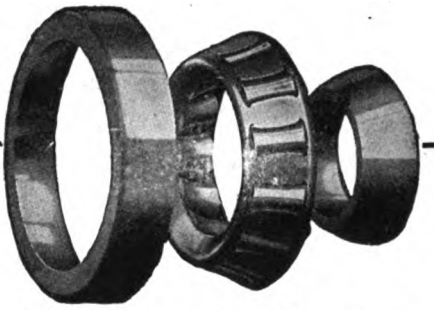
Ask Your Jobber

There is a style of Curtis Compressor Outfit that will meet your particular needs. Ask your jobber for particulars, or write us.

Style "W" Five sizes



Curtis Pneumatic Machinery Co.
1621 Kienlen Avenue, St. Louis, Mo.
Branch Office:
631-A Hudson Terminal, New York City



Front Wheel Bearing Replacements

Easily installed, satisfactory to customers, no mechanical change necessary in either hub or spindle.

WRITE FOR PRICES

FORD, All models **CHEVROLET, F, FA, BG, 490** **MAXWELL, 1914 to 1920**
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Cup and cone bearings have only a point contact on ball.

Shafer Roller Bearings have contact on full length of roller.

GEO. D. BAILEY CO.
(Shafer Service Division)
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Self Aligning
SHAFER Roller Bearing
100% Load Capacity From Any Angle

HOORAY FOR THE VANDERPOOL

Is what Vanderpool users say.

The Vanderpool is compact, takes little space, scientifically arranged that you can turn out a great amount of work in a short time. Ask any Vanderpool user.

Vanderpool Men Make Big Money

You will, too, after you are started. Our most successful men began without any knowledge of Tire-Rebuilding, but with the Vanderpool method of free Home-study they became proficient in a short time. You can learn in a few weeks of your spare time. Vanderpool equipment will fit you out for first class work.

Independence and a Business of Your Own

is within your reach at this very moment. Send a Post Card for our booklet, and get started at once.

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The Vanderpool Vulcanizing Co.

Springfield, Ohio

Positive Proof of How It Fires

Show Him The Famous "Lead Pencil" Test

This simple demonstration instantly convinces even the most skeptical motorist that **Twin Fires** banish all troubles with spark plugs.

Take any lead pencil and conveniently prove that **Twin Fires** gives two independent sparks—entirely different from any other spark plugs.

This test will prove that with **Twin Fires** he will always get two distinct, hot, fat, and instant sparks—that if dirt, oil or carbon clogs one point and causes it to short—the other point continues to fire.

Show Him Twin Fires—Then You'll Equip His Engine

The handy **Twin Fire** demonstration outfit enables you to prove how this plug overcomes troubles from oil and from carbon, and how it increases power.

Dealer Plan Sent to You on Request.

Twin Fire Spark Plug Co. **722 Grand River Avenue, Detroit, Michigan**

TWIN FIRE

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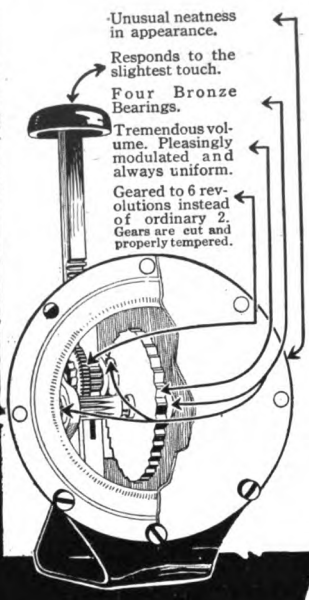
A-K HOR



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The improved, long-winded A-K favor at every comparative test. Its substantial mechanism is high can't get out of order, yet so powerfu enduring warning. It CLEARS THE ulated that it does not scare. It spea to six revolutions, instead of the ord jector (as illustrated) for touring car Projectors are SEAMLESS, another

Twelve years of experience, together with and heavy production enable us to BEAT t as in QUALITY. Will outlast and outwear a

Order your season's requirements EARLY. T our advice. A-K Horns are PREFERRED.

We also manufacture A-K Timers for Fords and F tractors. They are BETTER, too; and we make Spring ers and other accessories under the A-K Brand which for SHEER QUALITY and BIGGER VALUE.

Leading jobbers everywhere carry the A-K line. If you est jobber can't supply you, write us.

Angsten-Kox Company

110 So. Dearborn Street CHIC

Plants at Chicago and Michigan City, Ind.

ANGSTEN-KO

"SECURITY" Auto Lock SUPREME

Security Auto Lock Co. wins suit against Perry Auto Lock Co. and Ira D. Perry in Federal Court

Judge Kenesaw M. Landis decides

That the Patents of the Security Auto Lock Co. are valid.

That the Security Auto Lock Co. is entitled to damages, royalties, profits and costs due to this infringement.

That the case be referred to a master in chancery for an accounting.

WE INTEND TO MAINTAIN OUR RIGHTS AND PROSECUTE ALL INFRINGERS.

The Security Auto Lock is the ORIGINAL LOOSE WHEEL LOCK FOR FORDS, which cannot be beaten.

Made of solid brass, which cannot be broken with a hammer.

Steel working parts.

Positively cannot be hammered down.

Can be installed in five minutes, as no filing, sawing, drilling or chiseling is necessary.

When locked car cannot be driven or towed away. Insurance reduced 15%. Approved by Underwriters.

It makes the Ford positively Thief-proof.

Price $7.00

Some good territory still open. Write us.

Security Auto Lock Co.

410 North Paulina St. Chicago, Ill

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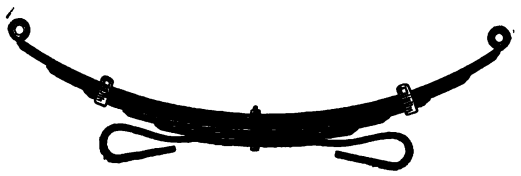
FORD USERS
Don't Really Want Cheap Springs

any more than cheap or poor tires or service. Cheap (?) goods—usually are the dearest—especially if the *cost of installing* must soon be repeated.



NEW ERA "SAVEUR"

Complete.....$6.50
"Saveur" Open Looped Leaf only.....$2.50

'BETTER' FORD SPRINGS
That Do Stop the Breakage

Don't queer chances for future business from customers by selling a spring no better than the broken one.

Insist on **New Era Springs** from your jobber—or order direct from us.

A genuine New Era guaranteed Ford front spring is stamped A-1 and "New Era" on bottom leaf—has seven leaves graphited for about two years' lubrication, bushed, tie clips bolted, painted and oil tempered. Weight 18 pounds.

POPULAR PRICED FORD FRONT SPRING No. A-401 is exactly like A-1 except not graphited and clips not bolted. The only one we know of sold at competitive price is positively oil tempered.

Sold by 220 Best Jobbers

A-1 Ford Front Spring, 7 leaves (Graphited).....$ 4.50
A-401 Front, not guaranteed. 7 leaves 3.50
A-2 Rear Standard tread 51 lbs., 8 leaves (Graphited). 12.00
A-1900 43 lbs., Rear, 8 leaves (not guaranteed) 10.50
A-402 Rear Tread, 60 inch, 8 leaves (Graphited)..... 15.30

FORD TRUCK SPRINGS

Ford Truck
T-1210 M/T '18 R., Half R.orL. 7.40

Hudford
T-1208 R. S., 52x3, 9 1., 1 Ton. 21.50
T-1209 R.S., 50¾x3, 12 1., 2 Ton 42.00

Make-a-Motor
T-1204 R. S., 49½x2½, 8 1..... 19.30

Max-fer Truck
T-1204 R. S., 42x2, 10 1..... 13.05
T-1205 R. relief, Cr. 31x2, 7 1. 5.50

FORD TRUCK SPRINGS—Cont'd

Olson Unit One-Ton Truck
T-1207 R. S, 44x2, 7 1..... 14.60

Redden Truck
T-1206 R. S., 40x2½ 8 1..... 15.75

Smith Form-A Truck
T-1200 R. S., 42x2, 10 1..... 13.05
T-1201 R. S., 42x2, 12 1..... 16.50
T-1202 R. Relief, Cr. 31x2, 7 1 6.00

Ask for complete stock list of Better Springs for all cars.

Extra Heavy Springs for Ford Cars of Commercial Use

A-1894 Front, 9 plates, (Graphited).....$ 6.50
A-1895 Front, 10 plates, (Graphited)..... 7.20
A-1896 Rear, 56-inch tread, 10 plates, (Graphited)..... 19.50
A-1897 Rear, 56-inch tread, 11 plates, (Graphited)..... 21.50
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A-1899 Rear, 60-inch tread, 11 plates, (Graphited)..... 24.00

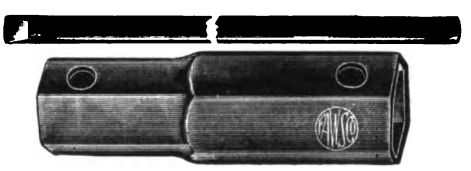
It's poor economy to spend labor replacing a broken spring with one NO better.
Use New Era "Better" Springs for all cars, and stop the breakage. 150 best jobbers list them.

The New Era Spring and Specialty Company

68 Cottage Grove Ave., Grand Rapids, Michigan

FAWSCO SPARK PLUG WRENCHES

TUBULAR DRAWN STEEL



These wrenches are the highest grade coppered and nickel steel. Made in standard combinations of sizes. Complete with Bessemer steel pin.

No. 29x31—For ⅞ & 15/16" Plug Shells.....Each, $0.45
No. 29x33—For ⅞ & 1" Plug Shells.....Each, .45
No. 29x37—For ⅞ & 1⅛" Plug Shells.....Each, .45
No. 31x37—For 15/16 & 1⅛" Plug Shells.....Each, .45

Packed in individual boxes.

Ask for Circular.

27 WARREN ST. NEW YORK CITY — **J. H. FAW, Inc.** — **918 Hearst Bldg. SAN FRANCISCO**

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A WONDER LUBRICANT FOR CAR AND TRUCK SPRINGS

"Napco" Graph-Oil

Simply apply "Napco" to the sides of the springs with an oil can—

It will make springs work properly.

It will protect springs against breakage.

It will save in repair costs and replacements.

It will stop all spring noises.

It will make the vehicle ride easily.

It will save tires.

It keeps the springs from becoming rusty.

It adds to car service and comfort.

It will penetrate in between the leaves, cover and absolutely lubricate the surfaces of the leaves.

"Napco" used only on one side of a spring will come out the opposite side in from 30 seconds to three minutes without spreading.

A few drops of "Napco" will make easy starting of rusty nuts, bolts and connections, as it penetrates around the threads and loosens the rust.

With "Napco" there is no need to spread the leaves to lubricate them. It makes quick and easy work of a dirty job. Because it is easy to apply, operators and repairers will use it.

Jobbers and Dealers.

"Napco" Graph-Oil is a guaranteed product. It saves in time and labor. There is nothing like it and it is 100% efficient. It is a wonder worker, something essential in the tool kit, garage, repair and service station. It sells in a big way at a good profit to the trade.

"Napco" is sold in 16-oz. cans—List price, **75 cents.**

A special price when ordered in gallon cans or 50-gallon steel drums.

Send your order today. If demonstration is desired, write for sample can.

National Automotive Products Co.

331 The Arcade

CLEVELAND, OHIO

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BLACK & DECKER

LECTROFLATER

ELECTRIC AIR COMPRESSORS

PORTABLE TANK OUTFIT

Particularly convenient for use out-doors and places at some distance from the nearest electric light socket, as the tank stores sufficient air at one filling to inflate five average tires from flat to full pressure or ten tires from 40 to 80 pounds. You take the air to the car, saving valuable time and giving your patrons the kind of service they appreciate.

The No. 2 Lectroflater Electric Air Compressor used with this outfit is a sturdy, dependable unit of unusual compactness and durability.

Air cooled. There is no water to freeze up.

Grease lubricated throughout. No oil used.

The motor develops one-half horsepower and operates on any current from Direct to 60 cycle Alternating.

Lectroflaters are made in different styles to suit various requirements.

May we send you complete information?

THE BLACK & DECKER MFG. CO.

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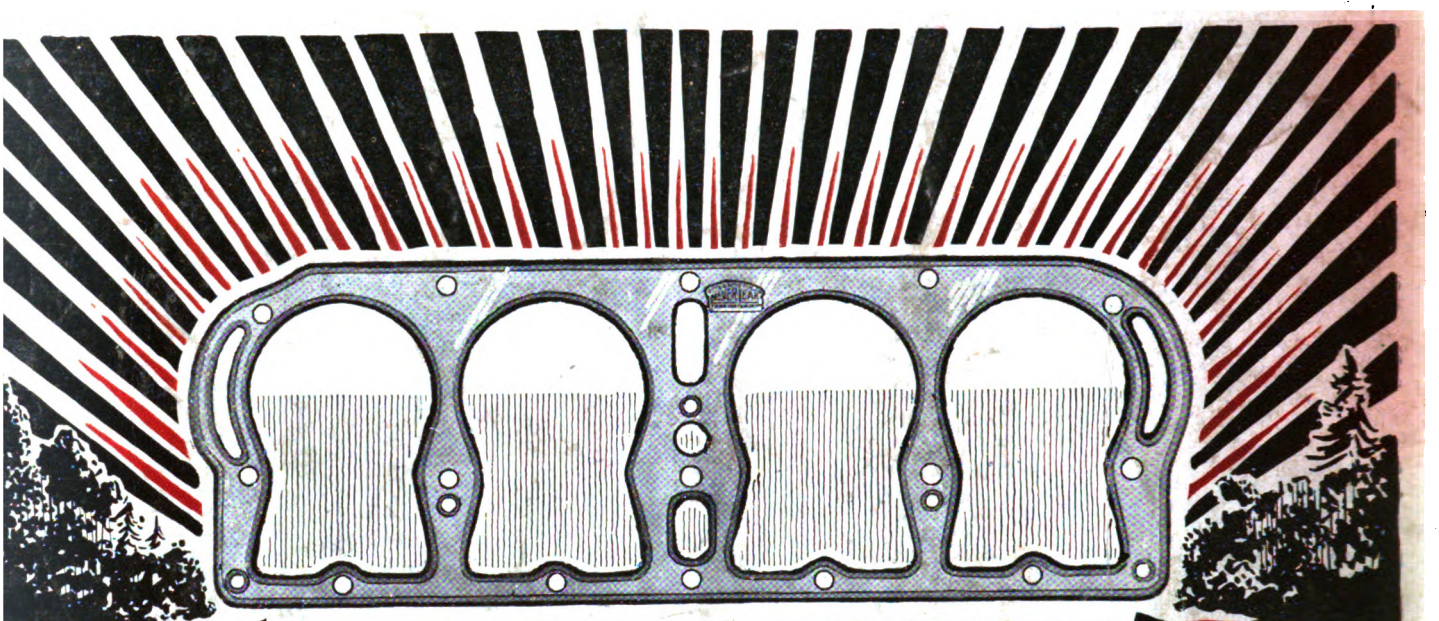

NEVER-LEAK CYLINDER HEAD GASKETS

STRONGEST WHERE OTHERS ARE WEAKEST

Double the Strength and Service Life

That means a 100% better gasket

Never-Leak gaskets will not blow out or break as most other gaskets do.

They are all metal, enclosing asbestos fabric with practically indestructible seamed edges and the only gaskets made that way.

They cost less and are guaranteed to be wholly dependable, to afford perfect service and complete satisfaction in any use.

An all-quality product produced by the largest makers of gaskets in the industry.

We stock more than 90 types of gaskets for as many makes of cars and trucks. We have what you want or can quickly make it.

Why not specialize in using or selling Never-Leak gaskets?

All orders given personal attention. Prompt delivery.

Whatever your requirements may be, we can satisfy you.

FITZGERALD MANUFACTURING COMPANY

TORRINGTON, CONNECTICUT.

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Entered as second class matter, December 30, 1911, at the Postoffice at Pawtucket, R. I., under Act of Congress of March 3, 1879.

The Accessory and Garage Journal

VOL. IX. NO. 2. PAWTUCKET, R. I., JUNE, 1919. $2.00 THE YEAR.

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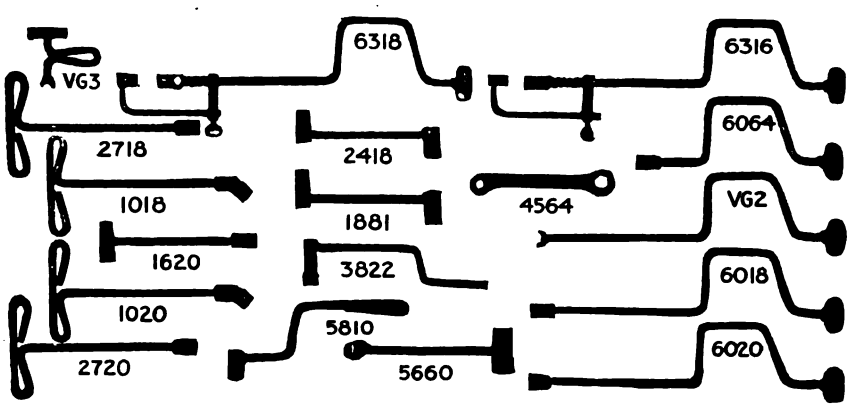

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The series illustrated will serve nearly every requirement for Ford Car adjustment, repair and overhaul.

A Walden-Worcester agency means the establishment of a department that will meet a constantly increasing demand for highest grade dependable tools.

It is worth while for every dealer to write for our 1920 catalogue.

WALDEN-WORCESTER, INC.

GENERAL OFFICES AND FACTORIES
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452 MONADNOCK BUILDING

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487 MONADNOCK BUILDING

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"Built By Cord Tire Specialists"

Only One Secret to Good Tires

WHEN it comes right down to proven facts, tire manufacturers and dealers know there is only one secret to making a good tire. *"Use only the best materials!"*

No freak or fancy construction makes so good a tire as good materials.

The best materials that the market affords are put into Syra-Cord Tires by experienced cord tire builders under the direction of cord tire specialists.

Syra-Cord Tires are made with universal tread scientifically designed to prevent skidding. Yet they coast and steer as easily as ribbed treads. With equal efficiency you can equip your whole car, front and rear, with Syra-Cord universal treads.

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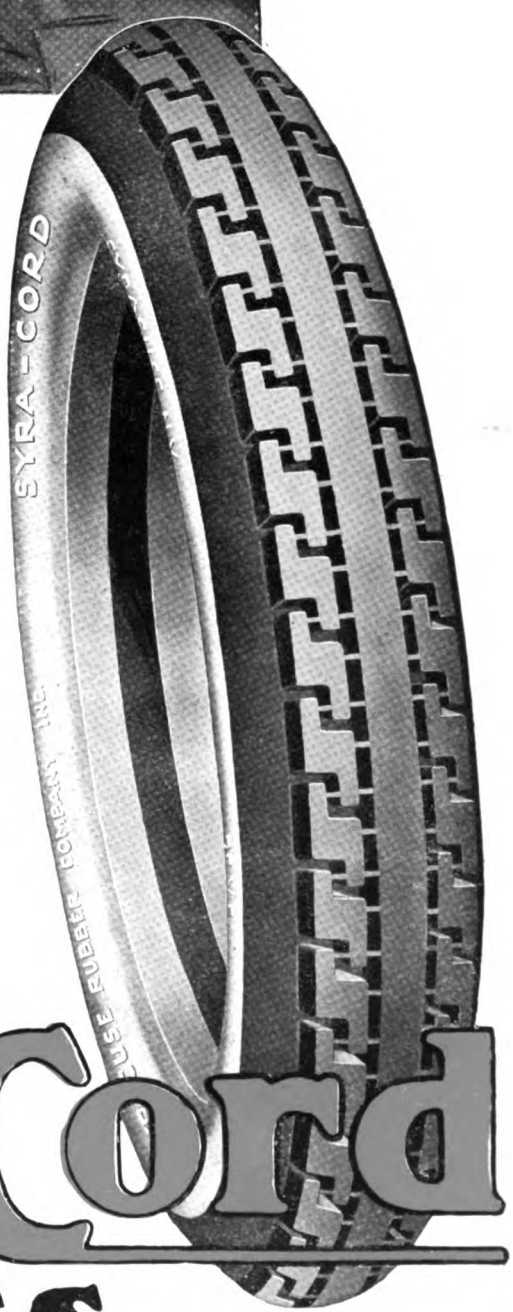
SYRACUSE RUBBER COMPANY, *Inc.*
SYRACUSE, NEW YORK



Syra-Cord TIRES

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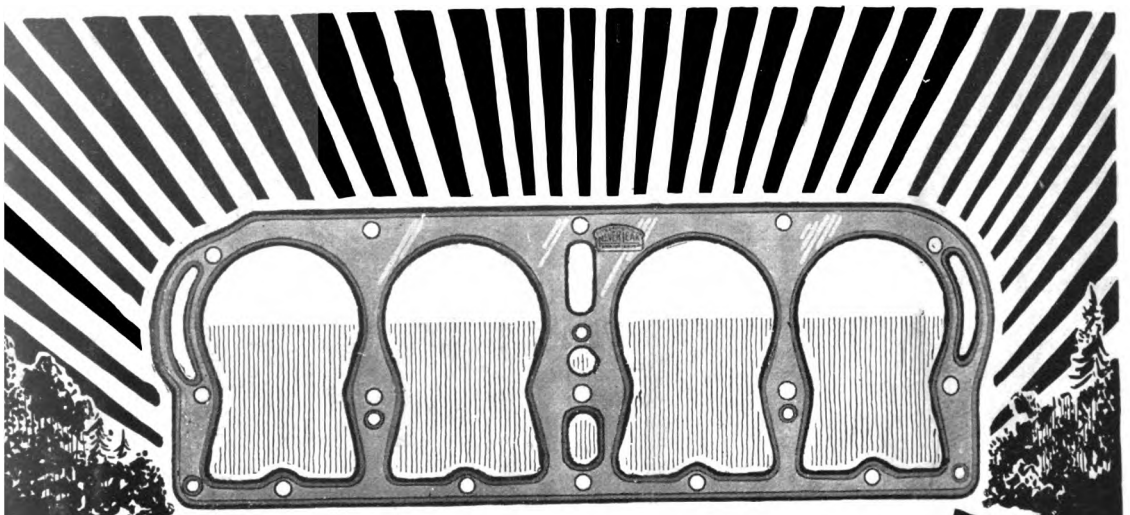

NEVER-LEAk

CYLINDER HEAD GASKETS

STRONGEST WHERE OTHERS ARE WEAKEST

Most car owners know from experience that a gasket that will not crack, break or blowout is better than a good gasket.

None of these defects can develop with NEVER-LEAK Gaskets. Old type gaskets may cost slightly less, but you cannot afford to gamble with car service and repair bills for a few cents.

NEVER-LEAK Gaskets are metal enclosing asbestos fabric—the only type made with seamed edges, that strengthen and reinforce it 100 per cent. Every one guaranteed. We are the world's largest gasket maker. Our standard stock includes gaskets for nearly 100 cars and trucks. We produce any type to specification.

We can fill any stock order immediately. We can make delivery to schedule.

Write for Catalogue, Quotations and Discounts.

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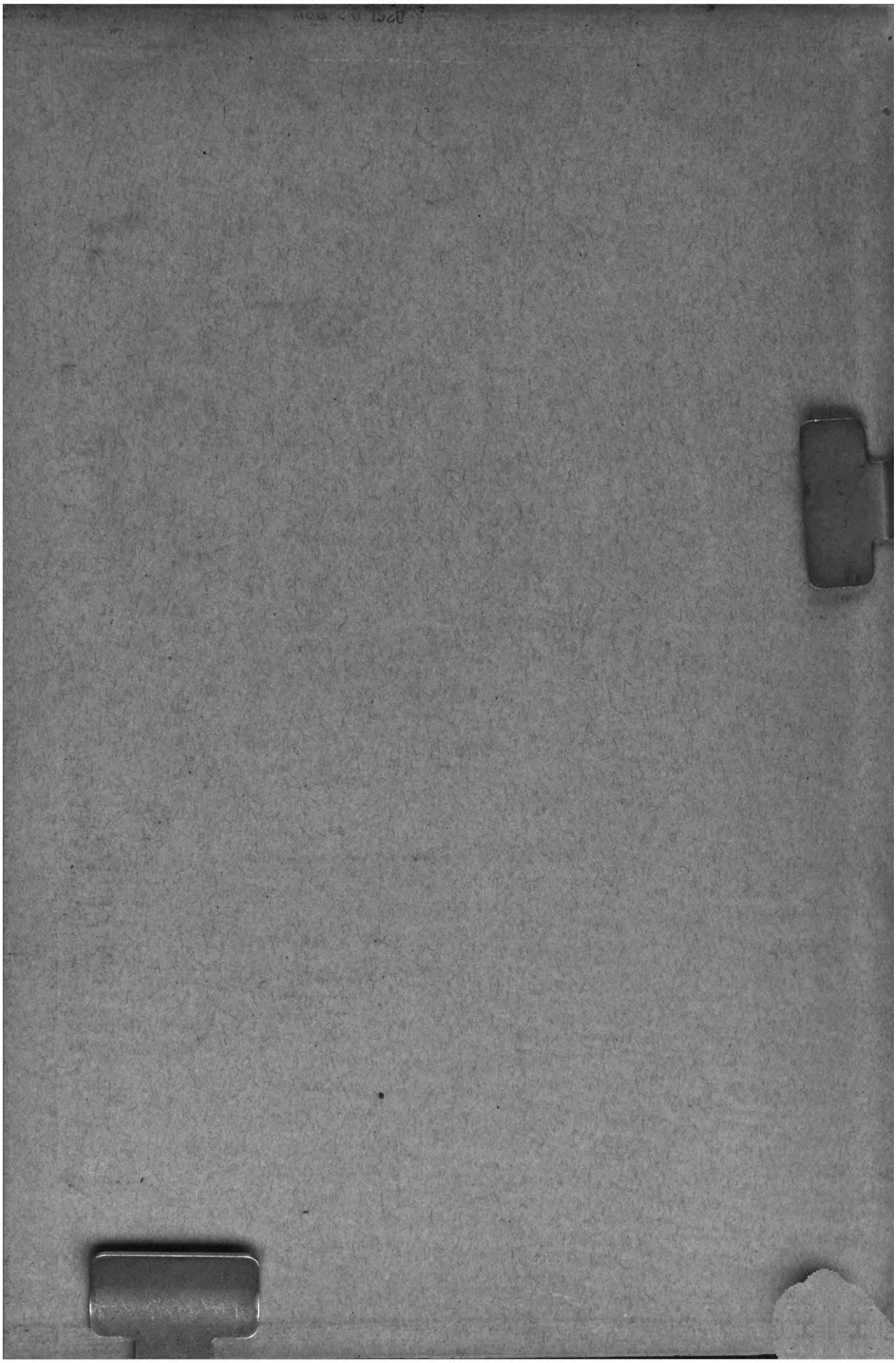

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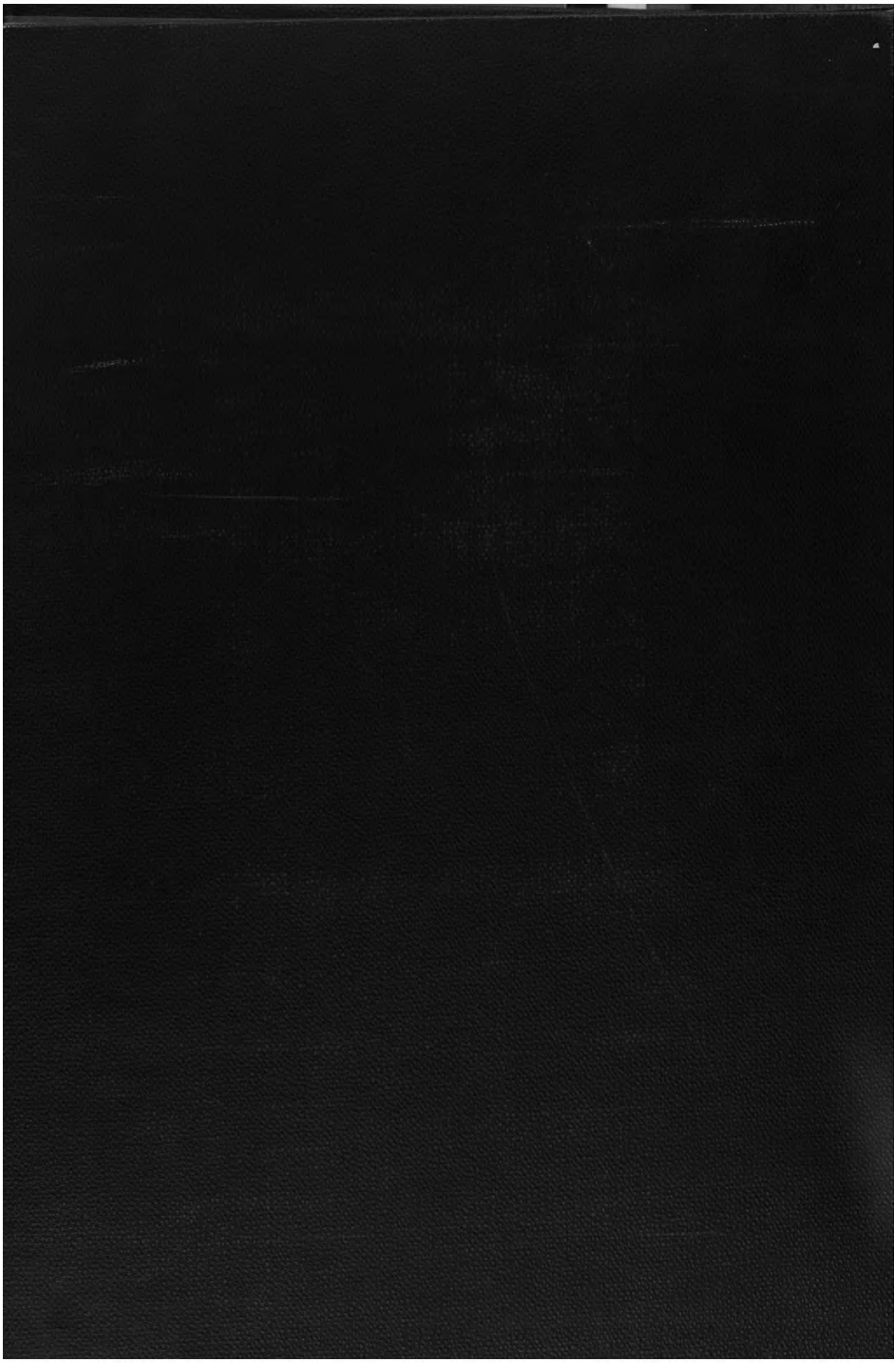

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